

THE UNIVERSITY OF HULL

A Study of Viability and the Management of Knowledge
in Community Enterprises in Thailand

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by

Wisonthेera Mettanont

B.A. (Communication Arts), Chulalongkorn University, Thailand

M.P.A. (Public Administration), Chulalongkorn University, Thailand

M.S. (Human Resource and Organization Development),

National Institute of Development Administration, Thailand

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Abstract

This research is related to the viability and management of knowledge in community enterprises (CEs) in Thailand. CE is a term that represents a range of business activities which are founded and operated by local people in order to strengthen economic development in a community. CEs also contribute to preserving indigenous knowledge and culture, encourage learning and social development in their communities, and promote cooperation for people to solve their problems.

Although CEs can provide several advantages as mentioned above, it has been found that a number of CEs cause economic, social and environmental problems to communities. These problems may arise from weaknesses in knowledge, thinking and learning, which affect the viability of the CEs. Therefore, knowledge management (KM) is the focus for this study because it not only involves the management of knowledge and learning, but is also considered as a method to support viability, competitiveness and the growth of organisations. The Viable Systems Model (VSM) is also considered because it is a theoretical framework that explains organisational viability and sustainability. Furthermore, VSM can strengthen KM implementation by making KM more effective.

Even while the literature shows several studies on KM in CEs, only a small number of them explain the way KM affects CEs viability and sustainability. Moreover, research into applying the VSM to CEs is relatively rare. Therefore, this research aims to combine KM with the VSM to study the survival problems of CEs in Thailand. This study aims to explore useful ways to improve the viability of CEs using KM. The research objectives

are to investigate how to enhance CEs' knowledge in a way which improves the viability of CEs, to explore knowledge sharing between CEs and communities in order to improve their collaborative learning and viability, to propose a KM model which can contribute to improving the viability of CEs, and to extend the body of knowledge by applying a VSM framework to KM, particularly with small organisations like CEs in Thailand.

To achieve the research aim and objectives, an interpretivist research paradigm and a qualitative approach were employed. Eight CEs from four regions of Thailand were taken as case studies. These case studies were categorized into two groups, consisting of best practice CEs group and typical CEs group. Data was collected through semi-structured interviews, participant observation and focus groups. The data collected was analysed by grouping according to the research questions. In order to enhance the transparency of the data analysis process, the computer-aided qualitative data analysis software NVivo was employed.

The key findings of this study include clarifying the type of knowledge required for CEs' viability and the ways to manage such knowledge. In addition, six factors contributing to CEs' viability are derived from this study's findings. These factors include leadership, networks/connections, external environment monitoring and preparing for changes (S4 of VSM), continuous learning in CEs through both adaptive and generative learning, continuous knowledge creation, and support from government agencies.

These findings make both theoretical and practical contributions. In terms of theoretical contributions, the gap in using KM to directly study the viability of small organisations as CEs is filled; knowledge in complementing KM with VSM is extended; and using the

VSM criteria to improve organisational viability is extended to unique organisations like CEs. Regarding practical implications, the findings, which include ways to improve the viability of CEs using KM, can contribute useful management information to CEs and government agencies involved in the development of CEs. This research also offers guidance for future research regarding CEs' viability.

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Chapter 1

Introduction

1.1 Introduction

This chapter provides the background information and rationale for designing and developing this research project which intends to explore useful ways to improve the viability and knowledge management of community enterprises. The research aim, research objectives and research questions are presented. The research methodology, and an overview of eight case studies, are summarised. Finally, an outline of how this thesis was developed is provided.

1.2 Background Information

A community enterprise (CE) can be defined as an organisation working for sustainable regeneration in the community through a combination of economic, social, environmental and cultural activities (Development Trusts Association, 2000, cited in Pearce, 2005, p.32). This organisation is independent, not for private profit and operated by local people. CEs play a vital role in strengthening economic and social development, providing the community with learning opportunities, enhancing the quality of community life and supplementing community development (Welsch and Kuhns, 2002). CEs are not only a way to earn money and mitigate the economic problems of the household, but also help to preserve indigenous knowledge and culture by adopting and adapting local wisdom to produce their products (Valaisathien, 1996).

Moreover, CEs also promote the integration of people in order to solve their own problems. This is the basis of developing a strong community where members play an important role in managing their ways of life and creating a self-reliant community which can unite and develop solutions when facing problems or changes in a complex world.

There is no explicit evidence to identify when CEs were first established in Thailand. However, it appears that a large number of CEs emerged after the economic crisis in 1997. Since the 1960s, when the first National Economic Development Plan (1961-1966) was launched, Thailand has used a top-down development approach and 'development with growth' agenda, resulting in socio-economic progress for its people (Hanpongpanth, 2004). Implementing the first National Economic Development Plan resulted in the rate of economic growth increasing by 8.1 percent per year on average. Average income per capita increased by 6.1 percent per annum, and agricultural and industrial production expanded by 6.1 and 11.2 percent respectively during this period (NESDB, 2010). This top-down development - guided by the government's modernisation policy - focused on objects, technology and the growth of industries to develop the country; it caused significant changes in several areas including the economy, politics, society, culture and the environment. The positive results of this approach were an increase in the rate of economic growth, the growth of infrastructure, more modern communication systems and the distribution of educational opportunities. However, it seems that these positive results were not spread to people in rural areas and disadvantaged groups in Thailand and this social transformation was not without negative effects.

The expansion of a top-down development approach by government into rural areas has caused many feelings of impotence. For instance, people in the agricultural community have to rely heavily on market forces and middle men. Moreover, natural resources, relationships in the family and traditional aggregation, which involves gathering members of a rural community to help a neighbour do something such as harvest, has been degraded. Local wisdom, which helped locals to solve their problems, is beginning to be forgotten and lost, and this wisdom has an effect on sustainable living which can allow people to be self-reliant. The ability to manage needs and handle problems, which were long considered as fundamental attributes of Thai people and Thai society, has been affected. It appears that the bubble economy of an unsustainable boom, and the vulnerability and other problems of rural areas, reflect a flawed, top-down management approach reflecting the government's modernisation philosophy.

After a considerable time under a capitalist development approach in Thailand, the worst result has been the increasing dependency on outside support, such as the government or capitalists, and the increasing lack of self-reliance among the Thai people. Thailand faced a serious economic crisis in 1997 which resulted in a number of companies in various industries failing, so a substantial number of workers (as high as 1.2 million, representing 16 percent of total unemployment in the country in January 1998) had to return from urban areas to their hometowns in rural areas (Hanpongpanh, 2004). In this period, many communities started their CEs using local wisdom and the natural resources in their areas. Hence, over the past ten years, the number of CEs has been rising in Thailand. According to the Community Enterprise Promotion Division (2015), there are 75,606 CEs registered with the Secretariat Office of Community Enterprise Promotion Board (SCEB) in 2015. There are two main types of CEs, namely

CEs that produce products and CEs that provide services. Regarding the first group, 37,999 CEs produce crops or are engaged in livestock production and fishery; 13,852 CEs produce food, processed food and beverages; 9,244 CEs produce textiles and clothing; 9,752 CEs produce arts, crafts and furniture; 427 CEs produce leather and ornament; 9,889 CEs sell factors of production, such as organic fertiliser and crop seeds; 2,002 CEs produce herbal products, such as soap and shampoo; 80 CEs sell machinery; and 5,644 CEs produce other products. In the second group, CEs that provide services, 4,448 CEs provide community saving services; 1,873 CEs are community co-ops; 561 CEs deliver health services; 521 CEs run tourism services; 29 CEs offer mechanical repairs; and 7,450 provide other services. It should be noted that one CE can operate more than one type of business

Apart from the economic crisis, the other key factor that has supported the growth of CEs in Thailand has been the government's 'One Tambon One Product' (OTOP) project launched in 2001. This project aims to promote the development of local communities by encouraging people to participate in the creation of jobs and income, by using local resources and local wisdom to develop products or services which are unique and value-added, such as herbal drinks, silk weaving and bamboo wickerwork (Community Development Department, 2010). In addition, the government passed the Community Enterprise Act in 2005 concerning CEs. This was enacted in order to encourage CEs to be able to compete both domestically and internationally. CEs will be supported in using local wisdom, generating income and improving management skills. This will make the community self-reliant and help to strengthen the community's economy in order to be ready for future competition (RYT9, 2006). It may be said that these two policies of the

government are important factors that have promoted the emergence of a large number of CEs in Thailand.

Considering that there are thousands of CEs in Thailand, it is important to note that not all of them have been successful. On the contrary, there are only a few that have succeeded and survived to this day. Some succeeded initially but subsequently failed. For example, in 2002 there were approximately 1,200 groups across the country which had registered as local alcohol producers. One year later, only five percent of them remained (Phongphit, 2005b). CEs that cannot survive cause people to suffer more greatly because, for example, some people have greater debts due to borrowing money to invest in the enterprises.

Konthaiban (2007) argues that a crucial cause for the failure of CEs lies in their patterns of thinking and learning. Such CEs can perform better when they follow advice and information given by the government or external experts and it would appear that they cannot generate or create new knowledge/new idea by themselves. Likewise, Hoawteerakul (2010) suggests that the success of some CEs is not sustainable. Temporary success comes from the assistance of external consultants and external trainers, whereas members of CEs lack true ability in management, such as the ability to seek information for product development. In addition to the financial impact, the weakness in thinking and learning in the CEs may cause other problems, such as oversupply, which occurs because many CEs in the same area produce the same product. This may lead to arguments and social disruption in the community.

The lack of thinking and learning may also generate environmental problems. One obvious example is the waste resulting from the manufacturing process such as banana peel from banana chips and dried banana butter production. For instance, Nong Toom Sub-district, Kong Krilat District in Sukhothai Province, which is well known for producing banana chips and dried banana butter, produce around 3-5 tons of waste banana peel per day. This results in environmental problems such as smelly banana peel, water and soil pollution, and a breeding place for bacteria, flies and mosquitoes (RISE-AT, 2003). Another example is waste water from the production of mulberry paper in several communities in northern Thailand such as Ton Pao Sub-district, San Kamphaeng District, Chiang Mai Province (GSCI, 2005). This waste accumulates in the soil during the dry season before leaching into the natural water sources the rainy season. Such examples result in the important question of how to manage knowledge in CEs in order to improve their learning and viability.

1.3 Rationale for the Use and Application of Knowledge Management and the Viable Systems Model

Knowledge management (KM), which has been recognised as an effective method to support organisational viability, competitiveness and growth (Diakoulakis et al., 2004), was adopted for this study because the viability of CEs is compromised due to shortcomings in knowledge, thinking and learning, as described previously,. This is because KM is concerned with the management of whatever is identified as knowledge (McAdam and McCreedy, 2000); it is related to learning (Hislop, 2005), and organisational viability depends on an ability to create and manage knowledge (Yolles,

2000). Thus, this research has assessed how the use of KM may contribute to improve the viability of CEs.

KM is the management of knowledge-related activities. It is multi-dimensional and covers most aspects of organisational activities (Wiig, 1994, 1995, 1997). It has been recognised as the key sustainable competitive resource (Kogut and Zander, 1992) and as the key sustainable strategic resource (Davenport and Prusak, 1998; Zack, 1999). Achterbergh and Vriens (2002) also comment that knowledge is a critical factor for maintaining organisational viability. Although KM is a powerful method to improve organisational viability, it does not mean that the application of KM will always be successful. Consequently, there is an attempt to find ways to improve and unleash the potential of KM. To this end, systems thinking has been proposed because it helps to ensure that every aspect of a complex problem is considered (Rubenstein-Montano et al., 2001); and the complexity of managing knowledge demands a holistic approach (Kalkan, 2008).

It is now generally recognised that systems thinking has a significant role in managing organisations and communities. This is because each organisation, whether public sector, private sector or community, is in an environment that is more complex than was so in the past. Surviving simply by using traditional perspectives can no longer be the approach while fierce competition continues. Therefore, it is often suggested that using the systems approaches to consider an organisation will help to understand its situation and enable us to better handle its problems. Systems approaches are not only used to consider organisational management, but can also be used in combination with several concepts/subjects/disciplines. KM's potential can be enhanced by systems approaches.

Scholars, such as Rubenstein-Montano et al. (2001), Gao et al. (2002), Yoshida et al. (2004), Jackson (2005), Cegarra-Navarro and Martinez-Conesa (2007), and Kalkan (2008) support the use of system approaches in complementing KM.

Since this research is concerned with the viability of CEs, approaches or tools associated with organisational viability were taken into account. Then, the Viable Systems Model (VSM) was considered because it is the systems approach which covers all the necessary and sufficient factors for organisational viability (Leonard, 2000). The VSM is a model presenting the basic and sufficient conditions to provide viability for any kind of system (Beer, 1979, 1981, 1985, 1989). It consists of five systems, which each have different functions. Each system performs its task in order to maintain the viability of the organisation as a whole (the details of the VSM are described in Section 2.10). Due to the systemic way that the VSM understands an organisation, it is useful to use the VSM as a structure to study KM for viability in CEs.

Leonard (2000) indicates that applying the VSM to assess organisational knowledge can supply a more integral picture than focusing only on knowledge content or process documentation. Since it is widely accepted that the VSM is a structure that allows an organisation to be viable, Achterbergh and Vriens (2002) suggest that an organisation needs knowledge that allows each system in the VSM to perform in a way that each component contributes to the viability of the whole system. Therefore, one part of this project investigated the kinds of knowledge which are required in each system in order to contribute to CE viability. Then, the examination of how CEs manage this knowledge was proposed.

It has been found from reviewing the literature that KM contributes to organisational viability while the VSM can strengthen KM implementation by making KM more effective. In addition, reviewing the literature allows the researcher to identify three main research gaps. First, there are a small number of researchers employing KM to directly study the viability of CEs. Second, the study of applying the VSM to CEs is relatively rare. Third, the number of research studies using the VSM in conjunction with KM is limited.

These gaps in findings and the survival problem of CEs in Thailand make this study - using the VSM structure to study KM in CEs in order to improve their viability - extremely useful. Furthermore, these research gaps have led to the research topic, research aim, research objectives and research questions identified in the next section.

1.4 Research Aim, Objectives and Research Questions

In response to the research gaps identified from reviewing the literature, the topic of this research is identified 'A Study of Viability and the Management of Knowledge of Community Enterprises in Thailand'. This study aims to explore useful ways to improve the viability of CEs using KM. The research objectives are to:

1. Investigate how to enhance CEs knowledge in a way to improve the viability of CEs
2. Explore knowledge sharing between CEs and communities in order to improve their collaborative learning and their viability
3. Propose a KM model which can contribute to improving the viability of CEs

4. Extend the body of knowledge by applying a VSM framework to KM, particularly with small organisations like CEs in Thailand.

In order to reach these objectives, this study needs to answer these research questions.

1. How can CEs' knowledge be enhanced in a way that improves their viability?
 - 1.1 What kinds of knowledge do CEs need to remain viable?
 - 1.2 How can such knowledge be generated, shared, retained, and applied in CEs?
2. How can knowledge be shared in communities as a way of improving both their collaborative learning and viability?
3. What kind of KM model can be effective for improving the viability of CEs in the context of developing countries?
4. What new contributions could be gained from applying a VSM framework to KM (particularly in small organisations like CEs)?

1.5 Research Methodology

To achieve the research aim and objectives, the interpretivist paradigm was adopted. This is because it allows the researcher to examine more complicated situations, to involve the study of variables, and to involve the context of the study (Remenyi et al., 1998). Moreover, when studying communities, it is unavoidable to become involved with societies and humans who have different opinions depending on their understandings and interpretations of the situations. Consequently, a qualitative approach was adopted to gain an in-depth understanding of data about knowledge and the management of such knowledge, which cannot be readily measured. Then, the data

obtained was analysed and used to generate in-depth learning about the main issues relevant to the viability of CEs. This can be considered as an inductive approach, which collects facts to generate a theory. The case study strategy was chosen to gain a rich understanding of the context of the research and the process being studied (Morris and Wood, 1991) because it is able to answer the question 'why' as well as the 'what' and 'how' questions (Saunders et al., 2003). Semi-structured interviews, participant observations, and focus groups were the three methods used to collect data from the eight CEs selected as case studies.

1.6 Case Studies

To study the knowledge required for viability, how to manage such knowledge in CEs and the way to improve collaborative learning in communities, eight CEs from four regions of Thailand were taken as case studies. They were divided into two groups: typical CE (CEt) and best-practice CE (CEb). These four CEbs were chosen because of their pertinence to the research topic. They have been identified as the best-practice CEs of each region in Thailand and have been accepted as the prototype for a number of communities in managing their knowledge and improving their potential for collaboration (Phongphit, 2005; Konthaiban, 2007). These CEbs are: "Nam Kian Community Enterprise", which produces washing products from Thai herbs in Nan Province, northern Thailand; "Oom Saeng Community Enterprise", which commercialises several kinds of organic rice in Si Sa Ket Province, north-eastern Thailand; "Lad Bua Khao Community Enterprise" which produces various kinds of snacks, such as cereal/dried shredded pork-topped banana chips, in Ratchaburi Province, central Thailand; and "Karoh Community Enterprise", which produces Khanom Jeen

noodle dough in Naknon Si Thammarat Province, southern Thailand. Details of these four CEbs can be found in Section 3.6 and Chapter 5.

In comparing with the CEbs, the four CEts are located in the same districts as the selected CEbs in order to reduce the variances of race, religion, language, culture and geography. These CEts are similar to other CEs in general, and simple enough to be representative of most CEs. That is why they will be called typical, as they are the most common ones in Thailand. Then they can be called average or typical cases (Patton, 1987; Yin, 2009). These CEts are: “Tha Nao Community Enterprise”, which produces fermented pork or sour pork in Nan Province, northern Thailand; “Mueang Khong Community Enterprise”, which produces plastic basketry from plastic ribbons in Si Sa Ket Province, north-eastern Thailand; “Tha Ton Chan Community Enterprise”, which produces chilli paste and curry paste in Ratchaburi Province, central Thailand; and “Nopphitam Community Enterprise”, which produces wooden furniture from old roots or stumps in Naknon Si Thammarat Province, southern Thailand. Details of these four CEts can be found in Section 3.6 and Chapter 4.

1.7 Outline of the Thesis

This thesis is divided into seven chapters:

Chapter 1 Introduction gives a description of the background information, rationale for the use of KM and the VSM, research aim, research objectives, research questions, research methodology, research context and thesis structure.

Chapter 2 Literature Review provides a critical review of the literature on the key concepts used in this study, which are CE, KM, systems thinking, the VSM, and learning. Then the research gap is presented after reviewing the literature. The conceptual framework and the methodological framework are also demonstrated in order to outline the scope of this study and clarify the steps to answer the research questions, respectively.

Chapter 3 Research Methodology discusses the research methodology employed in this study, including the research paradigm, research approach, research strategy, data collection and analysis methods. Then, a description of the eight CEs chosen as case studies and the criteria for case selection are presented. A discussion of the credibility of the research design is also included.

Chapter 4 Data Analysis: Typical CEs presents findings and discussion on the analysis of typical CEs (CEts). The four case studies of the CEts are presented in this chapter, each discussed regarding general information, VSM analysis, KM analysis, and collaborative learning.

Chapter 5 Data Analysis: Best-Practice CEs presents findings and discussion on the analysis of the best-practice CEs (CEbs). The four case studies of the CEbs are presented and discussed under the four main themes, which are general information, VSM analysis, KM analysis, and collaborative learning.

Chapter 6 Data Analysis: Improving Viability of Community Enterprises Using KM, Lessons from the Findings discusses the key findings from comparing the CEts and CEbs.

The comparison includes the knowledge required in the CEs, the management of such knowledge, learning in the CEs and collaborative learning in communities. The discussion of the key findings is linked to key theoretical concepts to reveal the answers to the research questions of this study.

Chapter 7 Conclusion draws together the research findings and research questions. Theoretical contributions to knowledge and practical implications of the research are also offered. Finally, research limitations and future research suggestions are provided.

1.8 Summary

This chapter presents an overview of this study. It provides the background, the main concepts used, and the aims the objectives and research questions that guided this study. It also introduces the research methodology, which is the guideline to answering the research questions and achieving the research aim. It may be said that the study of improving the viability of CEs using KM and the VSM is both necessary and significant. The uniqueness of this project lies in employing the VSM to support KM in CEs. There is every hope that the findings from this project can contribute with useful learning for the CEs and organisations involved in the development of CEs. Moreover, these findings would be used to improve the viability, and reduce the current limitations, of most of the CEs in Thailand. The next chapter offers a review of the literature on the related topics.

Chapter 2

Literature Review

2.1 Introduction

This chapter aims to critically review the literature on the key concepts used in this research project. Since the problems about viability of community enterprises (CEs) in Thailand are described in the introductory chapter as a result of the shortcomings in knowledge, thinking and learning among the CEs' members, so knowledge management (KM) is a key topic employed to study this issue. In addition to CE and KM, systems thinking and organisational viability, which are crucial for the study, are also discussed. A thorough review of the literature on KM and CE helps the researcher to highlight the research gap. It shows that the study of applying KM with systems thinking to improve viability in CEs is relatively rare. Following this, the conceptual framework is developed to overview the way this study will be organised. It also helps to simplify what is going to be investigated. Then the methodological framework is created in order to clarify the steps to answer the research questions.

2.2 Community Enterprise

Community enterprise (CE) is a term commonly used when referring to a range of enterprises and business activities, which are operated within the community, and play a role as part of the community economy. There are several words that are used in the same sense as CEs, such as community businesses, community development

corporations and community co-operatives (Pearce, 1993); other terms used include community benefit corporations and community trading organisations. However, this research will use the term 'community enterprise' which is widely used and known.

A number of people and organisations have defined CEs. The Development Trusts Association (2000, cited in Pearce, 2005, p.32) defines CE as "...organisations working for sustainable regeneration in their community through a mix of economic, environmental, cultural and social activities". This kind of organisation is also independent, not-for-private-profit, locally accountable, and dedicated to engaging the community's members in the process of regeneration. Community Business Scotland (1991, cited in Pearce, 2005) and Business in the Community (1992, cited in Pearce, 1993) give quite similar definitions: that the CE is owned and controlled by members of the community; that it aims to strengthen the local economy by delivering jobs and related training to members; and that it also seeks to become financially self-sustaining and make profit in order to use this surplus to reinvest in the enterprise, create more jobs and generate wealth in the community. Valaisathien (1996) further explains that CEs usually produce goods or provide services by using local and natural materials. These productions and services are often based on local knowledge and labour and simple technology.

Considering the definitions of CE, its key characteristics can be clearly seen. These are: community-owned, community-controlled, creating jobs and generating wealth for community, and financial self-sustainability. These characteristics respond to the cause of the emergence of CEs which Pearce (1993) states have arisen as a response to, and as a consequence of, the expansion of poverty and disadvantages in society.

Furthermore, these features reflect the main purposes of CEs which are to strengthen economic and social development, to provide the community with learning opportunities, to enhance the quality of community life and eventually to supplement community development (Community Enterprise Development Centre in Thailand, 2001; Welsch and Kuhns, 2002). In addition to the characteristics mentioned above, it is found that most CEs are located in rural areas (Halvorson-Quevedo, 1991; Amin, 2002). Such enterprises usually have a flat, non-hierarchical organisational structure, uses simple operational systems and has limited financial assets (Jonjoubson, 2008). They also run their business employing casual labour and relationships rather than formal contracts (ILO, 2002). Regarding to the size of CEs, it does not specify exactly how many members that each CE must have. However, most CEs in Thailand are larger than micro enterprises which the International Labour Organisation (ILO) and the United Nations Development Programme (UNDP) define as having fewer than five employees (Jonjoubson, 2008). Moreover, according to the Community Enterprise Act 2005, any CE that would like to register with the Secretariat Office of the Community Enterprise Promotion Board must have at least seven members (RYT9, 2006). This means that most CEs in Thailand have at least seven members.

Although, in principle, CEs would benefit both local people and communities, in practice it appears that a number of CEs cause economic, social or environmental problems. Some people have more debt because of borrowing money to invest in the enterprises, and subsequently the business fails. Some CEs producing the same product, in the same area, argue with each other because of oversupply. Some CEs generate environmental problems for the community because of waste resulting from the production process. Details of such problems can be found in Section 1.2. These problems significantly affect

the viability of CEs. Therefore, the researcher is interested in studying how to enhance or improve the viability of CEs, which is the ability to maintain their independent existence in a continuously changing environment. Since problems with viability are a consequence of weaknesses in people's knowledge, thinking and learning, knowledge management (KM) is adopted in this study. This is because KM is concerned with the management of whatever is identified as knowledge (McAdam and McCreedy, 2000), is associated with learning (Thomas, Sussman and Henderson, 2001; Hislop, 2005) and organisational viability which depends on an ability to create and manage knowledge (Yolles, 2000). For a better understanding of the implementation of KM in CEs, KM will be described in the next section (2.3). Then, applying KM in CEs will be described in the subsequent section (2.4).

2.3 Knowledge and Knowledge Management

2.3.1 Knowledge

Before describing the term knowledge management (KM), the definition and context of knowledge will be considered first. Small and Sage (2006) note that Plato defined knowledge as a "...justified true belief...". This definition has been accepted by most Western philosophers. By adopting this traditional definition of knowledge, Huber (1991) and Nonaka and Takeuchi (1995) define knowledge as a justified belief that helps to increase one's capability to act effectively.

In addition to the definition of knowledge as mentioned, there are various alternative perspectives proposed within which to consider knowledge. These perspectives are knowledge as data and information, knowledge as a state of mind, knowledge as an

object, knowledge as a process, knowledge as a condition to access information, and knowledge as a capability. Alavi and Leidner (2001) gather these perspectives from several authors including Carlsson et al. (1996), McQueen (1998), Schubert et al. (1998), Zack (1998) and Watson (1999). These various perspectives of knowledge result in different perceptions of knowledge management (Carlsson et al., 1996). To demonstrate the differences between each perspective, Alavi and Leidner (2001) summarise these views of knowledge and their implications for knowledge management as presented in Table 2.1.

Table 2.1: Knowledge Perspective and Their Implications

Source: Adapted from Alavi and Leidner (2001, p.111)

Perspectives		Implications for Knowledge Management
Knowledge vis-à-vis data and information	Data is fact, raw numbers. Information is processed/interpreted data. Knowledge is personalised information.	KM focuses on exposing individuals to potentially useful information and facilitating assimilation of information.
State of mind	Knowledge is the state of knowing and understanding	KM involves enhancing individual's learning and understanding through provision of information.

Perspectives		Implications for Knowledge Management
Object	Knowledge is an object to be stored and manipulated.	Key KM issue is building and managing knowledge stocks.
Process	Knowledge is a process of applying expertise	KM focus is on knowledge flows and the process or creation, sharing and distributing knowledge.
Access to information	Knowledge is a condition of access to information	KM's focus is organised access to and retrieval of content.
Capability	Knowledge is the potential to influence action.	KM is about building core competencies and understanding strategic know-how.

Regarding Table 2.1, it is clear that each knowledge perspective leads to a different way of managing knowledge. Among these six perspectives, it may be said that this research is in line with the process perspective. This is because the focus of this study in KM is on the process of generating, sharing, retaining and applying knowledge.

Apart from the six perspectives of knowledge mentioned above, there is another group of authors who discuss the perspectives of knowledge and KM strategies regarding each perspective. Knowledge can be categorised from two perspectives, according to the way that it is viewed and treated (Roos & Krogh, 1996; Sveiby, 1996; Quintas, Lefrere and Jones, 1997; Alvesson and Kärreman, 2001; Scarbrough and Swan, 2001). The first

perspective is called the “cognitive perspective” (Swan et al., 1999) or “cognitivist perspective” (Krogh, 1998) and the second one is called the “community perspective” (Swan et al., 1999). In the cognitive perspective, knowledge is treated as an object which can be packaged up, owned and passed around, while the community perspective regards knowledge or knowing as a human process which occurs between individuals in society (Edwards et al., 2009). Hansen et al. (1999) describe that these two perspectives lead to two main KM strategies. The cognitive perspective results in “codification strategy” which emphasises developing an electronic document system that codifies, accumulates, spreads and allows re-use of knowledge. By contrast the community perspective brings about a “personalisation strategy” which focuses on developing networks between members in the organisation in order to link people and enhance tacit knowledge sharing. To make it easy to understand, these perspectives and KM strategies are presented in Table 2.2.

Table 2.2: Knowledge Perspectives and Knowledge Management Strategies

Perspectives		Knowledge Management Strategies	
Cognitive	Knowledge is an object to be packed up, owned and passed around.	Codification	Emphasis on developing IT systems to code, accumulate, spread and re-use knowledge
Community	Knowledge is a human process between individuals.	Personalisation	Focus on developing human networks to link people and enhance tacit knowledge sharing

Considering the two KM perspectives and two KM strategies as presented in Table 2.2, this research will focus specifically on the community perspective and personalisation strategy. This is because the quality of human relationships is vital to the sustenance of CEs. Furthermore, because they lack resources and skills, most CEs do not greatly rely on ICT and, consequently, the management of knowledge is mainly focused on the relationship between people in the CEs and communities. However, the cognitive perspective and codification strategy have not been entirely ignored. This is because most best-practice CEs employ computer programmes to manage their information. These computer programmes allow CEs to manage their knowledge and information effectively.

In addition to the various perspectives on knowledge presented in Tables 2.1 and 2.2, some authors, especially in IT literature, define knowledge by differentiating between knowledge, information and data (Alavi and Leidner, 2001). This may be called the hierarchy view of data, information and knowledge, in that data includes raw numbers and facts while information is processed data and knowledge is validated information (Dretske, 1981). Tuomi (1999) argues that information comes from articulating, verbalising and structuring existing knowledge, while data comes from assigning a fixed representation and standard interpretation to information. He further suggests that knowledge and information can be converted to the other form. That is, information can be converted to knowledge when it is processed by individuals. Knowledge can be transformed to information when it is articulated and offered in the form of text, figures, words, or other symbolic forms. In Small and Sage (2006) view, information is data which has the potential value to make a decision. Moreover, information is closely related to knowledge. Brown and Duguid (2002) identify three important distinctions between knowledge and information. Firstly, knowledge entails a knower. Secondly, knowledge is much harder to manage than information in terms of detaching, transferring and sharing. Finally, knowledge is much harder to manage than information in terms of assimilation and understanding.

From the above discussion about data, information and knowledge, it is found that different authors agree that these three words are not the same; they simply have different opinions on the details. Although the researcher agrees with the differences between knowledge, information and data, there are instances when the terms 'data' and 'information' are used in explaining knowledge management processes in this study. This is because the stored data or stored information of each CE can be considered as

knowledge when it is used to enhance the capacity of CEs. That such data or information has not yet been used does not mean it is useless; rather, it is waiting to be used appropriately at the right time. Therefore, not only 'knowledge' but also 'data' and 'information' can be found and considered in the management of knowledge in this research.

Apart from being considered in terms of perspectives and hierarchy, knowledge can be categorised from other perspectives. One of these classifies knowledge into two dimensions of tacit and explicit knowledge. Nonaka (1994) explains that tacit knowledge means knowledge that is rooted in an individual's experience and action while explicit knowledge means knowledge that is articulated, codified and presented in symbolic form. Small and Sage (2006) further explain that explicit knowledge is more formal and systematic, while tacit knowledge is highly personal. A simple example of tacit and explicit knowledge may help to distinguish these terms. In cooking, for example, tacit knowledge is knowledge of how to cook delicious food without measuring or following a recipe, while explicit knowledge is a cookbook. Between these two dimensions of knowledge, there are different opinions about the importance of tacit and explicit knowledge. Nonaka (1994) and others, such as Spender (1996a, 1996b, 1997), focus on tacit knowledge while Bohn (1994) suggests that explicit knowledge is more valuable than tacit knowledge. However, both tacit knowledge and explicit knowledge will be focused on in this study because they are important in terms of being an attribute to enhance the capacity and competitiveness of CEs. Moreover, tacit and explicit knowledge are mutually dependent and reinforce qualities in each other. Tacit knowledge is required for developing explicit knowledge, and explicit knowledge makes it easier for individuals to gain more knowledge. However, individuals need their tacit

knowledge to be based on an understanding of new explicit knowledge (Polyani, 1975 cited in Alavi and Leidner, 2001). Moreover, tacit knowledge can be transferred to explicit knowledge and explicit knowledge can be converted to tacit knowledge (Nonaka, 1994).

2.3.2 Knowledge Management

The term knowledge management was first coined by Karl Wiig in 1986 (Edwards et al., 2009). According to Wiig (1994, 1995, 1997), KM is multi-dimensional and covers most aspects of organisational activities. Edwards et al. (2009) explain that, although knowledge as a term has been in use for a long time, the use of KM in the business management context came about in the 1980s, and by the 1990s both publications of academic papers on KM and conferences on the subject gained popularity. Two prominent reasons why KM became an important focus for organisations in the 1980s and 1990s are: firstly, the beginning of the era of knowledge economy; and secondly, the rapid growth in information and communication technologies (ICT). Diakoulakis et al. (2004) reason that KM is fast emerging because it is an effective method to improve management and operation in organisations, and thus support their viability, competitiveness and growth.

Several authors have provided definitions of KM. Krogh (1998) and O'Deli and Grayson (1998) state that KM refers to the process of identifying, capturing and leveraging an organisation's knowledge to enhance its competitiveness. Civi (2000) defines KM in the same way as Krogh (1998) and O'Deli and Grayson (1998). That is, he considers KM as a process in organisations to create and use their collective knowledge. Chowa et al. (2005) provide a KM definition by mentioning the details in the KM process. In their

view, KM is a set of activities that enable the creating, storing, distributing and applying of knowledge in an organisation. Murray and Myers (1997, p.29) mention that 73 percent of 260 UK and European organisations voted for the business definition of KM as the “...collection of processes that govern the creation, dissemination and utilisation of knowledge to fulfil organisational objectives”. From these KM definitions, it may be concluded that the meaning of this term is generally described in terms of the process and its advantages.

As well as the definition of KM, the processes of KM have been described by several authors. However, the KM processes mentioned in literature by these authors are not very different in their basic concepts. The differences between them are only in the number and naming of processes. The four basic processes of KM are creation/construction, storage/retrieval, transfer and application (Pentland, 1995; Alavi & Leidner, 2001). Likewise, Achterbergh and Vriens (2002) conclude that there are four processes, which seems to be central to several academics’ identifications of the KM processes. These four processes are knowledge generation, knowledge sharing, knowledge retention, and knowledge application. Bose (2004) mentions six KM processes in his article: creating, capturing, refining, storing, managing and disseminating knowledge. Durst and Edvardsson (2012) employ five processes of KM as a base to review the KM literature on SMEs. These processes consist of knowledge identification, knowledge creating, knowledge storage/retention, knowledge transfer, and knowledge utilisation. In order to compare KM processes mentioned by these authors, they are collected in Table 2.3.

Table 2.3: Knowledge Management Processes Mentioned by Authors

KM Processes	Pentland (1995); Alavi & Leidner (2001)	Achterbergh & Vriens (2002)	Bose (2004)	Durst and Edvardsson (2012)
Identification				/
Generation/creation/construction	/	/	/	/
Capturing			/	
Refining			/	
Retention/storage/retrieval	/	/	/	/
Managing			/	
Sharing/transfer/disseminating	/	/	/	/
Application/utilisation	/	/		/

A consideration of the KM processes presented by authors in Table 2.3 reveals that there are four activities or processes in KM that are repeated most often: namely, knowledge generation/creation/construction, knowledge retention/storage/retrieval, knowledge sharing/transfer/disseminating, and knowledge application/utilisation. Therefore, this research will focus on four processes of KM in CEs, which are knowledge generation, knowledge sharing, knowledge retention, and knowledge application. Knowledge generation includes acquiring knowledge from the outside and creating knowledge by learning from the inside (Nonaka and Takeuchi, 1995; Davenport and Prusak, 1998; Probst, Büchel, and Raub, 1998). The methods of obtaining knowledge

from the outside may include buying, renting, or even stealing (Davenport and Prusak, 1998). Knowledge sharing refers to the distribution or transmission of knowledge from individuals to others, or from a system to others. This process aims to make sure that existing knowledge stays in the right place with the right person in an organisation (Achterbergh and Vriens, 2002). Knowledge retention means the process of keeping or storing knowledge, and making it possible to retrieve it (Achterbergh and Vriens, 2002), while knowledge application is the process of employing existing knowledge for use in working or solving problems in order to create values for the organisation (Bhatt, 2001).

It is widely accepted that KM contributes to several positive effects on organisations. KM facilitates the continuous processes of learning in people and organisations (Civi, 2000). Communication, collaboration and transforming of local knowledge into organisational knowledge can also be enhanced by KM (Duffy, 2000; Lee and Hong, 2002). Moreover, Edwards et al. (2009) note that KM not only helps to save costs, generate income and increase customer acceptance, but also enables organisations to better deal with complexities and changes in the environment. This is because organisations can create and utilise the best possible capital hidden in employees' brains as intangible assets (Gao et al., 2002). Moreover, the effective and appropriate management of knowledge can drive organisations to become adaptive, innovative, responsive, intelligent and sustainable (Wong and Aspinwall, 2004; Hackbarth, 1998). Likewise, Kogut and Zander (1992), Davenport and Prusak (1998), Zack (1999) and Achterbergh and Vriens (2002) all share the same view that KM as a concept draws strength from the increasing recognition of how organisational knowledge contributes to organisational sustainability and competitiveness. Achterbergh and Vriens (2002)

emphasise that the ultimate goal of KM is to design and improve knowledge processes in order to maintain the viability of an organisation.

Due to a number of advantages, KM has been applied in all types of organisations: for-profit, non-for-profit and public sector. However, only a small number of studies in KM focus on the small business sector as the majority are concerned with large organisations (McAdam and Reid, 2001). In the next section, applying KM in the small business sector, such as small and medium enterprises (SMEs) and CEs, will be addressed.

2.4 Knowledge Management in Community Enterprises

Almost all the studies about KM pay attention to large organisations, while small organisations are often overlooked. From reviewing literature on the use of KM in SMEs, Durst and Edvardsson (2012) confirm that knowledge of KM in SMEs has not been much studied. According to McAdam and Reid (2001) and Durst and Edvardsson (2012), most KM studies may focus on large organisations because, in general, large corporations have numerous and diverse knowledge assets that need to be managed. Moreover, large organisations usually comprise a great many different business units, so they need to run knowledge management projects in order to share and transfer knowledge between the various units. Another reason is that large organisations are better equipped in terms of budget, manpower and time to implement KM. It is, therefore, not surprising that most research on KM usually occurs in large organisations rather than smaller ones.

On the other hand, there are reasons why KM has not been found much in small organisations. Bridge et al. (2003) state that, in a number of small enterprises, the owner-manager takes on a central position. That means these people take responsibility in recognising the benefits or advantages of KM implementation in their enterprises. However, lack of time, financial capital and expertise result in keeping KM in the heads of the owner or some key person, rather than it being implemented (Wong and Aspinwall, 2004). It is regularly found that SMEs do not have sufficient time to identify and recognise the benefits of KM because day-to-day operations in SMEs demand close monitoring (Hofer and Charan, 1984). Additionally, Desouza and Awazu (2006) comment that a lack of size and hierarchies in small enterprises allow owners and employees to maintain close contact. This relationship can promote knowledge flows between them. These may be reasons why, as a general rule, KM is not formally applied in small organisations. However, there are indeed KM studies in small organisations such as SMEs. This will be discussed below.

Although KM is infrequently found in small organisations, it does not mean that they do not need KM. Amelingmeyer and Amelingmeyer (2005), as cited in Durst and Wilhelm (2012), argue that a number of small organisations have limited resources in terms of financial capital, workers and machines. Therefore, these resources have to be used carefully because errors in small organisations may have more serious consequences than those in large organisations. Thus, it may be implied that KM is important for small organisations in terms of helping to reduce the opportunity for mistakes. Moran (1999); Wong and Aspinwall (2004) agree that employees in small and medium enterprises also need appropriate and up-to-date knowledge and skilled employees as much as large companies do. Likewise, Gharakhani and Mousakhani (2012) agree that

small and medium organisations should apply KM to improve themselves, as well as large organisations.

With regard to implementing KM, Edwards et al. (2009) suggest that KM will be more useful if it is employed in alternative spheres. This means taking KM out of the business/corporate domain and bringing it to other contexts where the priority is social benefit and not just profit-making. Examples illustrating this trend include knowledge sharing among farmers in developing countries, such as using KM approaches in managing agricultural indigenous and exogenous knowledge in Tanzania (Lwoga, 2011), preserving heritage for future generations, and implanting social responsibility to preserve the cultures of the nation. In the context of this research, it is in line with the idea to use KM in alternative organisations because the researcher would like to study KM in CEs, which are unique organisations that aim to strengthen both financial and social aspects in communities.

Although most studies of KM focus on large organisations as mentioned previously, the study about KM in the context of small organisations can still be found. Durst and Edvardsson (2012) review 36 articles published between 2001 and 2011 about KM in SMEs and conclude that the body of knowledge on KM in SMEs is still limited. It is also clear that there are three areas of KM that seem to be well researched in SMEs: namely, KM implementation, KM perception and knowledge transfer. However, the literature review shows that there is little research on knowledge identification, knowledge storage/retention and knowledge utilisation.

Regarding KM practice in SMEs, McAdam and Reid (2001, p.240) conclude in comparing SMEs and large organisations that SMEs have "...a more mechanistic approach to knowledge construction and relying less on social interaction". Beijerse (2000) of 12 Dutch companies, ten of which SMEs, reveals that there was no company with an explicit policy about KM either in strategy or on a tactical level. On an operational level, there are all sorts of instruments used to evaluate knowledge, determine the knowledge gap, acquire knowledge, and share knowledge. However, in these companies, such instruments are not seen as instruments for KM. It can be said that they use KM without calling it KM. Desouza and Awazu (2006) study shows the same result as Beijerse (2000). Moreover, they found that SMEs are likely to immediately use knowledge generated rather than store it. SMEs can also reduce the loss of knowledge by avoiding the retention of knowledge in only one employee (Desouza and Awazu, 2006).

Nunes et al. (2006) in their study into KM awareness, KM perceptions and KM requirements in SMEs, Nunes et al. (2006) discover that KM is not considered as a crucial function in SMEs, even though guidelines and procedures related to KM have been established. Massa and Testa (2007) present the benefits of e-procurement systems in knowledge codification and storage in order to reduce the risk of knowledge concentration within a few members of the organisation. Hutchinson and Quintas (2008) conclude from their study of SMEs that there are processes and means in SMEs and that employees understand KM. However, KM is mostly applied informally. In the small number of SMEs implementing KM processes in a formal way, the term KM is used to describe their activities.

From the previous review, it may be concluded that KM is gradually recognised and employed in small organisations such as SMEs. However, no mention was found in the literature of the use of a systems approach in KM research on SMEs, even though the close relationships between systems approach and KM have been identified (this point will be discussed in Section 2.9). Therefore, this omission in the literature may be identified as a gap in the study of KM in SMEs or small organisations.

Even though the research concerning KM in CEs is scant, it is receiving much attention in Thailand. Details of research projects retrieved from the Thai Library Integrated System, which is the database that provides full documentation of theses and research reports from universities across the country, are presented in Appendix C. Reviewing literature on KM in CEs in Thailand, establishes that most of them focus on the characteristics of KM, problems in KM process or factors affecting KM. Not one of them addresses using KM to improve the viability of CEs. This is the research gap that this researcher would like to fill.

In addition to the very limited number of studies concerning KM and organisational viability in small organisations such as CEs, another gap appears when considering some aspects of KM without considering it in a holistic manner. Some KM studies focus on the production process, such as Kar's (2012) study on rural handloom enterprises in India, while others focus on only one process of the KM cycle. An example of this is Tinnaluck's (2005) study on knowledge creation and sustainable development in Thailand which focuses on the synergies of local wisdom and modern science in enterprises. Moreover, most of the research concerning KM in CEs in Thailand, as presented in Appendix C and described previously, focuses on an assessment of

individual processes or aspects of the processes of KM in CEs. There is no study considering a more holistic approach to using KM to improve the viability of CEs. This would appear to indicate that the use of KM to study the viability of small organisations such as CEs, in a holistic way, is relatively rare. This conclusion is consistent with those of several academics that, overall, KM literature focuses on knowledge typology, knowledge transfer, knowledge creation and knowledge storage and retrieval (Hendriks, 1999; McAdam and McCreedy, 1999; Jasimuddin, Connell and Klein, 2005; Chase, 2006). It may be concluded that, whilst the use of KM in small organisations such as SMEs or CEs is quite limited, the use of systems approach with KM to improve viability in such organisations is even more limited.

Apart from having identified the gap in holistic studies of KM in CEs, there is another reason that the researcher is interested in applying systems approach to complement KM. This is because the systems approach is widely accepted as having the potential to support KM. Even though KM is a powerful method to improve organisational viability, it does not mean that the application of KM will be always successful. Therefore, there is an attempt by scholars to find ways to improve and unleash the potential of KM. In this regard, systems thinking or the systems approach has been proposed because it helps to ensure that no point is ignored (Rubenstein-Montano et al., 2001) and the complexity of KM requires a holistic approach (Kalkan, 2008). This position is further supported by scholars such as Gao et al. (2002), Yoshida et al. (2004), Jackson (2005), and Cegarra-Navarro and Martínez-Conesa (2007) in postulating that systems thinking can enhance the potential of KM. Therefore, there is both a clear gap, and an opportunity, to further use systems approach to study KM in order to improve the viability of CEs. Systems thinking and adopting systems thinking to complement KM will

be discussed in Sections 2.8 and 2.9, respectively, but before that learning and collaborative learning will be described in the following sections.

2.5 Learning and Collaborative Learning

Learning is considered in this research in relation to KM for a number of reasons. According to Senge (1990), having knowledge may not be enough for organisations to survive in this age of continuous change and increasing competition. They need to have enough learning capability as well. Phongphit (2005a, 2009) agrees that learning is vital for the viability of CEs. Therefore, complementing KM with learning would help to explain why some CEs are viable and some not. Moreover, authors agree that KM and learning are related. Therefore, the literature on learning and collaborative learning are presented in Sections 2.5.1 and 2.5.2, respectively.

2.5.1 Learning

Fiol and Lyles (1985) argue that it is hard to find agreement between scholars in different fields on a definition of learning and a specification of how it happens. Kirriemuir and McFarlane (2004) agree that there are multiple and evolving definitions of learning. Therefore, it is quite hard to find agreement on what learning is and what forms of learning are valuable. However, some definitions of learning are as follows.

Dodgson (1993) summarises that various research sources focus on the outcomes of learning rather than what learning is, and how such an outcome, is achieved. On the other hand, the literature on organisation theory and psychology pays attention to the processes of learning. Therefore, Dodgson (1993) describes learning as the way an

organisation builds, supplements and organises knowledge and routines around its activities and within its cultures. Learning in his definition also includes adapting and developing organisational efficiency by improving the use of employee's skills. Gavin (1994, cited in Senge, 1997) suggests that learning is about change, which is the normal situation in the contemporary world. In Smith (1999)'s view, learning is a process that causes change in behaviour and ways of thinking, the achievement of personal potential or development of capacity to operate within particular communities. Bierly et al. (2000, p.597) define learning as "...the process of linking, expanding, and improving data, information, knowledge and wisdom". Argyris and Schön (1978) describe learning in the sense of the learning in organisations that is about the detection and correction of errors. Argyris (1993) adds that there are two conditions leading to learning in an organisation. Firstly, learning happens when the organisation accomplishes what it wanted; this is a match between its intention and outcome. Secondly, learning happens when a mismatch between its intention and outcome is detected and corrected; this mismatch is then turned into a match. Regarding several definitions presented previously, this study views learning as a process wherein individuals or organisations improve their information, knowledge or wisdom by linking or expanding existing information or knowledge in relation to the new factors. Then, this process leads to changes in behaviour or ways of thinking and development of their ability to work well, solve immediate operational problems, or build capability for the future.

In addition to definitions of learning, different types of learning are suggested by various academics. Argyris and Schön (1978) mention two types of learning in an organisation, namely single-loop and double-loop learning. The former is the process of detecting and correcting errors in the organisation so that the organisation can continue its present

policies or achieve its present objectives. The latter is the process of detecting and correcting errors that involves the adjustment of the norms, rules, policies and objectives of the organisation. Argyris (1993, p.8) adds that "...whenever an error is detected and corrected without questioning or altering the underlying values of the system (be it individual, group, intergroup, organisational or inter-organisational), the learning is single-loop". He also compares these two types of learning by using a thermostat as an example. Single-loop learning is like a thermostat programmed to detect states of too hot or too cold. When it detects that the room is too hot, it will turn the heat off. The heat will be turned on if it detects that the room is too cold. The thermostat can perform corrective action because it receives information - which is room temperature in this case. If the programmed thermostat questions itself as to why it was programmed at this temperature, then it would be considered as a double-loop learner. In Argyris (1993)'s view, both single-loop and double-loop learning are necessary for all organisations. Single-loop learning helps organisations to get everyday jobs done, so it is suitable for the routine or repetitive matters, while double-loop learning is appropriate for complex or non-programmable matters.

Botkin et al. (1979) describe three types of learning in organisations: maintenance learning, shock learning and innovative or anticipatory learning. The first, maintenance learning, involves trying to find better ways to accomplish what people already know how to do. It may be said that this process focuses on 'doing things right' without asking whether they are the right things to do. Since the weakness of maintenance learning is missing essential clues concerning the changing environment, or developing challenges, this type of learning is not enough to solve problems in crises. Therefore, the second type, shock learning, is relevant. It can be considered as a reactive action to changing

circumstances; however, there are several occasions during which shock learning creates more difficulties than the problems it is trying to solve. This is because this type of learning happens under the pressure of a crisis. In order to cover the limitations of maintenance and shock learning, the third type, innovative or anticipatory learning, is recommended. Botkin et al. (1979) explain that there are two important characteristics of this learning. The first one is participative: in participatory learning, everybody involved will participate in exploring alternatives and evolving consensus. The second characteristic is future-oriented: it focuses on the possible results in the future of actions taken today. This means innovative or anticipatory learning pays attention to the future rather than the past or present.

According to Senge and Fulmer (1993), another distinction between types of learning comes from contrasting instrumental learning with generative learning. Habermas (1972) explains instrumental learning as learning that helps to control and handle the environment. Mezirow (1991) describes that instrumental learning is involved in defining cause-effect relationships and learning through task-oriented problem-solving, such as ways to do or perform tasks. This kind of learning always involves a forecast anticipating noticeable things or circumstances. Cope (2005) adds that it helps to develop an understanding of the procedural assumptions leading the problem-solving process. Senge and Fulmer (1993) argue that instrumental learning implies adapting behaviour when individuals or organisations deal with changing situations. This kind of learning is vital for organisations wanting to survive in the changing environment. By contrast, they consider that generative learning is learning that encourages the capability of individuals or organisations to create their future. It concerns changes in ways of thinking which can allow individuals and organisations to perceive more deeply

how their reality can be affected by their actions. Senge and Fulmer believe that, in order to develop generative learning in an organisation, it is necessary to develop systems thinking capabilities throughout the organisation. In 1997, Senge mentions the term survival learning or adaptive learning in his paper. He describes adaptive learning as learning from experience. It helps to provide the most appropriate reaction to circumstances, or to predict and avoid problems or errors. He further explains that survival learning, or adaptive learning, is important and necessary for organisations. However, it is not always enough to guarantee survival as he argues with reference to research conducted at Royal Dutch/Shell in 1983. This research indicates that the average lifetime of organisations, even the largest industrial enterprise, is less than forty years. However, these businesses could avoid failure if they were able to identify and respond to forthcoming threats. Senge (1997) suggests that it must be better if survival learning or adaptive learning were linked to generative learning which enables individuals or organisations to create circumstances. From his explanation, it may be said that survival or adaptive learning can be put in the same group as instrumental learning, as mentioned by Fulmer and himself in 1993.

Regarding the several types of learning mentioned above, Senge and Fulmer (1993) comment that single-loop learning, maintenance learning and instrumental learning are common in character. Likewise, double-loop learning, anticipatory learning and generative learning also share some common themes. Table 2.4. summarises these ideas in order to clearly compare the types of learning suggested by Argyris and Schön (1978), Botkin et al. (1979), Senge and Fulmer (1993) and Senge (1997).

Table 2.4: Types of Learning

Authors	Types of Learning		
Argyris and Schön (1978)	Single-loop learning		Double-loop learning
Botkin et al. (1979)	Maintenance learning	Shock learning	Innovative learning / Anticipatory learning
Senge and Fulmer (1993); Senge (1997)	Instrumental learning / Survival learning / Adaptive learning		Generative learning

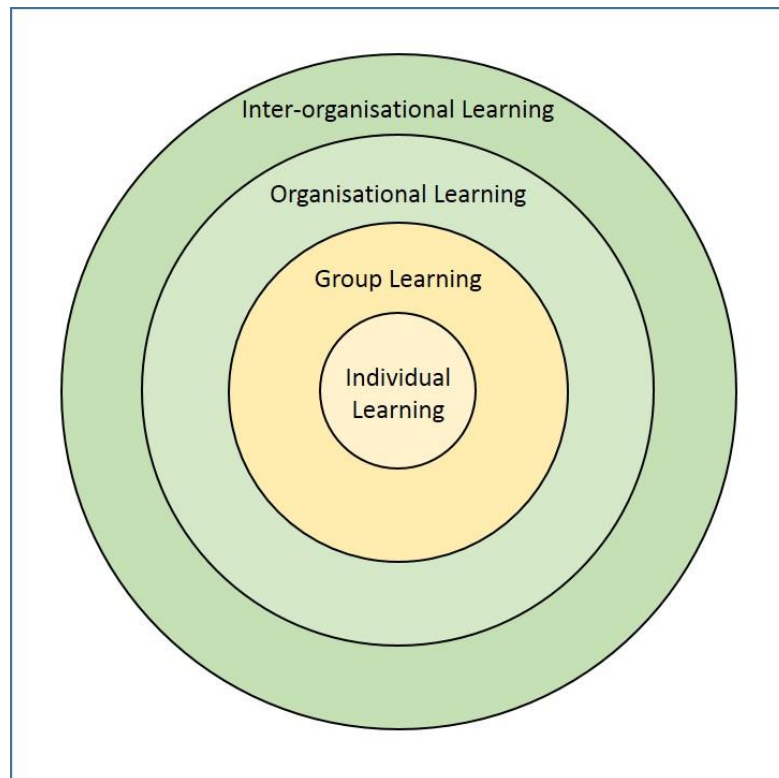
These types of learning will be utilised in the data analysis chapter of this study in order to identify the differences in learning between the selected CEs.

Authors note that learning can occur at several levels. These are individual (Holmqvist, 2004), group (Brown and Duguid, 1991, 2001; Lave and Wenger, 1991), organisation (Jerez-Gómez et al., 2005) and inter-organisation (Araujo, 1998; Dyer and Nobeoka, 2000). Learning also involves interaction between people in an organisation, and interaction between the organisation and its environment (Nonaka et al., 2000; Wang and Ahmed, 2003). Likewise, van Winkelen (2010) suggests that relevant learning occurs at multiple interacting levels, across individuals, groups, organisations and inter-organisational. Beesley (2004) suggests that learning at one level will not occur unless it has happened at the previous level. For example, learning in a group will not happen

if there is no learning at the individual level. Therefore, levels of learning should be seen as nested. He summarises levels of learning and their interrelations as in Figure 2.1.

Figure 2.1: The Interrelated Levels of Learning

Source: Beesley (2004, p.79)



For the study of viability and the management of knowledge, this research focuses on the organisational level because it pays attention to improving the viability of CEs. However, it is inevitable that examples of individual learning and group learning are required to present how CEs learn. This is because, according to Beesley (2004), learning at individual and group levels are the basis of organisational learning. In addition, an organisation cannot perform actions to produce learning by itself. It is individuals who take actions that lead to learning within the organisation (Argyris, 1993). This research focuses on both the organisational level and inter-organisational learning. In this case, it means the learning that takes place between the CEs which are case studies and others

in their communities. The focus on inter-organisational learning will help to achieve one objective of this study, which is to explore the knowledge sharing between CEs and communities in order to improve their collaborative learning and their viability.

2.5.2 Collaborative Learning

It is generally accepted that improving intra-organisational and inter-organisational relationships are important strategies for management (von Hippel, 1986; Mattsson, 1997; Lane and Lubatkin, 1998; Reagans and McEvily, 2003; Peters and Fletcher, 2004; Ritter, Wilkinson, and Johnston, 2004). This means that management at the individual, group/business unit, organisational and inter-organisational levels are interrelated (Ritter et al., 2004), a relationship which corresponds to the levels of learning described previously. Bångens and Araujo (2002) suggest that one's learning depends on the ability and competencies of others, rather than oneself. Consequently, the researcher questions that focusing only on learning in the CEs will be enough to study their viability. Therefore, the study of collaborative learning between CEs and others in their communities is examined.

The term 'collaborative learning' is normally found in education literature. Hron and Friedrich (2003) define collaborative learning as a philosophy of teaching where learners jointly work on a mutual goal, exchange their opinions on a topic, clarify the meaning of concepts or raise a problem together. Collaborative learning can also be found in management literature. Laycock (2005, p.527) defines collaboration as "...working together to achieve common goals and objectives". Laycock also links this definition of collaboration to KM by noting that one of KM's principles is also "...working together to achieve common goals and objectives".

To define collaborative learning, Kaye (1992), cited in Trentin (2010), identifies seven key elements that combine to explain the meaning of this term:

1. Although learning occurs in an individual, it is influenced by various external factors including interpersonal and group interaction.
2. There is a social process while individuals are learning, because they have to interact with other people.
3. Collaborative learning is concerned with not only interchange and interaction between colleagues, but also power relationship negotiations within the group and roles exchange.
4. Collaborative learning is better than the sum of individual learning. This is because collaboration is implicit synergy which means the whole is greater than the sum of the parts.
5. Collaborative learning is not successful on every occasion. Sometimes, it causes misunderstanding, conflict and time-wasting. In this matter, Dodgson (1993) argues that although the outcomes of learning may be negative, it normally has positive consequences: that is, organisations can learn from mistakes.
6. Collaborative learning can be: a) learning in an organised group, or b) learning from relying on others' support and offering support to others.
7. Each learning process has a duration. The interaction and support required in a learning group may change within such duration.

Collaborative learning can bring about several benefits. Learning from others helps individuals or organisations to save costs and time in trial and error (Bandura, 1977). Collaborative learning allows people to create new knowledge by using existing

knowledge to solve a problem together. It also helps individuals to acknowledge disagreement and deal with difficulties within the group/community (Rae et al., 2006). Nooteboom (2004) proposes three categories of possible goals for inter-firm collaboration. The first category is efficiency in resource provision, such as economies of scale, scope and time, combining or swapping products, and spreading risk. The second category is new competences development, such as learning by interaction and complementary competences. The last category is positioning in markets, such as fast entry into new markets of products and inputs, and adjustment of products, technology or inputs to customer conditions. In some cases, such as in supply and value chains and R&D, collaboration can help not only to add value, but also to create new value (Laycock, 2005).

Although there are a number of advantages to collaboration learning, it does not mean that it is a panacea that can solve every problem or works well in any kind of situation. As mentioned previously in Kaye (1992)'s seven key elements of collaborative learning, sometimes collaborative learning causes misunderstanding, conflict and time-wasting. In order to reduce the risk of these problems, Laycock (2005) suggests that whoever wants to be involved in collaboration should consider the drawbacks of collaborative learning as well as its benefits. He further suggests that it is important to choose collaborative partners wisely, plan collaborative programmes well, and carefully consider any cultural change in the people and organisations. The researcher considers that Laycock's suggestions should not be overlooked by any organisation, especially a for-profit organisation, in terms of preparing itself to join in collaborative learning with others in the same or different business/industry. However, in the context of CEs and communities which are not profit-driven organisations, creating collaborative learning

may not present as high a risk as in profit-driven organisations. This is because CEs do not only have financial goals, but also other goals, namely, social, cultural and environmental goals. Therefore, collaborative learning is needed in CEs and communities. Another important reason why collaborative learning is necessary for CEs is that CEs are small enterprises with limited resources both in terms of knowledge and capital. Therefore, collaboration is a useful way to enlarge CEs' capabilities and competencies.

As the sharing of knowledge or information is an indispensable part of collaborative learning, knowledge sharing literature is examined in the following section.

2.6 Knowledge Sharing, Learning and Collaborative Learning

Zaheer and Venkatraman (1995) argue that mutual exchanging of information and expertise across organisations is knowledge sharing. It is assumed that knowledge providers are willing and proactive enough to give information that is useful for knowledge recipients (Zhang et al., 2003). Wu and Lin (2013) agree that the effectiveness of knowledge sharing depends on the ability and willingness of the knowledge senders. They also suggest that knowledge sharing requires information systems to support the sharing processes. However, some studies argue that human networks are the fundamental factor for effective knowledge sharing, not information technology (IT) or information system (IS) networks (Buckman, 2004 cited in Laycock, 2005). Laycock (2005) also suggests that knowledge sharing depends on collaboration. If there is good collaboration, the sharing of knowledge will be effective. Regarding factors influencing inter-organisational knowledge transfer, Easterby-Smith et al. (2008)

propose four factors: namely, characteristics of knowledge in the sender organisation, characteristics of knowledge in the recipient organisation, inter-organisational dynamics, and the nature of the knowledge. The first factor, characteristics of knowledge in the sender organisation, includes absorptive capacity, intra-organisational transfer capability and motivation to teach. These factors are consistent with Wu and Lin's work above. The second factor, characteristics of knowledge in the recipient organisation, includes absorptive capacity, intra-organisational transfer capability and motivation to learn. The third factor, inter-organisational dynamics, contains structures and mechanisms, social ties, power relations and trust and risk. The last factor, the nature of knowledge, implies tacitness, ambiguity and complexity. The more knowledge has these three attributes, the more difficult it is to transfer.

There are a number of benefits to sharing knowledge with outsiders such as partnerships or other organisations. It encourages organisations to learn from partners (Lorenzoni and Lipparini, 1999), gain more capability and jointly generate new knowledge (Sveiby, 2001). Knowledge sharing about cost and production from partners can help organisations realise their limitations and make appropriate adjustments for their projects (Joshi and Sharma, 2004). Furthermore, inter-organisation knowledge sharing can be the strongest contributor to organisational performance (Schroeder et al., 2002).

In explaining knowledge sharing, some academics note the relationship between knowledge sharing and learning. Bergman et al. (2004) suggest that a vital factor for an organisation to stay in balance with the pace of change is learning through knowledge creation and knowledge sharing. This means knowledge sharing is a factor leading to learning, which is important for organisations to remain viable in the changing world.

Likewise, Mohr and Sengupta (2002) agree that knowledge sharing is very important for organisations to handle rapid change, to innovate, and to succeed. Selnes and Sallis (2003) suggest that sharing knowledge between organisations is an essential part and starting point of mutual learning or collaborative learning. Knight (2002) argues that collaborative learning is better than only sharing existing knowledge between organisations. This is because collaborative learning allows organisations not only to gain new knowledge and experience from others, but also to learn the way to manage alliances. It can be concluded that knowledge sharing is crucial for learning, especially collaborative learning. Therefore, learning and collaborative learning can help organisations to handle a changing environment and retain their viability.

The review of the literature on learning, collaborative learning and knowledge sharing identified a number of studies in the educational area, learning in organisations and management areas, and a limited number of studies on collaborative learning. However, the research into collaborative learning in organisations and management normally take places in large organisations or private organisations. Some studies use public organisations as their locus. It is rare to find studies on collaborative learning within, or among small organisations, especially in the third sector like CEs. Studies on collaborative learning in communities are also rarely found, which is why one of the objectives of this research concerns collaborative learning in communities through exploring knowledge sharing between CEs and others in their communities. The next section reviews the literature on stakeholders or participants in collaborative learning in a community.

2.7 Stakeholders

As described previously, an organisation needs to contact others in order to create collaborative learning, and this applies to CEs. In addition to learning, organisations can obtain various benefits, such as being sustainable, from contact with others. Scholars agree that stakeholders can affect organisational sustainability efforts. If organisations manage stakeholders well, they will offer better assistance and resources than usual (Perrini and Tencati, 2006 ; Clemens and Bakstran, 2010; Misani, 2010; Paloviita and Luoma-aho, 2010). In order for organisations to reach sustainability, they should first be viable. It may be assumed that stakeholders will have effects on organisational viability. Therefore, stakeholders cannot be ignored in the study of CEs' viability. Moreover, Theyel and Hofmann (2012) state that small organisations, such as SMEs, may need support from stakeholders because SMEs normally lack resources compared to larger organisations.

Freeman and Reed (1983) state that the term 'stakeholder' was first coined in an internal memorandum by the Stanford Research Institute (SRI) in 1963. The SRI defines stakeholders as "...those groups without whose support the organisation would cease to exist". Freeman and Reed (1983) argue that this definition is too general, and too exclusive, to serve external groups who are concerned in strategic matters. This is because, in this meaning, the list of stakeholders includes shareowners, customers, suppliers, employees, lenders and society. Consequently, they propose a definition of stakeholder in two senses, wide and narrow. In a wide sense, a stakeholder is "...any identifiable group or individual who can affect the achievement of an organisation's objectives or who is affected by the achievement of an organisation's objectives"

(Freeman and Reed, 1983). This wide sense definition includes both friendly and antagonistic groups. The list of stakeholders in this sense includes unions, employees, customer segments, shareowners, trade associations, government agencies, public interest groups, protest groups and competitors. In the narrow sense, Freeman and Reed (1983) define stakeholder as "...any identifiable group or individual on which the organisation is dependent for its continued survival". This use is more specific and is consistent with the SRI's definition. The list of stakeholders in this sense includes employees, customer segments, shareowners, certain suppliers, certain financial institutions and key government agencies. Although Freeman and Reed (1983) propose two definitions of stakeholder, they agree that the wide sense definition is more suitable for managing strategies in organisations. Consequently, in 'Strategic Management: A Stakeholder Approach' (1984) Freeman defines stakeholders as "...any group or individual who is affected by or can affect the achievement of an organisation's objectives" (Freeman, 1984, p.46 cited in Freeman and McVea, 2001, p.189). This definition has been cited by a number of authors such as Byrd (2007), Cummings and Patel (2009), and Theyel and Hofmann (2012) whose studies concerned stakeholders. In addition to Freeman's well-known definition, other scholars that have tried to define this term. Clarkson (1995, p.106) defines stakeholders as "...persons or groups that have, or claim, ownership, right, or interests in a corporation and its activities, past, present, or future". These rights or interests are the consequence of operations with, or activities done, by the corporation. Carroll and Näsi (1997) define a stakeholder as "...any individual or group who affects or is affected by the organisation and its process, activities and functioning". It should be noted that these definitions by are in line with Freeman's.

Apart from the various definitions of stakeholder, authors mention different types or categories of stakeholder. Clarkson (1995) categorises stakeholders into two groups, which are the primary stakeholder group and the secondary stakeholder group. The former is “... one without whose continuing participation the corporation cannot survive as a going concern” (Clarkson, 1995, p.106). This group includes shareholders and investors, employees, customers and suppliers. It also embraces public stakeholder groups which have a high level of interdependence with the organisation, such as the government whose laws and regulations have a direct impact on the organisation, or communities that provide infrastructure and markets. A secondary stakeholder group is defined as “...those who influence or effect, or are influenced or affected by, the corporation, but they do not engage in transactions with the corporation and are not essential for its survival” (Clarkson, 1995, p.107). The examples under this definition include the media, and a wide range of special interest groups. According to Carroll and Näsi (1997), stakeholders may be divided into two groups, namely internal and external stakeholders. The former includes employees and owners and managers, while the latter encompasses consumers, competitors, government, the media, social activist groups, the natural environment and the community. Although the categorisation helps people to understand stakeholders clearly, it is not the main focus in this research. Lists of stakeholders are given priority over categories in this research in order to find who must be included in studying CE viability.

Regarding lists of stakeholders, some of them are mentioned in given definitions and classifications above. In addition, a number of authors have mentioned or applied various stakeholders in their studies. Table 2.5 compares the stakeholders identified or applied by authors.

Table 2.5: Lists of Stakeholders Proposed by Authors

Lists of Stakeholders	SRI (1963)	Ansoff (1987)	Rhenman (1968)	Freeman and Reed (1983)	Cornell and Shapiro (1987)	Carroll (1991)	Hill and Jones (1992)	Hosseini and Brenner (1992)	Macey and Miller (1993)	Dooley and Lerner (1994)	Donaldson and Dunfee (1995)	Donaldson and Preston (1995)	Harrison and St. John (1996)	Atkinson et al. (1997)	Agle et al. (1999)	Cummings and Patel (2009)	Theyel and Hofmann (2012)	Total
Employees	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	16
Managers		/					/											2
Unions				/									/					2
Customers	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	17
Suppliers	/	/	/	/	/	/	/	/	/		/	/	/	/		/	/	15
Providers of complementary services and products					/													1

Lists of Stakeholders	SRI (1963)	Ansoff (1987)	Rhenman (1968)	Freeman and Reed (1983)	Cornell and Shapiro (1987)	Carroll (1991)	Hill and Jones (1992)	Hosseini and Brenner (1992)	Macey and Miller (1993)	Dooley and Lerner (1994)	Donaldson and Dunfee (1995)	Donaldson and Preston (1995)	Harrison and St. John (1996)	Atkinson et al. (1997)	Agle et al. (1999)	Cummings and Patel (2009)	Theyel and Hofmann (2012)	Total
Distributors					/													1
Shareholders / Stockholders / Owners	/	/	/	/		/	/		/	/	/			/	/			11
Creditors / Lenders / Financial institutions	/		/	/			/											4
Investors								/				/				/		3
Trade associations / Industry groups				/								/				/	/	4

Lists of Stakeholders	SRI (1963)	Ansoff (1987)	Rhenman (1968)	Freeman and Reed (1983)	Cornell and Shapiro (1987)	Carroll (1991)	Hill and Jones (1992)	Hosseini and Brenner (1992)	Macey and Miller (1993)	Dooley and Lerner (1994)	Donaldson and Dunfee (1995)	Donaldson and Preston (1995)	Harrison and St. John (1996)	Atkinson et al. (1997)	Agle et al. (1999)	Cummings and Patel (2009)	Theyel and Hofmann (2012)	Total	
	Competitors				/		/							/					
Government / Local government agencies				/						/		/	/		/	/	/	/	7
Community / Local community / Society	/					/	/	/	/	/	/	/	/	/	/	/	/	/	13
Public interest groups				/															1
Protest groups / Activists				/		/							/						3
Political groups												/				/			2

Lists of Stakeholders	SRI (1963)	Ansoff (1987)	Rhenman (1968)	Freeman and Reed (1983)	Cornell and Shapiro (1987)	Carroll (1991)	Hill and Jones (1992)	Hosseini and Brenner (1992)	Macey and Miller (1993)	Dooley and Lerner (1994)	Donaldson and Dunfee (1995)	Donaldson and Preston (1995)	Harrison and St. John (1996)	Atkinson et al. (1997)	Agle et al. (1999)	Cummings and Patel (2009)	Theyel and Hofmann (2012)	Total
	Public at large / General public						/	/										
Universities																	/	1
Consultants																	/	1
Media																	/	1

Table 2.5 illustrates that the most frequently mentioned stakeholders in the majority of studies are customers, employees, suppliers, the community, and shareholders. The other stakeholders that should not be ignored are government agencies, especially the one whose laws or regulations directly impact on the organisation. Although it is not a distinct stakeholder in the list, it is occasionally mentioned by authors. Most importantly, government agencies that can directly impact on the organisation are considered primary stakeholders which affect the survival of the organisation (Clarkson, 1995). Therefore, stakeholders which are customers, employees, suppliers, community, shareholders and government agencies are considered in this research as groups that can affect, or be affected by, the viability of CEs.

As mentioned in Section 2.4, the systems approaches can unleash and enhance the potential of KM. In the following sections, adopting systems thinking to complement KM will be discussed in Section 2.9, but first Section 2.8 will describe systems thinking to illustrate its importance in the contemporary world.

2.8 Systems Thinking

It may be argued that, in contemporary societies, complexity, change and diversity are continual and fast-moving. Jackson (2003) described the terms complexity, change and diversity as follows. 'Complexity' results from the nature of problems; it is hard to find a problem that presents itself individually, most problems interrelating with other problems. If someone tries to examine a problem, such a problem seems to expand beyond its boundaries and involve more issues and stakeholders. Jackson also notes that 'change' is considered as a product of the times, giving examples to support his

claim including customers' preferences changing over shorter time periods, global competition escalating through nonstop technological innovation, new regulations from governments, and transformations in society and people's ways of thinking. He suggests that an organisation which aims to remain viable has to respond cleverly and skilfully to its environment. Regarding 'diversity', he comments that problems may have much greater diversity in the world of complexity and change and argues that it is undeniable that increasing complexity, change and diversity can affect viability.

Meadows (2009) adds that continuous and rapid changes result in making it much more complicated for all living and non-living things to remain viable. To alleviate this problem, Meadows suggests people use systems thinking in seeing, thinking and understanding the phenomena that occur. She reasons that understanding the ways of systems may help to shape a better world because systems thinking may be a way to support people in identifying the root causes of problems and discovering new options.

Although the term 'system' is used in various areas - such as science, social sciences, mass media and also in common everyday language- it seems that there is no general acceptance or clear description within the body of knowledge concerning systems thinking or a systems approach (Kramer and Smit, 1977). Regarding the term 'system', Checkland (1981, p.3) states that it "...embodies the idea of a set of elements connected together which form a whole". The visible properties of any system are the properties of the whole, not of its component parts. The example of water is used to illustrate this, by observing that the test of water is of the properties of the substance water; it is not the test of hydrogen and oxygen, which are the components of water. Then "systems thinking" refers to the process of thinking using systems ideas (Checkland, 1999). With

regard to the term “approach”, Checkland (1981) describes it as a way to tackle a problem. Therefore, “systems approach” is a way to tackle a problem by taking a broad view, trying to take all aspects into account, and concentrating on interactions between the different parts of the problem.

Kramer and Smit (1977) argue that the systems approach is a consideration of a system as a whole, consisting of interdependent parts. They also summarise the historical background of systems thinking or a systems approach to show that systems thinking or a systems approach has been developing since 1950 in various areas of the humanities and natural sciences, such as psychology, biology and physics. Later, systems thinking was applied in both organisations and management. Jackson (2003) argues that there has been a long history to systems concepts, going back to the early Greek philosophy. They have been involved in various kinds of discipline. However, it was around the time of the Second World War that systems ideas were applied to managerial problem-solving for the first time. The evidence would appear to indicate that systems thinking is continuously brought to the forefront by people in different disciplines.

In addition to Meadows (2009), there are academics that have given reasons and explanations to support the importance and inevitability of systems thinking. Checkland (1981) and Jackson (2003) agree that systems thinking is more suitable for problems in the world of complexity, change and diversity than reductionism. Descartes (1668) defines ‘reductionism’ as the way to analyse and describe a complex situation by dividing it into as many parts as possible and necessary in order to deal with it. He also states that he would use the method of reductionism to understand the world and its problems. Checkland (1981) argues that reductionism may work well in the age of

scientific revolution, which was when Descartes wrote about reductionism. However, it cannot help solve complex and real-world problems in social systems. He also emphasises that these very problems are abundant and they have a significant effect on organisations and societies. Jackson (2003) further explains that, in complex problems, there are richly interconnected sets of parts. The relationships between the parts may be considered as more important factors than the nature of each part individually. The way that parts are organised can allow new properties to emerge. Therefore, considering each part as reductionism suggested cannot solve the complex problems because the most important features, the new properties, are ignored. This is why reductionism may not be appropriate, or adequate, for complex problems in our world today.

In contrast to reductionism, holism concentrates on the study of the whole rather than the study of the parts. It also focuses on the interconnectedness of the parts, the relationships between them, and how these relationships frequently bring about new properties, which are surprising outcomes (Jackson, 2000). It may be said that holism focuses on the organisational level to ensure that the parts are well functioning and relating together; therefore, the purpose of the whole can be served. This is the reason why systems thinking can provide a useful corrective to reductionism (Jackson, 2003). One explicit example to support the idea that the reductionist perspective may not be beneficial to the organisation as a whole, is mentioned by Senge (1997). He claims that focusing on each part, or individual, may reduce the productivity of the organisation. To illustrate his claim, he raises the case of an American motor manufacturer. Generally, to assemble a car, a standard type of bolt will be used in three places; for this manufacturer, three different bolts are required. This is because the design department

used three engineering teams who were each responsible for their part. It is certain that each team is satisfied with its bolt because it works well; however, this situation makes the American car more costly and slower to manufacture than the Japanese car. The reason is that the Japanese motor manufacturer uses the same bolt produced by one engineering team in three places while assembling a car. This is one example to support the idea that the objectives of the whole system, or organisation, can be best served by employing the holistic view.

Apart from reductionism, Jackson (2003) also discusses the limitations of natural science. He comments that, although natural science is often able to test hypotheses by conducting experiments in the laboratory to find the correlation between cause and effect among a limited number of factors, it is really difficult to apply natural-science methods to cope with real-world problems. This is because the problem situations seem to have no boundary, and the important factors involved do not identify themselves easily as they would do in a laboratory setting. Furthermore, it is impossible for any real-world problem to be repeated with exactly the same conditions, therefore, the experiment cannot be replicated. Another reason is that, to understand and interfere with social systems, people are unavoidable. Such people are different in terms of their belief, culture, purpose and evaluation of the situation. These kinds of things cannot be set and controlled like laboratory experiments. These are the reasons why Jackson (2003) comments that natural-science methods are not appropriate when dealing with real-world problems.

Jackson (2003) further describes that organisations need help in dealing with increasing complexity, change and diversity. A number of management tools have been delivered

by management gurus in order to offer assistance to organisations. He refers to such management tools as management fads, which people accept as panaceas or quick-fix solutions. The includes examples of them such as process re-engineering, benchmarking, total quality management, balanced scorecard, scenario planning, rightsizing, value chain analysis, learning organisations, knowledge management, and customer relationship management. However, these management fads not only cause high costs for organisations, but also rarely work to help organisations in the face of complexity, change and diversity.

In Jackson's view, these management tools fail because they impede creativity and suffer from a lack of holism. He explains that creativity is a vital attribute for handling complexity, change and diversity and that when specific management tools try to present themselves as the one best solution in all situations, they are obstructing creativity. Most importantly, they are simple solutions which are not holistic enough because they focus on the parts rather than on the whole of organisations. This results in missing the significant interactions between the parts which may create new properties or new problems for organisations and affect the whole organisation. For example, process re-engineering focuses so much on items that can be engineered at the cost of the employee in organisations. However, process re-engineering failed in obtaining overall improvement. Benchmarking, another example, concentrates on comparisons between an organisation and external comparators. This management tool emphasises the efficiency of each part of the organisation without the recognition that the performance of the whole organisation can be destroyed if each part does not have a good interaction. Total quality management pays attention to improving process design while overlooking wider structural matters and the politics of organisations.

Although some management fads may consider more parts in an organisation, they are all viewed from the same perspective. In Balanced Scorecards, for example, the four aspects which are financial, customer, internal business processes, and learning and growth, is also considered (Kaplan and Norton, 2001). In Jackson's viewpoint, however, it actually requires users to employ a machine-like view of organisations to a wider range of their functions. Therefore, it is just a way to look at different things with the same lens.

It may be summarised that reductionism, the natural-science approach and management fads cannot help organisations to solve problems in the context of complexity, change and diversity. Therefore, systems thinking or systems approaches are proposed as alternative choices to cope with complex and real-world problems in social systems.

2.9 Knowledge Management and Systems Thinking

From the review presented in Sections 2.3 and 2.4, it appears that KM does not lead to success in every organisation although it is a powerful approach to organisational development. There are several factors that determine the success or failure of KM projects. Rubenstein-Montano et al. (2001) indicate that the people and the culture of the workplace are two key issues in knowledge sharing, which is very important for KM initiatives. Chua and Lam (2005) suggest that there are four factors involved in KM failure: technology, culture, content, and project management. *Technology* refers to the KM infrastructure (e.g. tools and devices), while *culture* represents the softer aspects of human and organisational behaviour. The *content* category refers to the characteristics or properties of the knowledge itself, and finally, *project management*

embodies the overall management aspects of the KM project(s). They further explain that KM failure is not caused by any one factor in any category, but the combination of several factors between categories. This may indicate that an interesting path to explore would be the implementation of KM with a more holistic or systemic approach. Kalkan (2008) reveals that most KM studies - a field which is currently receiving a substantial amount of attention from both academics and practitioners (Nonaka & Takeuchi, 1995; Davenport & Prusak, 1998; Hall and Paradice, 2005) - all focus on a particular perspective despite KM's complexity demanding a holistic approach.

Rubenstein-Montano et al. (2001) support the idea of implementing KM in a more systemic way. They state that various approaches to KM have been implemented in different kinds of organisations, but they are not always sufficient to satisfy all organisational needs. They believe that systems thinking can unleash the power of KM and consequently enable organisations to handle complex and dynamic situations; this enhances their ability to adapt to a changing environment, making them more viable and sustainable. Therefore, system thinking is important to KM because it helps to ensure that no issue is overlooked. Cegarra-Navarro and Martínez-Conesa (2007) support this idea in their study on KM and E-business in the telecommunications industry: they suggest that knowledge creation, knowledge transfer and knowledge utilization, the three processes of KM, need to be addressed holistically rather than separately.

Gao et al. (2002) also believe that organisations need appropriate systems methodologies to develop efficient and synergetic KM processes. The systems methodologies not only enable employees to use systems thinking in socially entangled

knowledge processes, but also to benefit organisations in terms of guiding effective decisions, improving trust and partnering in work relationships and promoting the exchange and flow of organisational knowledge. They also suggest that, among existent varieties of systems-based methodologies which have been developed for various applications, soft systems methodologies are valuable tools to support knowledge and its management in organisations because they exemplify the benefits of applying systems approaches to supplement KM. Interactive planning (IP) developed by Ackoff (1979) is considered as one pathway that can help to stimulate participation and engagement in KM implementation. This is because IP encourages the participation from all stakeholders in various stages of the planning process which leads to cooperation and involvement in the planning process. This involvement will help members of the organisation to better understand the organisation and their roles which will eventually result in the engagement in a KM project. Beer's Viable Systems Model (VSM) (1979, 1981, 1985), with its five subsystems, can help foster a deeper understanding of KM in organisations. Since the VSM is a structure that promotes information flow in the organisation, both managers and workers can understand the KM project more deeply through this structure. In addition, employing Checkland's (1981) soft systems methodology (SSM) with KM can encourage continuous and effective learning, because the seven stages of SSM represent a cycle learning process for coping with real-world problems and exploring reality to improve problem situations. As it is natural that things change over time, including these real-world problems and reality itself, so members of the organisation can re-create the solutions to their problems. This is the reason why SSM can stimulate continuous and effective learning in KM implementation.

Yoshida et al. (2004) further explain how SSM can intensify organisational knowledge creation. They suggest that SSM can be applied to support all phases of the SECI model which is the process of continuously creating new knowledge by interacting between explicit and tacit knowledge (Nonaka & Takeuchi, 1995). The SECI model was developed by Nonaka and Takeuchi (1995) to introduce the idea that explicit and tacit knowledge can be converted into each other and that this will be knowledge creation. S-Socialisation means the tacit-to-tacit conversion; E-Externalisation describes the conversion of tacit knowledge to explicit knowledge; C-Combination refers to the explicit-to-explicit conversion; and I-Internalisation is the process of explicit knowledge to tacit knowledge. Regarding the use of SSM to support the SECI process, Yoshida et al. (2004) describe that the rich picture stage enables a creative way of sharing tacit knowledge (S) while the relevant system, root definition and conceptual model stages let people transfer tacit knowledge to explicit knowledge (E) in a group. Agreement on feasible and desirable change confirms the combination of explicit knowledge (C). Finally, the actions refers to the fact that the explicit knowledge becomes part of individual's tacit knowledge (I).

In addition, Gao et al. (2002) propose systems methods which may be suitable for dealing with diverse kinds of knowledge system in organisations. It may be said that they try to create a convenient toolkit for applying systems methodologies in KM. However, their study is mainly theoretical and lacks empirical evidence. Therefore, the researcher would like to employ the VSM, one of systems approaches, with KM to study CEs. This research project can be considered as one of practical studies about systems approaches and KM. Applying systems approaches to underpin KM in practice may be useful for scholars and practitioners in both KM and the systems thinking area. As

mentioned previously, scholars support the idea that systems approaches can complement the power of KM (Rubenstein-Montano et al., 2001; Gao et al., 2002; Yoshida et al., 2004; Jackson, 2005; Cegarra-Navarro and Martinez-Conesa, 2007; Kalkan, 2008). Bringing this into practice by applying a systems approach with KM to implement in an organisation may be beneficial in terms of getting results from a real situation. The results help to support the hypothesis that the systems approaches contribute to improved KM and learning. This research strategy may also highlight possible problems or difficulties occurring in combining KM with systems approaches. The results obtained by implementing a systems approach with KM in an organisation can be used by KM scholars to modify their KM concepts or theories. Practitioners may also learn from these results and improve their organisational KM processes. This research intends to demonstrate, through action research in comparative case studies, that this is a feasible and interesting approach to KM research, especially in relation to CEs.

There have been several attempts to employ other systems approaches, such as critical systems thinking (CST), to enhance KM. CST is the use of different systems approaches to cope with problems or situations. It aims to address the challenge of problems which are characterised by large scale scenarios including complexity, uncertainty, impermanence, and imperfection by combining systems thinking and participatory methods (Bammer, 2003). Panagiotidis and Edwards (2001) apply CST to organisational learning and KM because they believe that deep organisational learning only takes place when stakeholders reflect on their actions. Gao et al. (2003) introduce CST into the study of knowledge and its management, finding that CST comprehensively and creatively addresses issues related to the complexity of human knowledge and knowledge management processes. It also provides new thinking and techniques for

knowledge managers while encouraging knowledge workers to participate in active communication and organise their activities in a systemic way. Lehaney et al. (2004) also study the relationship between socio-technical systems thinking and KM, and propose a critical systems framework for KM, while Jackson (2005) also notes that CST has contributed much to KM theory and practice by providing a source of explicit knowledge and assisting KM to avoid pitfalls. All of these researchers suggest ways in which CST can help to strengthen KM.

From reviewing the literature on KM and systems thinking as discussed above, it is evident that there are efforts to apply systems thinking in complementing KM. As explained in detail previously, several studies have shown that this combination can help KM work better. For example, IP can encourage participation and engagement in KM implementation (Gao et al., 2002); SSM can intensify organisational knowledge creation (Yoshida et al., 2004); CST helps KM in providing a source of explicit knowledge and assisting KM to avoid pitfalls (Jackson, 2005). As far as the researcher found from reviewing literature, such a combination between systems approaches and KM does not directly mention organisational viability. Since this research project is concerned with the viability of CEs, approaches or tools associated with viability are taken into account. Considering the systems approaches which promote organisational viability, it is inevitable that the Viable Systems Model (VSM) is considered, as this is the only systems approach which directly mentions organisational viability. Leonard (2000) confirms that the VSM covers all necessary and sufficient conditions for organisational viability. In addition, Gao et al. (2002) support the application of VSM to complement KM by noting that VSM contributes to fostering a deeper understanding of KM in organisations because VSM is a structure that promotes information flow in organisations. To

supplement Gao et al.'s note, such information flow not only fosters a deeper understanding of KM, but also supports speed and ease in knowledge sharing, which is one of the key KM processes. If knowledge sharing is effective, it can affect knowledge generation, knowledge retention, and knowledge application as well. Moreover, VSM may contribute to identifying team learning pathologies resulting from ineffective structures. This is important for KM as the knowledge structure is correlated to the organisational structure on which learning is happening. More details about how VSM can strengthen KM implementation can be found in Section 2.11.

Overall, while it can be said that systems approaches such as VSM, SSM and CST are employed to support KM, it is rare to find studies focusing on a small organisation. Therefore, applying systems approaches to strengthen KM in CEs provides a means to expand current contributions from systems approaches. The next section will characterise VSM; then an explanation of how the application of VSM to complement KM study is illustrated in Section 2.11.

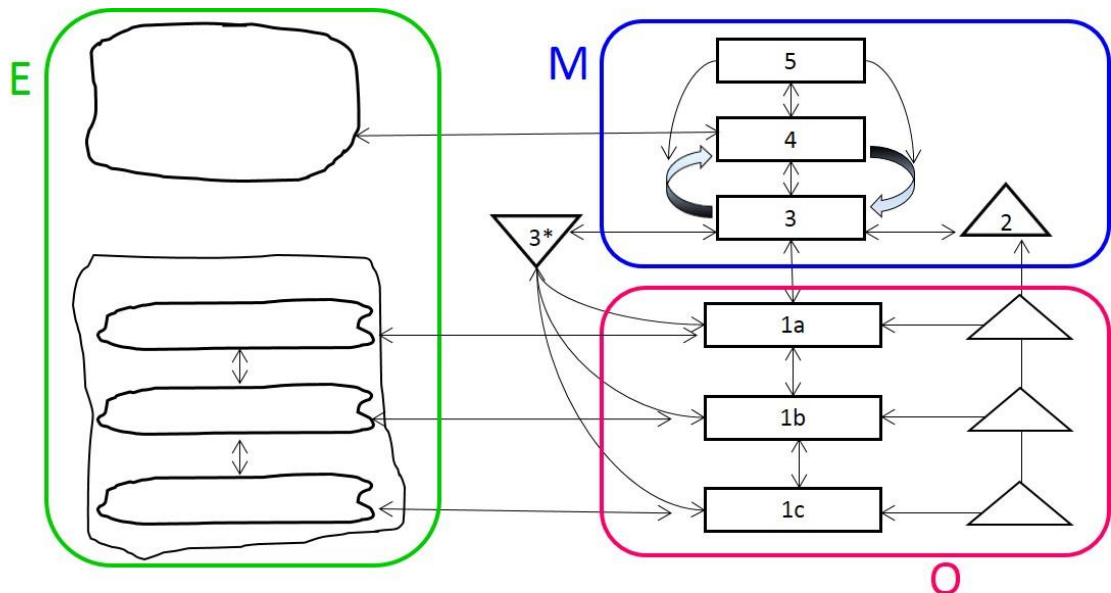
2.10 The Viable Systems Model (VSM)

The Viable Systems Model (VSM) is a model created by Stafford Beer. This model presents basic and sufficient conditions to provide viability to any kind of system (Beer, 1981). The objective of this model is to explain how systems are viable. He defines 'viable' as able to exist independently (Beer, 1989). Initially, VSM was widely misinterpreted and misunderstood because of its complexity, though Beer continuously improved his model until it was finally accepted (Beer, 1989).

To explain the VSM, Espinosa and Walker (2011) state that the VSM considers an organisation as a whole system which simultaneously tries to keep its identity and deals with the changing environment. The VSM is composed of three elements: the Operation (O), the Meta-system (M) and the Environment (E), see Figure 2.2: The VSM diagram. O represents the operational system which is in charge of all the basic works or primary activities. M stands for the systems that serve to ensure that the operational units work well in harmony and to make certain that they can adapt to the changing external environment. M is also responsible for supplying logical closure to the whole system and monitoring the balance between external and internal situations. E represents everything that is outside the system and relates to that system including the unknown future.

Figure 2.2: The VSM Diagram

Source: Adapted from Espinosa and Walker (2011, p.43)



The Operation and Meta-system (O+M) are divided into five interacting systems which are explained by Espinosa and Walker (2011) as follow. System 1 (S1) is the Operation (O), one of the three elements of the VSM. S1 takes responsibility for implementing the key tasks which reflect the purpose of the organisation. For example, the key task of a noodle factory is producing noodles. In operating this key task, S1 must have been in contact with its external environments such as customers, dealers or vendors. Therefore, it should be as self-governing as possible in order to cope with such environments so that it can be viable by itself. In addition, the effective S1 must be designed to have enough variety in order to deal with the complexity and variety of their environments. This is because variety can only be dealt with by means of variety (Ashby, 1956). However, it is necessary to have a balance between the independence of each S1 and the organisational level coordinating them.

System 2 (S2) is responsible for managing conflicts between S1s. If there is more than one S1 in the Operation, a conflict of interests can occur because each S1 can focus only on its individual task. Solving conflicts by S2 allows S1 to work smoothly and helps the whole system to maintain its stability (Espinosa and Walker, 2011). To make its job easier, S2 may announce rules or regulations or standard procedures to support collaborative work and reduce interfering issues in the Operation. It may be said that S2 works as a coordinator (Jackson, 2003).

Espinosa and Walker (2011) further explain that the main function of System 3 (S3) is to generate synergy in the Operation. It means that the performance of every S1 in the Operation is better than the sum of each S1s performance when each works separately. The other roles of S3 are making sure that each S1 consistently monitors its performance

compared to its target, and providing support when S1 requires. Preventing harm from an independent S1's activities to the whole system's viability is the other role of S3. If the viability is at risk, the independence of S1 may be minimised by S3 in order to guarantee survival of the whole. There may be some times and some events that are not reported formally from S1 through S2 and S3; this means those issues cannot be solved or managed. To prevent this, S3* is required as an alternative and internal channel to collect data directly from S1. With S3*, S3 can work more effectively in monitoring and regulating internal matters.

Although the Operation is stable, the organisation also needs to ensure that it can survive in a changeable environment. Therefore, System 4 (S4) is required. Its responsibility is to look for, and analyse, what is happening outside the organisation, which may represent threats or opportunities to the Operation. Then, this information will be used in the strategic plan to cope with threats that may arise, or to take advantage of developing opportunities. In this strategic planning, internal information from S3 is required for completeness of data (Espinosa and Walker, 2011).

To be viable, it is necessary for the whole organisation to work within the same guideline or policy framework. System 5 (S5), the last system, "...is responsible for the organisational closure, identity and ethos" (Espinosa & Walker, 2011, p.53). Its main job is to provide the ultimate authority and to supervise the interaction between S3 and S4. If organisational core values are disregarded by S3 and S4, or someone in the organisation does not follow the agreed policies, S5 will play its role in order to ensure that everyone works within the framework. Since too much control may cause a lack of work flexibility and agility, S5 will intervene only when it is required.

Beer states that the VSM can be applied to all systems, whether large or small. Even with a one-person enterprise, if it wants to be viable, the application of the VSM is inevitable (Jackson, 2003). In practice, the VSM has been widely used in various kinds of organisations, both large and small. Beer (1989) identifies that examples of large organisations that implement VSM include the steel industry, textile manufacturers, ship-builders and paper manufacturers, while the example of small businesses include an engineering business and a bakery. Moreover, businesses such as publishing, insurance and banking, which deal with information, as well as transportation businesses such as railways, ports, harbours and shipping lines, have also applied the VSM to improve organisational viability. He further observes that in several countries, the VSM is applied in the education and health sectors. The VSM then has also been applied to government at all levels from the city to the province, to the state and international organisations. Although Beer does not describe the details of the VSM application in these cases, we also see that the VSM has been used in a wide variety of scenarios. In addition to the examples above, the VSM has also been applied at community level. Espinosa and Porter (2011) adopt the VSM to improve sustainability of communities. The findings reveal that the VSM framework helps to develop self-organisation in the community, and this will be a factor in supporting this community to achieve sustainability. The VSM also helps to stimulate the learning context in the community.

Burgess and Wake (2012) remark that, although the VSM is applied to different-sizes and kinds of organisations, it seems that those organisations are usually large. Implementation of the VSM in small organisations, especially SMEs, is very rare. They further describe that, even though Espejo (1989b) provides some details in applying the

VSM to a medium-sized British manufacturer, he does not explain the implication for the VSM in this kind of organisation. Moreover, this manufacturer is a subsidiary of a larger company and the findings of this study are applied to the parent company. It may therefore be said that this VSM application does not directly focus on SMEs. Consequently, Burgess and Wake (2012) adopt the VSM to study SMEs in order to identify whether the VSM is suitable to be used as a diagnostic tool to determine the viability of SMEs. The result is that the VSM is appropriate as a tool to be used in understanding operations and assessing the viability of SMEs. Another example of the use of the VSM in small businesses is Beckford 's work Beckford (1992) which employs the VSM to study a family business which is classified as a small business. The finding is that the VSM is useful to analyse the whole organisation and to determine the requirements of each section. Unfortunately, this study does not identify the pros and cons of implementing VSM in a small organisation.

The VSM is not only applied in a variety of organisations, but has also been employed to study different aspects of organisations. For example, Espejo (1989) uses the VSM as a diagnostic tool in his study of a small company called P.M. in the electrical engineering sector, while Britton and McCallion (1989) apply the VSM as a diagnostic tool in a multi-institutional setup in their study of the electrical industry in New Zealand. Leonard (1989) employs the VSM as a tool to discuss an area of policy in a study on commercial broadcasting in the United States. The VSM is also used as a tool to develop organisational competence, promote decentralisation, and improve information flow at a Swedish paper and packaging company (Holmberg, 1989). Another case is considered in Bititci et al's study Bititci et al. (1999) which combine the concept of the VSM and business process management to create a "viable business structure", which is the

model that describes the structure of a viable business. Using this model in several practical cases has established that it helps to improve agility, responsiveness and business results.

Evidence appears to indicate that the VSM is a concept which is general enough to be applied to different kinds of organisations of varying sizes, and that it can be applied to several aspects of such organisations. It is certain that such organisations use the VSM to enhance their viability, though it appears that the vast majority of organisations implementing the VSM are large. On the other hand, it is very difficult to find research about applying the VSM to small organisations, particularly small organisations that have unique characteristics like CEs. Therefore, VSM is employed in this research project as a framework to study KM in CEs in order to maintain their capacity of independent existence: that is, the viability of CEs themselves.

2.11 Knowledge Management and the Viable Systems Model

Leonard (2000) states that KM will reveal its full potential if the organisation that uses it is considered as a whole picture. She also indicates that Beer's VSM contributes an excellent structure for this because this model has been used for decades to diagnose organisational structure and communications. Therefore, according to this model, the necessary and sufficient conditions for viability can be considered. Likewise, Kalkan (2008) states that hierarchical-bureaucratic structures prevent knowledge sharing and utilisation in organisations, restrict learning and generation of new knowledge, knowledge circulation and innovation. Consequently, a number of organisations have tried to develop new organisational structures in order to support KM. Leonard (2000) explains KM using the structure of the VSM as a framework, and concludes that standard

processes of knowledge management such as knowledge organising or knowledge sharing cannot bring maximum benefits for an organisation. On the contrary, using the VSM to assess an organisation's total intellectual capital can provide a more complete picture than focusing only on knowledge content or process documentation.

Jackson (2005) strongly supports Beer's position that VSM provides an appropriate structural context for knowledge creation. Nonaka and Takeuchi (1995) admit that the correct structural context is vital to the success of the SECI process. It has been suggested that this structure should be flat, flexible and capable of matching the variety of potential complex environments. Moreover, this structure has to allow for redundancy of information and enable proper conversations within members of an organisation. Individuals have to be allowed as much autonomy as situations permit to ensure that the organisation creates adequate variety. From these pre-conditions, the VSM is recognised as a suitable structure for the knowledge creation process because it can satisfy these challenges.

Yang and Yen (2007) employ the VSM framework to study KM because they believe that focusing on individual or department functions is inadequate when attempting to clarify the required knowledge capabilities. A macro framework is needed to investigate the role and strategic mission underpinning the function of individual divisions within an organisation. Moreover, the traditional structure of organisations may not be suitable for knowledge-based organisation (Nonaka & Takeuchi, 1995). Therefore, a new organisational structure that encourages effective and efficient communication, like the VSM, will be beneficial for knowledge creation and knowledge sharing. From their study,

Yang and Yen (2007) propose a viable systems framework for KM to be used further in analysing and discussing the potential role of KM in organisations.

Yolles (2000) perceives that the creation of knowledge is essential for the viability of organisations in a complex environment. Therefore, he employs viable systems theory to propose a knowledge creation approach, as an alternative to the SECI model - the well-known knowledge creation cycle generated by Nonaka and Takeuchi (1995). His approach does not just see knowledge creation as a set of consequential steps, but as a continuous test and examination through feedback.

The studies on KM and the VSM mentioned above offer as essentially conceptual or theoretical contribution. A more practical study comes from Achterbergh and Vriens (2002). They apply the idea of the VSM to KM in order to explore the relationship between organisational knowledge and organisational viability. From this study they present lists of knowledge, detailed in Section 6.2.1.2, that are directly necessary for organisational viability. Considering these lists of knowledge, it appears that presented sets of viable knowledge may be used in any kind of formal organisation which has clear goals and measurement. However, it is not certain whether these sets of viable knowledge are suitable for small or informal organisations such as CEs.

Achterbergh and Vriens (2002) further suggest that each function or each system of the VSM contributes to organisational viability. These functions sometimes need to apply the knowledge created by another; therefore, knowledge has to be shared among these functions of the VSM. Apart from generating, applying and sharing knowledge, retaining knowledge is indispensable so that it can be retrieved by the functions that apply it. It may be said that they consider knowledge generation, knowledge application,

knowledge sharing, and knowledge retention as the four key KM processes in an organisation. They finally conclude that, in order to be viable, an organisation needs knowledge which allows the functions required for viability (F1-F5) to perform in such a way that each function contributes to the viability of the whole system.

With regard to Achterbergh and Vriens's (2002) paper, there is one main reason for discovering a gap in applying the VSM to KM. The knowledge required for each function in the VSM that they propose may not necessarily be the most appropriate for CEs. This is because CEs have special characteristics and are different from other organisations. The management in most CEs is informal, so they do not have clear organisational goals, expected performance, or regulatory measures that are raised. Since there are differences between CEs' and the characteristics of general organisations, an investigation into the kinds of knowledge required for viability and the way CEs manage their knowledge is necessary to fill this gap.

It may be concluded from reviewing the literature that KM contributes to organisational viability and the VSM can strengthen KM implementation by making KM more effective. This is because the VSM is a structure that supports knowledge creation and knowledge sharing in organisations. Therefore, this synergy can contribute to organisational viability. In addition, the literature review has allowed the researcher to find three main research gaps. Firstly, there seems to be little published research on employing KM to directly study the viability of CEs: the majority of them pay attention to the characteristics of KM, problems in the KM process or factors affecting KM. Secondly, research into VSM implementation in CEs is rare. Lastly, there is a limited amount of research that uses the VSM in conjunction with KM. Of the small number that exist,

most of them are theoretical rather than empirical in their focus. These gap findings and the survival problems of CEs in Thailand make this study – using the VSM structure to study KM in CEs in order to improve their viability - extremely useful for both theoretical contributions to knowledge and practical implications for CEs and government agencies. The next sections will address the conceptual framework (2.12) and methodological framework (2.13), which are the domain and means to achieve the research aims and objectives.

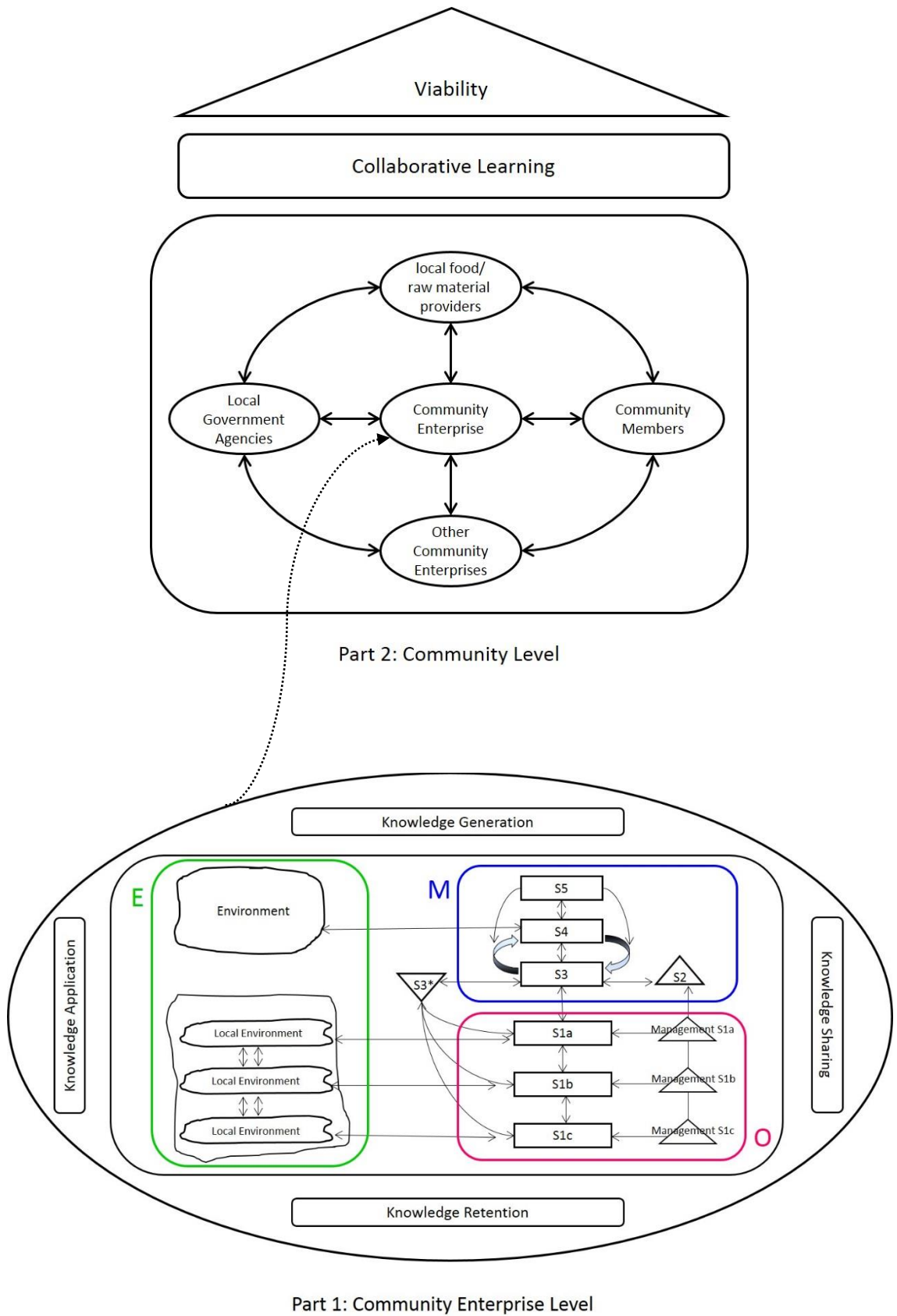
2.12 Conceptual Framework

Based on the literature review, it can be argued that KM is an effective way to support organisational viability, competitiveness and growth (Diakoulakis et al., 2004). However, applying traditional KM to an organisation may not be sufficient to cope with the complex environment; therefore, a number of academics such as Gao et al. (2002), Jackson (2005), Yoshida et al. (2004), and Cegarra-Navarro and Martínez-Conesa (2007) support the use of systems approaches in conjunction with KM. This is because systems thinking helps to ensure that no point is ignored (Rubenstein-Montano et al., 2001) and the complexity of KM demands a holistic approach to cope with it (Kalkan, 2008).

As this research project is concerned with the viability of CEs, the systems approach that promotes organisational viability is considered. Therefore, the VSM is proposed because it suggests criteria for structural design that enable organisational viability. As Leonard (2000) suggests, using the VSM to assess organisational knowledge can supply a more complete picture than focusing only on knowledge content or process documentation. This is because the VSM covers all the essential factors for

organisational viability. For Achterbergh and Vriens (2002), organisations need knowledge that allows each system in the VSM (S1-S5) to perform in a way so that each system contributes to the viability of the whole system. Therefore, Figure 2.3 presents a conceptual framework that integrates the concepts discussed so far.

Figure 2.3: Conceptual Framework



From this conceptual framework, two parts - KM in CEs, and knowledge sharing between CEs and other individuals and businesses in their community - are apparent. These are discussed next.

Part 1: Community Enterprise Level

In the first part, which is the study about KM in CEs, the researcher employs Beer's VSM to provide a structure for investigating the knowledge types that are required in each system in order to contribute to the viability of CEs. Therefore, the diagram showing the details of the CE is composed of three elements: the Operation (O), the Meta-system (M) and the Environment (E). The Operation or System 1 (S1) may consist of a number of operational units such as S1a, S1b and S1c. The Operation or S1's role is operating the key task of the CE. The Meta-system (M) comprises of Systems 2, 3, 3*, 4 and 5. System 2 (S2)'s main job is conflict management, while System 3 (S3) takes care of synergy and internal regulation in S1. S3* is sometimes required as an alternative and internal channel to collect data directly from S1. System 4 (S4) is responsible for adaptation and the strategic plan of the CE. System 5 (S5) takes charge of the policy, ultimate authority and identity of the CE. The Environment (E), the third element, represents everything that is outside and relates to the CE, including the unknown future. From these five systems (S1-S5), the researcher will explore the knowledge types that are required in each system to ensure its viability.

In the next stage, the researcher will examine how the CE manages this knowledge by considering the four main steps in the KM process. As described in Section 2.3.2, scholars have identified a variety of KM processes. However, the KM processes mentioned by these scholars are only different in the number and naming of processes,

not in the basic concepts. The four processes which seem to be central to all of them are: knowledge generation, knowledge sharing, knowledge retention, and knowledge application. These four main processes are employed to create the conceptual framework for this study. By suggesting this typology of KM processes that summarises the types of KM processes mostly used by current KM research, the researcher can ensure that this study covers all important aspects of KM activities covered by state of the art research in KM. See more details in Table 2.3 about the comparison of KM processes proposed by scholars.

In this study, knowledge generation refers to the creation and the acquisition of knowledge both from inside by learning and from outside by importing. Knowledge sharing stands for the distribution or transmission of knowledge from one person to another, or from a system to others. Knowledge retention represents keeping or storing the existing knowledge in order to make it easy to access and reuse. Knowledge application means using knowledge obtained from other systems to apply to work or solve problems.

Since each CE is a subsystem in the bigger system, which is a community, the viability of the CE is not only the result of its internal management, but also the result of the external environment such as customers, suppliers and other businesses. For this reason, it is necessary to study the second part of the conceptual framework. This part will focus on the knowledge sharing between the CE and the other groups in the community in such a way as to improve their collaborative learning and their viability as a community. As discussed previously, learning is crucial for CE viability (Phongphit, 2005a, 2009), while one's learning is influenced by others' capability and competencies

rather than oneself (Bångens and Araujo, 2002). This means CEs could learn more effectively by collaborating with others in order to learn from others' abilities and competencies. In addition, collaborative learning can provide several advantages such as resources saving (Bandura, 1977; Nooteboom, 2004) and new knowledge creating (Rae et al., 2006). In collaborative learning, knowledge sharing is necessary (Selnes and Sallis, 2003). Moreover, it can contribute to organisational performance (Schroeder et al., 2002), organisational viability (Bergman et al., 2004) and organisational successfulness in a changing world (Mohr and Sengupta, 2002).

Part 2: Community Level

As the second part of the conceptual framework focuses on knowledge sharing between CE and the other groups in the community, it is necessary to clarify the term 'other groups in the community'. In this study, 'other groups in the community' means the CE's external stakeholders, which are groups affected by CEs or that can affect CEs' viability. The comparison of stakeholder lists proposed by authors in Table 2.4 reveals that the external stakeholders mentioned in most studies are: customers, suppliers, the community and government agencies. Considering these four groups of stakeholders in the community, it is identifiable that customers in the community of the CE are community members, while suppliers in the community are local providers. Local government agencies are put in the conceptual framework as government agencies. Community members, local providers and local government agencies are parts of the community; therefore, it may be assumed that the 'community' which is one key stakeholder on the list is not abandoned in this study. Other CEs in the same community, both groups producing similar and different products, are considered as one part of the

community of the CE as well. This is because they are the same type of organisation in which the exchange of information and communication normally occurs.

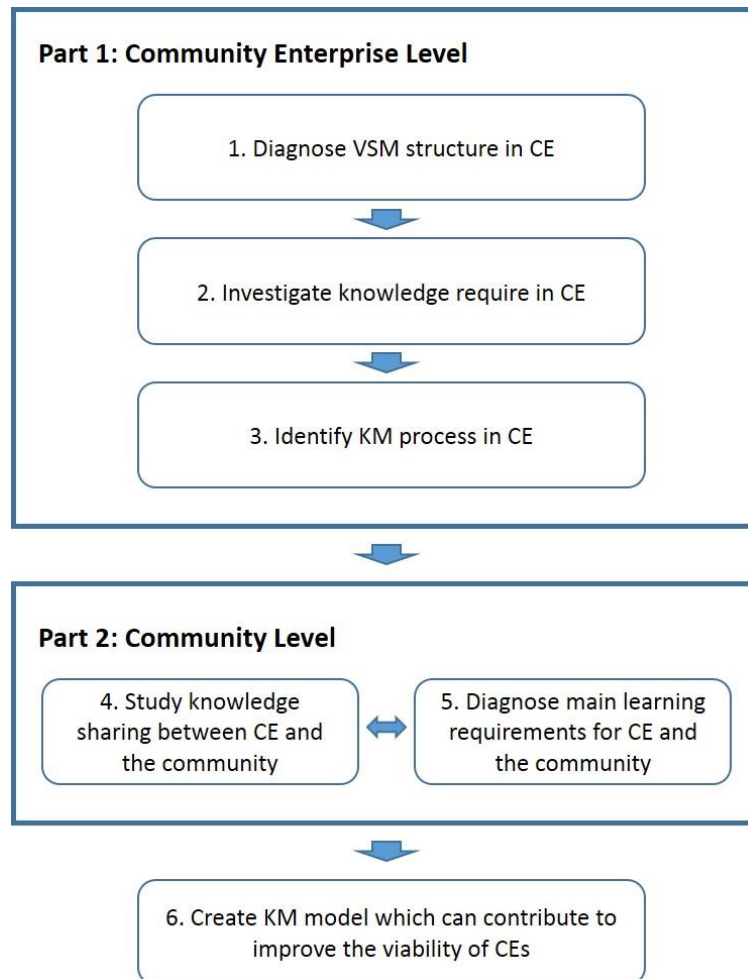
These four groups are all directly correlated with CEs. Local food/raw material providers such as farmers and gardeners are heavily involved with CEs because they deliver raw materials to them. It is likely that knowledge sharing with suppliers will affect the viability of CEs. Community members are customers of the CEs, so knowledge sharing between these groups is very important. Other CEs in the same community, both producing similar and different products, also affect the operation of the CE. Therefore, the sharing of knowledge between them is necessary for strengthening their collaborative learning and their viability. Local government agencies refer to the organisations that are directly involved with the operation of CEs. They may support a CE by providing useful information, such as production information or market information. Thus, knowledge sharing with this kind of organisation is essential as well. Therefore, community members, local providers, local government agencies and other CEs in the community are placed in the second part of conceptual framework in order to study the knowledge sharing between CEs and others in a way to improve their collaborative learning and their viability as a community.

Once the conceptual framework is created, the next step is implementation. The next section will explain the methodological framework which presents the steps to obtain answers for the research questions.

2.13 Methodological Framework

From the conceptual framework which explains ‘what’ to study, this section will illustrate ‘how’ to study. The practical steps to acquire data for answering the research questions are presented in the methodological framework.

Figure 2.4: Methodological Framework



This methodological framework presents six steps for answering the research questions:

1. Diagnose the VSM structure in CE

First, the VSM will be used to diagnose the organisational structure in the CE. This step aims to identify System 1 - System 5 which is recognised as a comprehensive structure to promote viability in organisations.

2. Investigate knowledge required in CE

This step involves investigating the knowledge types that are necessary for the CE in order to remain viable. The nature of such knowledge will be clarified by analysing the knowledge requirements in System 1 – System 5.

3. Identify KM processes that exist (or do not exist) in CE

When discovering the knowledge required for viability, the researcher will further study how CEs generate, share, retain and apply this knowledge.

4. Study knowledge sharing between CE and the community

This stage requires an exploration of how knowledge is shared between the CE and other groups in the community (i.e. local (food) providers, community members, other CEs, and local government agencies) and how it improves their viability by providing opportunities for collaborative learning.

5. Diagnose main learning requirements for CE and the community

This diagnosis may provide useful information for creating a KM model which is more effective for improving CE viability.

6. Create a KM model which can contribute to improve the viability of CEs

After studying, collecting and analysing the data, a KM model will be created to generate a rich learning environment for improving the viability of CEs and communities in the context of developing countries.

2.14 Summary

This review of the literature demonstrates the key concepts used in this research project, which are CE, KM, system thinking and organisational viability. The extant literature reveals that KM is a powerful method to improve organisational viability. Moreover, complementing KM with systems approaches can enhance the potential of KM.

Therefore, the VSM, which is an approach associated with viability, can strengthen KM in contributing to organisational viability. The literature review was invaluable in identifying research gaps and establishing a conceptual framework. The research gaps are: 1) there is little published research on employing KM to directly study viability of CEs; 2) research about the VSM implementation in CEs is rare; and 3) the number of studies that used the VSM in conjunction with KM is limited. These gaps indicate that there is an absence of studies into the use of KM with the VSM to improve viability in CEs. From this gap, the research aim, the research objectives and the research questions as presented in Chapter 1 were generated. Then, the conceptual framework was developed in order to illustrate the scope of this study. Finally, the methodological framework was presented to clarify the steps to answer the research questions. The next chapter describes and verifies the research methodology.

Chapter 3

Research Methodology

3.1 Introduction

This chapter presents the research methodology employed in this study. It outlines the research paradigm, research approach, research strategy, data collection and analysis methods, and choice of case studies, and includes a discussion on validity, reliability and ethical issues. The chapter starts with a discussion of the research paradigms or research philosophy in social science. Then, the reasons to adopt an interpretivist paradigm are clarified. Subsequently, the research approach and research strategy are discussed followed by the reasons to apply the qualitative/inductive approach and case study strategy, respectively. Details of the data collection methods, which are semi-structured interview, participant observation, and focus group, and data analysis method are then described. The details of the research fieldwork, including the criteria for selecting case studies and the eight CEs selected as case studies, are explained. Finally, to ensure the quality of this study, the validity, reliability and ethical issues are considered.

3.2 Research Paradigm/Philosophy: Interpretivist Paradigm

A research paradigm or research philosophy is a philosophical matter that underpins the research and offer guidelines about how a research should be conducted based on assumptions about the world and the nature of knowledge (Collis and Hussey, 2009). In

other words, it is necessary for researchers to choose a particular research paradigm in order to design their research projects consistently. Therefore, it is very important for a researcher to understand his/her personal paradigm (Hussey and Hussey, 1997). In the social sciences, there are two main research paradigms used to study social phenomena: namely, positivism and interpretivism or phenomenology (Collis and Hussey, 2009). According to Guba (1990), each paradigm has different characteristics depending on the way their proponents respond to three basic questions, which are the ontological question, the epistemological question, and the methodological question. Ontological questions are about the nature of knowledge or reality, while epistemological questions ask about the nature of the relationship between the knower/the enquirer and the known/knowable. The methodological question, considers how the enquirer discovers knowledge.

In relation to ontology, which is concerned with the nature of knowledge/reality, positivists believe that reality is objective and separate from the researcher. There is only one reality for anything (Holloway, 1997; Lincoln & Guba, 2000; Schwandt, 2007; Collis & Hussey, 2009). By contrast, interpretivists believe that reality is socially constructed; therefore, it is subjective. Individuals have their own sense of reality. Thus, realities are multiple as seen by the participants (Guba, 1990; Creswell, 2007; Collis & Hussey, 2009; Matthews & Ross, 2010). Concerning epistemology, the relationship between the researchers and what is researched, positivists believe that the researchers are independent of what is being researched; while interpretivists believe that the researchers interact with what being researched (Lincoln & Guba, 1985; Collis & Hussey, 2009). Actually, the research process can influence both the researchers and everyone participating in the research (Collis & Hussey, 2009). Due to the differences in

ontological and epistemological assumptions, Phothisita (2013) argues that positivism and interpretivism have different methodological assumptions, which concern the process of this research. Positivists emphasise the ways in which researchers can manage samples and the research process in order to control and avoid bias. The researchers also make sure that any concepts they use can be measured (Collis and Hussey, 2009). Interpretivists focus on the ways that allow a good relationship between the researchers and participants. This is because interpretivists believe that relationship between the researchers and participants cannot be avoided. Good relationships, therefore, are important for accessing rich information (Phothisita, 2013). Moreover, people and their institutions in social sciences are different from the object of study of the natural sciences, so they cannot be studied and explained using only numbers and figures (Bryman and Bell, 2003).

Regarding the key features and assumptions of each paradigm, the interpretivist paradigm seems like an appropriate choice because it can fulfil the objectives of this research. It also allows the researcher to examine more complicated situations and consider not only the variables being studied, but also the context of the study (Remenyi et al., 1998). To study communities inevitably involves societies and humans who have diverse views depending on their understandings and interpretations of the issues. Their perception of reality is highly subjective, so there is not only one reality but multiple realities. Moreover, the information needed to answer the research questions is in-depth detail that cannot be measured or explained by only using numbers and figures. This in-depth detail must come from conducting in-depth research; therefore, the researcher cannot be separated from the researched CEs and their environment.

Although the interpretivist paradigm may be challenged regarding generalisability, Saunders et al. (2003) argue that generalisability is not crucially important because each situation or organisation is complex, unique and changeable. The information collected a few months previously may not be suitable for implementation in other organisations in this rapidly changing world. A more detailed discussion of generalisability in the context of this research is addressed in Section 3.7.

3.2 Research Approaches: Qualitative/Inductive Approach

Considering research approaches, there are two main approaches: namely, the quantitative and qualitative approaches. Denzin and Lincoln (2000) explain that the quantitative approach focuses on the measurement and analysis of casual correlation between variables. In this approach, the studies are done within a value-free framework. Creswell (2014) adds that this is an approach for testing theories deductively. By contrast, a qualitative approach is useful for exploring and understanding the meaning that participants ascribe to situations. This inquiry form supports an inductive style of research. The discussion about deductive and inductive approaches will follow shortly. According to Denzin and Lincoln (2000), the qualitative approach emphasises the qualities of entities, processes, or meanings, elements which cannot be examined or measured in terms of number, quantity, or amount. The intimate relationship between the researchers and what is studied is important. Qualitative researchers also stress the value-laden nature of enquiry. Langford and McDonagh (2003) argue that the qualitative approach empowers the researcher to find some reasons why people think the way they do.

Thus, the qualitative approach is more suitable for this study because it allows the researcher to handle data that cannot be readily measured, and gain an in-depth understanding of the topic. Information about the kinds of knowledge required for viability, the ways to manage this knowledge and the ways to generate collaborative learning in CEs cannot be provided only by quantitative data, which focuses more on statistical or numerical analysis. On the other hand, this information needs to be explained in depth in order to answer the 'how' and 'why' questions as they appear in the research questions addressed in the previous chapter. Therefore, the qualitative approach has been selected to support this research design.

Saunders et al. (2003) describe a deductive approach as a way for the researcher to develop a theory and hypothesis/hypotheses before designing a research strategy to test the hypothesis/hypotheses. This approach would be accordance with the positivist paradigm (Saunders et al., 2003) and associated with quantitative research (Ghauri and Gronhaug, 2005). By contrast, an inductive approach is a way for the researcher to collect data and develop a theory from analysing that data. Saunders et al. (2003) further mention that this approach is in accordance with the interpretivist paradigm while Ghauri and Gronhaug (2005) remark that it is associated with qualitative research.

Comparing the characteristics of deductive and inductive approaches, this study follows the latter. The researcher collected data about the knowledge needed for CEs to remain viable, the way to manage such knowledge, the way to share knowledge in communities, and the main learning requirements, from different case studies. The data obtained was analysed and compared in order to generate in-depth learning about the main issues relevant to the viability of CEs. Finally, a generic CE/KM model was proposed

summarising the learning from the comparative case studies, suggesting that it can be useful for other CEs to improve their viability. These steps correspond to the chosen inductive approach, which collects facts in order to generate or improve an existing theory.

3.3 Research Strategy: Case Study

Research strategy is a general plan of how researchers will set about answering the research questions they have set (Saunders et al., 2003). According to Creswell (2007), there are five strategies for qualitative inquiry, which are narrative, phenomenological, grounded theory, ethnographic, and case study research. Definitions and focuses of these strategies are presented in the following paragraph.

Regarding the first strategy, narrative research, Czarniawska-Joerges (2004, p.17) defines that "...narrative is understood as a spoken or written text giving an account of an event/action or series of events/actions, chronologically connected". Polkinghorne (1995) stresses that it has a specific focus on the stories told by individual(s). A phenomenological study "...describes the meaning for several individuals of their lived experiences of a concept or a phenomenon" (Creswell, 2007, p.57). Compared with narrative, phenomenological research reports about a group of individuals who have common experience of a phenomenon, while narrative focuses on the life of a single individual. Regarding grounded theory, Strauss and Corbin (1990) describe it as research in which a researcher uses data from a number of participants to generate or discover a general explanation (a theory) for what is being studied. Ethnographic researchers are interested in examining a number of individuals who share the same process, action, or

interaction with an entire cultural group (Creswell, 2007). This corresponds to the definition by Harris (1969) that ethnographers study the shared and learned patterns of values, beliefs, behaviours, and language of a culture-sharing group. The last strategy, case study, is defined by Robson (2002, p. 178) as “...a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence”. Likewise Creswell (2007, p.73), Robson explains that a researcher “...explores a bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information”. Apart from the definition and focus of each strategy, their characteristics are important for a researcher in order to choose an appropriate strategy. Therefore, their characteristics are compared in Table 3.1.

Table 3.1: Contrasting Characteristics of Five Qualitative Approaches

Source: Creswell (2007, p.78)

Characteristics	Narrative	Phenomenology	Grounded Theory	Ethnography	Case Study
Focus	Exploring the life of an individual	Understanding the essence of the experience	Developing a theory grounded on field data	Describing and interpreting a culture-sharing group	Developing an in-depth description and analysis of a case or multiple cases
Type of problem best suited for design	Needing to tell stories of individual experiences	Needing to describe the essence of a lived phenomenon	Grounding a theory in the views of participants	Describing and interpreting the shared cultural patterns of a group	Providing an in-depth understanding of a case or cases

Characteristics	Narrative	Phenomenology	Grounded Theory	Ethnography	Case Study
Discipline background	Drawing from the humanities including anthropology, literature, history, psychology, and sociology	Drawing from philosophy, psychology, and education	Drawing from sociology	Drawing from anthropology and sociology	Drawing from psychology, law, political science, and medicine
Unit of analysis	Studying one or more individuals	Studying several individuals that have shared the experience	Studying a process, action, or interaction involving many individuals	Studying a group that shares the same culture	Studying an event, a programme, an activity, more than one individual
Data collection forms	Using primarily interviews and documents	Using primarily interviews with individuals, although	Using primarily interviews with 20-60 individuals	Using primarily observations and interviews, but perhaps	Using multiple sources, such as interviews,

Characteristics	Narrative	Phenomenology	Grounded Theory	Ethnography	Case Study
Data collection forms (cont.)		documents, observations, and art may also be considered		collecting from other sources during extended time in the field	observations, documents, artefacts
Data analysis strategies	Analysing data for stories, “restoring” stories, developing themes, often using a chronology	Analysing data for significant statements, meaning units, textural and structural description, description of the “essence”	Analysing data through open coding, axial coding, selective coding	Analysing data through description of the culture-sharing group; themes about the group	Analysing data through description of the case and themes of the case as well as cross-case themes
Written report	Developing a narrative about the stories of an individual’s life	Describing the “essence” of the experience	Generating a theory illustrated in a figure	Describing how a culture-sharing group works	Developing a detailed analysis of one or more cases

Considering which characteristics of the five research approaches mentioned above are best suited for this research design, the case study seems the most reasonable choice for this study. This is because the researcher can investigate in depth, and with careful attention to detail, the selected CEs as case studies (Zikmund, 2003; Creswell, 2007). This highly focused attention allows the researcher to gain a rich understanding of the context of the research and the process being studied (Morris and Wood, 1991). In addition, the case study strategy has considerable ability to answer the question 'why' as well as the 'what' and 'how' questions (Saunders et al., 2003). This corresponds to the research questions of this project that ask about the kinds of knowledge needed for CE viability, the way to manage such knowledge, and the way to share knowledge in communities in order to improve their collaborative learning and their viability.

Although the case study strategy has been questioned due to its 'unscientific feel', Saunders et al. (2003) argue that this strategy can not only be a very productive way of exploring existing theory but might also allow a researcher to challenge an existing theory and propose a new one. Regarding the generalising issue, Zikmund (2003) argues that although the results from case studies should be seen as tentative and generalising from a few cases may be risky since each situation may not be the same, a comprehensive understanding revealed by a case study can be useful for orienting directions for future research. Furthermore, in order to diminish the suspicion about generalisability from a single case study, this project adopted a collective or multiple case study approach, which is the design of selecting multiple cases to demonstrate an issue (Creswell, 2007). Apart from reducing the restriction on generalisability, applying a multiple case study approach, or comparative case studies, may help the researcher to draw a more complete theoretical picture. This is because multiple cases are a

powerful way to generate a new theory and more elaborate theory since they allow replication and extension between individual cases (Eisenhardt, 1989, 1991). Four CEs which are recognised as having the best practice of each region in Thailand, and four typical CEs, were selected to be case studies. Then the findings from the eight case studies were compared and contrasted. This can contribute to strengthening external validity, and therefore generalisability (Hines, 2012).

Apart from the research strategy used, research can be classified by its purpose (Robson, 2002). According to Yin (2003), case study research can serve three purposes: descriptive, exploratory, and explanatory. He describes that descriptive study aims to show the details and context of the phenomenon chosen to study rather than analysis. The researchers apply a narrative technique to present their findings. The goal of exploratory study as mentioned by Glaser and Strauss (1967) is to discover theory by directly observing a phenomenon in its raw form. Yin (2003) argues that an exploratory study features a pilot study in order to define unclear concepts or to establish a hypothesis/hypotheses for further explanatory study. Moreover, this type of case study can be used to find out the fundamental causes of a phenomenon, or to search for elements in a phenomenon that should be studied more deeply. Regarding the purpose of the last option, the case study, Yin (2003) explains that an explanatory or causal study aims to explain how, and why, some circumstance(s) happened. This means it suggests the possible cause-and-effect relationships of a phenomenon.

Considering these three purposes, this research seems to be classified as an exploratory study. This is because this research aims to explore useful ways to improve the viability of CEs. The findings from case studies about the kind of knowledge required, and the

ways to manage such knowledge, were analysed to generate a CE/KM model for CEs that would be likely to strengthen their viability. It can be said that this research attempts to discover theory from studying phenomena. Thus, it meets the goal of exploratory study as mentioned by Glaser and Strauss (1967).

3.4 Data Collection Methods

This study employed three data collection methods: namely, semi-structured interviews, participant observation, and focus groups. This is consistent with Creswell's idea Creswell (2007), as shown in Table 3.1, that case study research uses multiple sources to collect data. Although these methods, especially interviews and observations, have been used in the study of CEs in Thailand, most of them focused on factors promoting or affecting the KM process, or problems in the KM process and suggestion for solving such problems. The difference in this research project is that semi-structured interviews and participant observation were adopted to collect data about the knowledge required for CE viability, the way to manage such knowledge, and knowledge sharing in communities to enhance their collaborative learning and their viability. Meanwhile focus groups were arranged to collect data about the main learning requirements of CEs and the communities.

3.4.1 Semi-structured Interviews

The interview is a method for collecting data from selected informants by asking questions to explore what they think, feel and do (Collis and Hussey, 2009). Under the interpretivist paradigm, an interview involves finding data on understandings, opinions, attitudes, and feelings that people have in common (Arksey and Knight, 1999). This

method allows researchers to interact directly with informants and examine the responses given to questions both in verbal and non-verbal language such as gestures or facial expressions (Langford and McDonagh, 2003). According to Holloway (1997), the qualitative in-depth interview has become a favourite method to collect and produce rich data in qualitative research.

Among various different types of interview, Harding (2013) suggests that there are three types that are frequently used: namely, unstructured interview, semi-structured interview, and biographical/life history interview. In an unstructured interview, as Collis and Hussey (2009) describe, most of the questions evolve during the interview rather than being prepared beforehand. Such questions are likely to be open-ended in order to explore the interviewee's answers in more depth. Harding (2013) argues that the semi-structured interview seems to be suitable for various research situations, and is recommended for new enquirers, because a list of topics or questions are prepared in advance, which the enquirers can use as a guide to follow. It also seems to be easier in terms of data analysis process. Regarding the last type, the biographical/life history interview focuses on the life or period of the life of an individual(s). This interview can examine issues in a more holistic way than any other type of interview (Harding, 2013).

In this study, the semi-structured interviews were adopted to collect the data. This is because the researcher realised that a guideline to an interview is important in getting the answers in line with the aim of the research questions. At the same time, these questions should be flexible enough to obtain more in-depth information from the interviewees. In the interviews, the researcher had a list of questions to ask key informants in communities such as CE leaders, CE members, community leaders, and

local government officers. This list of questions and the details of the informants are presented in Appendix A and Appendix B, respectively. In each interview, however, these questions might vary from interview to interview. The researcher might leave some questions or use additional questions to get more information from some informants. Moreover, the order of questions can be changed depending on the flow of the conversation. The interviews were audio recorded, transcribed verbatim into Thai, and relevant quotes were translated into English after the analysis.

3.4.2 Participant Observations

According to Kumar (2005, p.119), “observation is one way to collect primary data. It is a purposeful, systematic and selective way of watching and listening to an interaction or phenomenon as it takes place”. Alvesson and Kärreman (2011) add that an observation also reveals what happens in a naturally occurring context. The role of a researcher in an observation may vary from being a non-participant to a complete participant (Creswell, 2014). Regarding an observer’s role, Gold (1958) identifies such roles as four types, based on the standpoint from which the observer observes. The four types consist of complete participant, participant-as-observer, observer-as-participant, and complete observer. In the complete participant observation, the true identity and purpose of the research is not made known to the people being observed, but the observer interacts with them as naturally as possible. The participant-as-observer role is basically similar to the complete participant role. However, the significant difference is that both the observer and informants are aware that this is a field relationship. The observer-as-participant role seems to be more formal than the first two types. It is applied to studies involving one-visit interviews. The last model, the complete observer role, entirely removes the observer from social interaction with the people who are

observed; informants do not know that they are being observed. Among these four roles, Angrosino and Perez (2000) suggest that the appropriate type for fieldwork is the one that focuses on both the role as the researcher and the relationship with the community, which means the observer-as-participant role.

This study applied participant observations to collect the details of the CEs in addition to the semi-structured interviews. During the observations, field notes were taken. This supported data collection from the fieldwork to be more comprehensive and accurate. The researcher played a role as observer-as-participant in collecting data, which allowed the researcher the chance to be fully involved with the people and situations being researched. Therefore, a detailed understanding of values, motives and practices of those being observed can be gained (Collis and Hussey, 2009).

3.4.3 Focus Groups

The focus group is a way to collect data by asking questions from a group of people with the purpose of eliciting ideas about a topic (Holloway, 1997). It possess elements of two major techniques for collecting qualitative data, which are the interview and observation methods (Morgan, 1997; Collis and Hussey, 2009). To strengthen the data obtained, the researcher also convened focus groups to collect data about the main learning requirements of CEs and communities. Although the one-to-one interview allows the researcher to interact directly with informants and discovered more about individuals' viewpoints, a focus group has an additional advantage in that the group participants can react to and build upon the responses of others. This might result in the emergence of information or ideas that each person may never have realised on their own (Langford and McDonagh, 2003).

The researcher planned to arrange one focus group in each CEb to gain data about learning in CEs and communities. However, the focus groups were achieved in just two of the CEbs. In one CEb, the researcher was not able to arrange the focus group because selected informants were living in different districts. The distance made it impractical to travel to join the focus group. The researcher then applied one-to-one interviews to obtain data from selected informants. In another CEb, only two of the selected informants joined the focus group. Thus, the conversation occurred in a form of an interview rather than a focus group.

In the study of the CEs and communities, however, it may be said that the data collection from one-to-one interviews did not differ much from the focus groups. This is because even in the two CEs with which the focus groups were arranged, data did not arrive from the group dynamics, which is the key characteristic of focus groups (Stewart and Shamdasani, 1990). Such focus groups should be considered as focus group interviews rather than focus group discussions. This is because participants did not interact about the raised issue, but just answered the questions. Moreover, some participants, especially local food/raw material providers and villagers who were less educated, hardly gave their opinions if the researcher did not ask them individually. This might be because they did not want to express their ideas in front of the CE leader, community leader, or local government officer who were more educated than themselves. In Thai society, workers or labourers normally express themselves less than professionals (Phothisita, 2013). This is consistent with the suggestion of Stewart and Shamdasani (1990) that there are three factors that can influence the group dynamic in focus groups discussion. They are: 1) intrapersonal/individual differences such as demographic, physical, and personality characteristics; 2) interpersonal influences such as group

compatibility (homogeneity/heterogeneity) and social power; and 3) environment influences such as territoriality, spatial arrangements, and interpersonal distance. In addition, when the CE leader, community leader or local government officer expressed their opinions to answer the questions, others, especially the local food/raw material providers and villagers, agreed and took such answers as their own. This might be due to a psychological reason, that the group influence means participants have the same opinion. A participant who had different opinions did not express his/her opinions (Phothisita, 2013). From this study of CEs and the community, it might be said that one-to-one interview is an appropriate method to collect data from informants who hardly comment in the group, such as local food/raw material providers and villagers. However, a focus group would be the more effective way of collecting data if participants have common characteristics.

3.5 Data Analysis Method

The data analysis in this study was undertaken at three levels: within each case, across the four cases of the CEs/CEBs, and between the CEs and CEBs. The within-case analysis was conducted in three steps, as suggested by Miles and Huberman (1994). These three steps consist of data organising, data display, and conclusion, interpretation and verification. Regarding the first step, data organising, the interviews were transcribed verbatim into Thai in order to make sure that all data were included and to minimise the chance of error. After transcription, the interview transcripts were read and re-read thoroughly. This helped to enhance validity by making sure that the findings of the study exactly reflected the original data (Harding, 2013). It also helped to ensure that the researcher did not neglect any sections of the transcripts when analysing data

(Schmidt, 2004). After that, codes were applied to the data chunks. According to Ghauri and Gronhaug (2005), a main task of data analysis concerns dividing the complex whole of the data into particular parts because qualitative studies are often overwhelmed by large amounts of data. Therefore, data collected from semi-structured interviews, participant observations, and focus groups were coded in five main categories and 24 sub-categories according to the interview questions. Details of categories and sub-categories are:

1) VSM structure including

1.1) System 1

1.2) System 2

1.3) System 3

1.4) System 4

1.5) System 5

2) Knowledge required for CEs' viability

2.1) Knowledge required in System 1

2.2) Knowledge required in System 2

2.3) Knowledge required in System 3

2.4) Knowledge required in System 4

2.5) Knowledge required in System 5

3) The management of knowledge

3.1) Knowledge generation

3.2) Knowledge sharing

3.3) Knowledge retention

3.4) Knowledge application

- 4) Knowledge sharing between the CE and others in the community
 - 4.1) Sharing between the CE and local providers/suppliers
 - 4.2) Sharing between the CE and community members/customers
 - 4.3) Sharing between the CE and other CEs
 - 4.4) Sharing between the CE and local government agencies
 - 4.5) Integration with others to solve community problems
 - 4.6) Relevance between knowledge sharing and collaborative learning
 - 4.7) Assessment of knowledge sharing in the community
- 5) The main learning requirements of CEs and communities
 - 5.1) Key factors to support learning in the CE and community
 - 5.2) Assessment of such key factors
 - 5.3) Additional comments for enhancing learning in the CE and community

In order to enhance the transparency of the data analysis process, NVivo, which is the computer-aided qualitative data analysis software, was employed. This software helped the coding and retrieval process to be faster and more efficient. With the software, it was convenient for data display, which is the second step of data analysis as suggested by Miles and Huberman (1994). Data display means reassembling coding data according to themes or groups for analysis so that the data in each group can tell the same story meaningfully. In this study, the data in 24 sub-categories was connected with one another and further condensed and plotted into three groups according to research questions. The three groups are:

- 1) Knowledge required for CE viability
- 2) Four steps in the management of this knowledge, namely knowledge generation, knowledge sharing, knowledge retention and knowledge application
- 3) Knowledge sharing between CEs and other groups in communities as a way of improving their collaborative learning and their viability

In the third step of data analysis, as suggested by Miles and Huberman (1994), the researcher concluded the data and presented the findings for each CE. In the cross-case analysis, which is the analysis across the four cases of CEs (Chapter 4), four cases of CEbs (Chapter 5), and between the CEs and CEbs (Chapter 6), the three groups above were compared and contrasted. Then a CE/KM model was proposed to meet a research objective. Later, the theoretical contributions to knowledge and the practical implications of the research are noted.

3.6 Choice of Case Studies

In choosing a sample, Patton (1987) suggests that the logic of probabilistic sampling in statistics, and the logic of purposeful sampling in a qualitative approach, are different. Regarding statistical sampling, the sample should be selected truly randomly and should be representative of the population in order to permit confident generalisation. However, purposeful sampling will be of greater value and more meaningful if information-rich cases are selected. Patton (1987, p.52) further explains that “information-rich cases are those from which one can learn a great deal about issues of

central importance to the purpose of the evaluation". Thus, case studies, samples of which for this study were selected by purposeful sampling in order to engage information-rich cases to this study.

In this study, eight CEs from four regions of Thailand were taken as case studies. They were divided into two groups: typical CEs (CEt) and best-practice CEs (CEb). The researcher chose to consider cases studies from four regions of Thailand as they are the most representative regions in the whole of the country in which CEs are located. In each region, however, only one CEb and one CEt was chosen because of practical reasons and resources limitation in terms of time and money. The researcher spent weeks studying each CE in depth in order to obtain as clear and accurate information as possible. The advantages of spending a long time in each CE is that the researcher gained the trust of CEs and community members. This resulted in obtaining greater information from both interview and participant observation. It can be said that the researcher learned by being with the subjects. Although there was one CEb and one CEt from each region, comparing and contrasting four CEbs and four CEts from four regions, as multiple cases study, might be helpful in reducing the restrictions on generalisability as described in Section 3.3.

There is a reason that the researcher compared CEbs and CEts, which is that they are different in terms of size and performance. Since this study aims to explore useful ways to improve the viability of CEs using KM, studying KM in CEs that have characteristics leading to viability (CEbs) is inevitable. However, only studying CEbs may not be enough to reach a conclusion. Therefore, the study of CEts was arranged in order to compare and contrast the results of two different groups. These two groups represent the

differences in variety and complexity within the organisation. Although major differences by size between CEbs and CEts may be found and considered as a limitation of comparing two different groups, the strength of this selection is that CEbs can provide a considerable number of ideas for factors supporting viability. This also gives the researcher inspiration and ideas to answer the research questions.

Regarding CE selection, the CEbs were selected first and the CEts later. The CEbs were chosen because of their pertinence to the research topic. Since this research focuses on CE viability, considering the management of knowledge, the researcher selected CEs that are outstanding in these respects. This reason is consistent with a criterion called “extreme or deviant case sampling” for case study selection which was suggested by Patton (1987). He describes that a case is rich in information because of its *unusualness* or *specialness* in some way, such as outstanding successes or remarkable failures. Likewise the “extreme or unique case” suggested by Yin (2009), which means the case is different from others and the focus is on its distinctive qualities.

These four selected CEbs have been recognised as having the best practice in each region of Thailand and are the prototypes for a number of CEs in managing their knowledge and improving their potential for collaboration (Phongphit, 2005; Konthaiban, 2007). The Best Community Enterprise Award is further proof that these CEs are the examples of best practice in each region. This contest was arranged by the Department of Agricultural Extension at the Ministry of Agriculture and Cooperatives, which is a government agency responsible for CE registration. The criteria for this award are continuous learning, ability in administration and management, initiative, economic stability, self-reliance, and viability. Although one of these four CEbs did not win this

award because it had not participated in the contest, it is also an outstanding CE that should not be ignored in this study. This is because it was one of the pioneer groups that attempted to found a form of business which is established and managed by local people for the benefit of local people and the community (The Knowledge Management Institute, 2008; Chumchonchai Foundation, 2014). Later, this kind of business was known as a CE. This CE also plays a vital role in proposing and pushing the Community Enterprise Act 2005 (Khongpanya, 2013). Continuous learning, management ability, economic stability, self-reliance, and viability, which are the criteria for the Best Community Enterprise Award, can also be found in this CE (The Knowledge Management Institute, 2008; Learning Institute for Everyone, 2014). The four CEbs are presented in Table 3.2.

After the four CEbs were selected, the four CEts were chosen by the following criteria in order to compare and contrast with the four CEbs. Firstly, each CEt is located in the same district as the CEb in each region in order to reduce the variances of race, religion, language, culture and geography. Secondly, these CEts are similar to other CEs in general and simple enough to be representative of most common CEs. Then, they can be called average or typical cases (Patton, 1987; Yin, 2009). The term 'simple enough' means they have not had notable success or won any awards about CE management. Information from the CEb's leader in the same district was another way to confirm the common or average nature of these CEts. The four CEts are presented in Table 3.2.

Table 3.2: Eight Case Studies

Region \ Group	Typical CEs (CEts)	Best-practice CEs (CEbs)
Northern Thailand	Tha Nao CE (CEt1)	Nam Kian CE (CEb1)
North-eastern Thailand	Mueang Khong CE (CEt2)	Oom Saeng CE (CEb2)
Central Thailand	Tha Ton Chan CE (CEt3)	Lad Bua Khao CE (CEb3)
Southern Thailand	Nopphitam CE (CEt4)	Karoh CE (CEb4)

In northern Thailand, one CEt and one CEb in the Phu Phiang District of Nan Province were selected as case studies. The selected CEt is Tha Nao Community Enterprise (CEt1), located in Tha Nao Sub-District. Fermented pork or sour pork, which is a fermented food developed as a way to preserve pork, is a product of this CE. The best-practice CE in this region is Nam Kian Community Enterprise (CEb1), located in Nam Kian Sub-District. This CE produces herbal personal cleaning products, such as shampoo, conditioner, soap, bath creams and lotions.

Case studies in north-eastern Thailand are located in the Rasi Salai District, Si Sa Ket Province. Mueang Khong Community Enterprise (CEt2) was selected as a CEt, located in Mueang Khong Sub-District. They produce plastic basketry from plastic ribbons. Oom Saeng Community Enterprise (CEb2) was selected as a best-practice CE, located in Oom Saeng Village, Du Sub-District. This CEb commercialises several kinds of organic rice. Their work includes encouraging and supporting farmers who are members of this CE to do organic farming.

In central Thailand, Tha Ton Chan Community Enterprise (CEt3) and Lad Bua Khao Community Enterprise (CEb3) were selected as case studies. Both CEs are located in Lad Bua Khao Sub-District, Ban Pong District, Ratchaburi Province. The former produces chilli and curry pastes, while the latter produces various kinds of snacks such as cereal/dried shredded pork-topped banana chip and cereal/dried shredded pork-topped rice cracker.

In the last region, southern Thailand, case studies are found in Nopphitam District, Nakhon Si Thammarat Province. The selected CEt is Nopphitam Community Enterprise (CEt4), located in Nopphitam Sub-District. This CE's product is wooden furniture made from old tree-roots or stumps which have been excavated from the land. These roots or stumps are big enough to make furniture such as tables and chairs. The best-practice CE is Karoh Community Enterprise (CEb4), which is located in Moo 5, Karoh Sub-District. They produce Khanom Jeen noodle dough or Thai rice vermicelli dough.

Details of the seven sub-districts in which the eight CEs are located are presented in Table 3.3.

Table 3.3: Details of the Seven Sub-Districts

Sub-District	Location of	Area Size (square kilometres) ^{1*}	Number of villages	Number of households ^{2*}	Number of people ^{2*}			Topography	Main occupation	Religion
					Male	Female	Total			
Nam Kian	CEb1	43.20	5 ^{3*}	827	1,405	1,429	2,834	Piedmont and mountain ^{3*}	Agriculture (farming and gardening) ^{3*}	Buddhism ^{3*}
Tha Nao	CEt1	34.46	7 ^{4*}	1,096	1,597	1,760	3,357	Riverside plain ^{4*}	Agriculture (gardening, farming, and livestock farming) ^{4*}	Buddhism ^{4*}
Du	CEb2	30.60	14 ^{5*}	1,677	3,657	3,647	7,304	Low plain ^{5*}	Farming ^{5*}	Buddhism ^{5*}

Sub-District	Location of	Area Size (square kilometres) ^{1*}	Number of villages	Number of households ^{2*}	Number of people ^{2*}			Topography	Main occupation	Religion
					Male	Female	Total			
Mueang Khong	CEt2	25.24	15 ^{6*}	2,075	3,602	3,698	7,300	Riverside plain ^{6*}	Farming, merchant trading ^{6*}	Buddhism ^{6*}
Lad Bua Khao	CEb3 and CEt3	13.62	7 ^{7*}	1,954	3,097	3,632	6,729	Low plain ^{7*}	Agriculture (farming, and livestock farming) ^{7*}	Buddhism ^{7*}
Karoh	CEb4	102.35	9 ^{8*}	2,253	3,676	3,798	7,474	Hill in northern area and low plain in	Agriculture (farming and gardening) ^{8*}	Buddhism ^{8*}

Sub-District	Location of	Area Size (square kilometres) ^{1*}	Number of villages	Number of households ^{2*}	Number of people ^{2*}			Topography	Main occupation	Religion
					Male	Female	Total			
								eastern area ^{8*}		
Nopphitam	CEt4	127.86	9 ^{9*}	2,684	4,052	4,048	8,100	Plateau and mountain ^{9*}	Gardening ^{9*}	Buddhism ^{9*}

Sources: 1* Department of Local Administration (2011)

2* Department of Provincial Administration (2015)

3* Nam Kian Sub-District Administrative Organisation (2015)

4* Tha Nao Sub-District Non-formal and Informal Education Centre (2015)

5* ThaiTambon.com (2015b)

6* ThaiTambon.com (2015)

7* Lad Bua Khao Sub-District Administrative Organisation (2014)

8* Karoh Sub-District Administrative Organisation (2012)

9* Nopphitam Sub-District Administrative Organisation (2010)

Table 3.3 reveals that there are no significant differences between the two sub-districts in which CEb and CEt are located in term of area size, number of villages, number of people, and main occupations. This can be shown as evidence to establish that the CEbs and CEts in each region are located in a similar context and that the differences between CEbs and CEts in each region are not the result of population, size of sub-district, or topography.

Table 3.3 also shows that the main occupation of people in the communities where the CEs are located is related to agriculture. This may also be considered as a factor illustrating the economic environment that CEs inhabit. According to TAUW (2012), the majority of the population lives in rural areas and constitute an agricultural society with a specific cultural orientation. Consequently, it may be assumed that the communities presented in Table 3.3 are representative of others in Thailand in terms of social and economic context. Considering business activities of CEs in Thailand, as presented in Section 1.2, it is clear that around 70 percent of CEs produce crops, livestock production, produce food, processed food and beverages or are involved with fisheries. As mentioned above, this figure corresponds to the social context in which Thailand is an agricultural society.

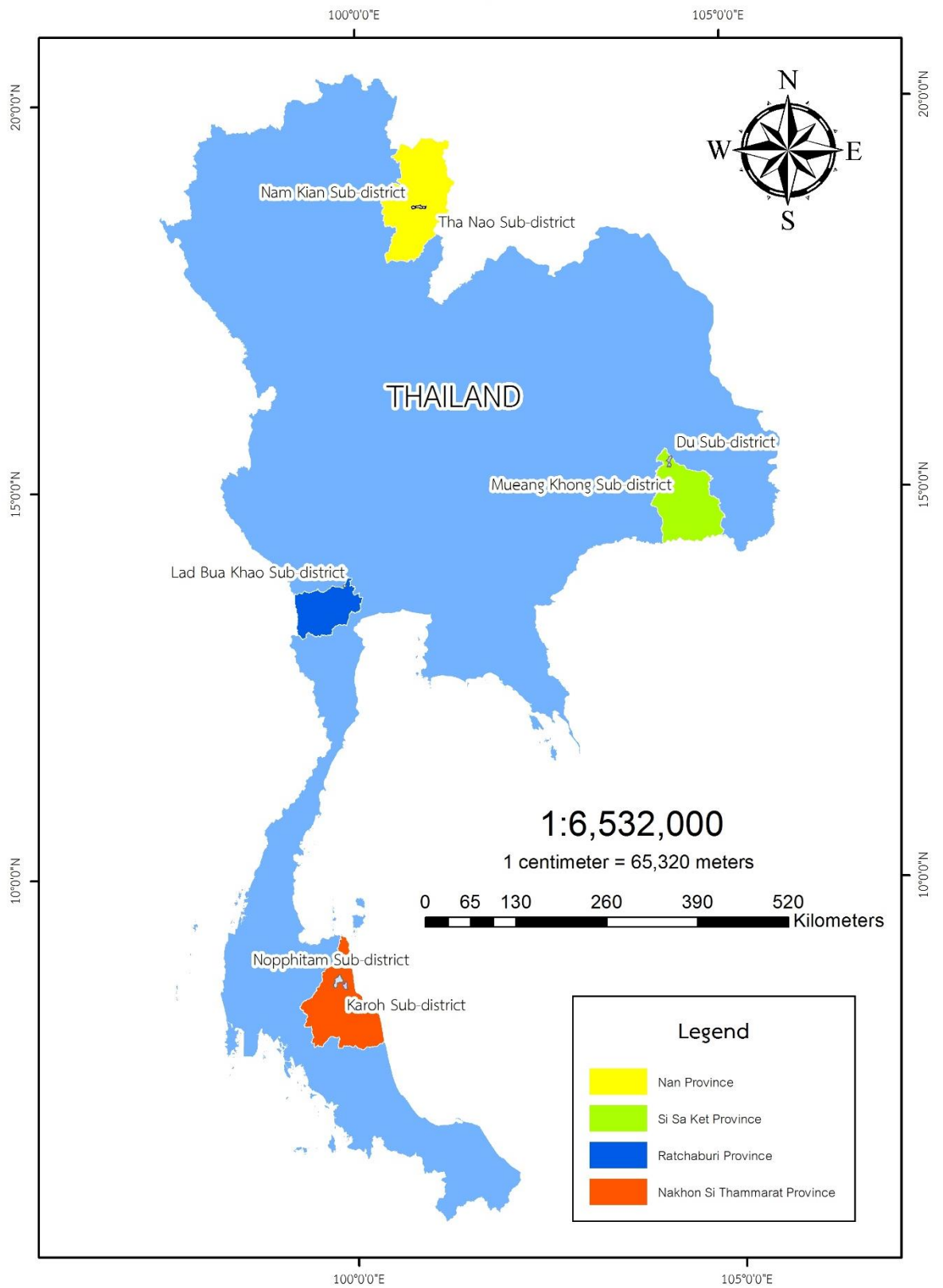
As described in Section 1.2, CEs developed when the Thai government focused on sufficiency economy in parallel to the mainstream economy. This is because the mainstream economy has caused income disparity among the population and many social problems. Phongphit and Janhong (2005) note that the concept of CE is to produce or manage the simple things that people require for their daily life in order to replace purchases from the market such as rice, pork, mushrooms, shampoo and soap.

To replace purchasing by producing autonomously allows people to reduce expenses and save more have more saving. Tanaisri (2012) argues that CE is an economic activity that can drive local economies. In a district, for example, there are 20 CEs which produce for local consumption and these can reduce external purchases by about 25 percent. From this reason, it may be said that CEs are important for local economies. Work by Phongphit and Janhong (2005) further supports the argument that CEs strengthen both the national and local economies because the strength of local economies affects that of the national economy.

Regarding sources of funding, each CE uses money which, in operating, is normally obtained from the CE's members. However, CEs do not reject support from outside. Obtaining support from outside is on the basis of self-reliance and self-sufficiency. Considering these characteristics of the economic environment, it may be said that findings from these case studies can be generalised to other CEs in Thailand. This is because most CEs in Thailand are in a similar situation to the selected cases. In addition, the research methodology and approach used in this study is context free. That means that this methodology can be repeated in any type or size of CE, and every region in Thailand, or outside of Thailand.

A map of study areas is presented in Figure 3.1. Details of the chosen four CEs and four CEbs can be found in Chapter 4 and Chapter 5 respectively.

Figure 3.1: Map of Study Areas



3.7 Credibility of the Research

Saunders et al. (2003) state that the way to increase the credibility of research is to reduce the possibility of getting the answer wrong. That means researchers have to pay attention to two prominent criteria, which are validity and reliability. Although these criteria are very important, and unavoidable in quantitative research, they have sometimes been mentioned in order to strengthen the credibility of qualitative research. LeCompte and Goetz (1982) identify the types of validity and reliability in qualitative research as follows.

3.7.1 Internal Validity

Internal validity refers to the degree of a good match between what researchers discovered and the theoretical ideas they generate (LeCompte and Goetz, 1982). To ensure the accuracy of the data obtained, this study used multiple data collection including semi-structured interviews, participant observation and focus groups to achieve triangulation. Moreover, the participants in CEs and communities over a period of time allowed the researcher to confirm the association between observations and theory.

3.7.2 External Validity

External validity means the degree of which findings of a study can be generalised to other social contexts (LeCompte and Goetz, 1982). Regarding this issue, Bryman and Bell (2003) argue that the result of qualitative research is for generalising to a theoretical concept rather than generalising to populations because a case study may not be a

sample of a population, while the informants may not be representative of a population either. However, in order to alleviate the issue of generalisability, this study employed a multiple case study strategy. Furthermore, the four cases selected (CEBs) are pertinent to the research topic, as they are recognised as having the best practice of each region in Thailand. The findings from these cases were compared and contrasted with more typical CEs operating in the same regions. This would contribute to strengthen the external validity that is the domain to which the study findings can be generalised (Hines, 2012). In addition, the findings and recommendations as presented between Chapter 4 and Chapter 7 may allow another researcher to repeat the procedures and compare the findings with similar studies.

3.7.3 Internal Reliability

Internal reliability refers to the degree to which different observers or researchers (if any) agree on what they see and hear in the same situation (LeCompte and Goetz, 1982). Since this study has only one researcher, internal reliability may be a limitation in this study.

3.7.4 External Reliability

External reliability means the degree to which a study can be replicated (LeCompte and Goetz, 1982). This issue may be another limitation of this study because it is difficult for qualitative research to meet this criterion. This research was conducted in CEs and communities in which the researcher cannot control the research sites. This limitation is consistent with the argument of LeCompte and Goetz (1982) that it is impracticable to fix or freeze a social setting and context to make it truly replicable.

3.8 Ethical Issues

Since this study involved human participants, ethical issues had to be addressed in order to ensure the quality and ethical acceptability. Saunders et al. (2003) state that the general ethical issue in research is concerned with protecting the research population from embarrassment, harm, danger or any disadvantages. Therefore, this study was conducted according to the Ethical Procedures for Research of Hull University Business School (Hull University Business School, 2011). The researcher provided clear information about this study, such as its purpose, for participants in CEs and communities. Each participant had to sign a consent form before engaging in the data collection process. A participant was able to withdraw from the research process at any time. Moreover, confidentiality for participants was protected from the data collection process to the publication of the research.

3.9 Summary

The adopted research methodology was outlined in this chapter. This study employed an interpretivist paradigm with a qualitative/inductive approach and case study strategy. Data was collected by semi-structured interviews, participant observation and focus groups from four best-practice CEs and four typical CEs in Thailand. The data collected was analysed, condensed, and plotted into three groups according to the research questions. The quality of this study was ensured by considering validity, reliability and ethical issues. The findings of typical CEs and best-practice CEs are presented respectively in the next two chapters.

Chapter 4

Data Analysis: Typical Community Enterprises

4.1 Introduction

This chapter presents the findings and discussion on the analysis of typical community enterprises (CEts). Four case studies of CEts are presented in this chapter, each discussed in terms of general information, VSM analysis, KM analysis and collaborative learning. The general information is provided to introduce each case study. It includes the enterprise background, location, foundation, members, organisational structure and management, product and production, customers, and distribution. The second topic, VSM analysis, is the analysis of the way CEts have implemented their functions by focusing on the five VSM systems (System 1 – System 5). Diagnosing the VSM structure in the CEts is needed to examine which tasks they do in each function and how they do them, in order to investigate the knowledge currently used in these CEts. Then the ways that the CEts manage such knowledge are analysed in the third topic, KM analysis. KM analysis is an analysis of the four main steps in a KM process, which are knowledge generation, knowledge sharing, knowledge retention, and knowledge application. More details of the VSM and KM theories can be found in Chapter 2. The last issue, collaborative learning, concerns the way CEts share knowledge with others in the community in order to support collaborative learning. In this section, however, learning within each CEt is presented before leading to collaborative learning in the community. The CEt/KM model is then proposed to summarise the knowledge currently used in the

CEts, the ways the CEts manage such knowledge, and the factors supporting learning in the CEts.

The four CEts explained in this chapter are: Tha Nao Community Enterprise (CEt1) in northern Thailand; Mueang Khong Community Enterprise (CEt2) in north-eastern Thailand; Tha Ton Chan Community Enterprise (CEt3) in central Thailand, and Nopphitam Community Enterprise (CEt4) in southern Thailand. They were selected as case studies for two main reasons. Firstly, they are located in the same district as the chosen best-practice CEs. Secondly, they are similar to other CEs in general, and simple enough to be representative of most common. This is consistent with Yin's (2009) idea which suggests that one criterion to choose a case study is that it is simple enough to be representatives of those which are common. Details of case study selections are presented in Section 3.6.

4.2 General Information about the CEts

In this section, general information including the enterprise background, organisational structure and management, product and production, and customers and distribution is presented in order to give an overview of each CEt.

4.2.1 General Information of Tha Nao Community Enterprise

4.2.1.1 Background Information

Tha Nao community Enterprise (CEt1) is located in Tha Nao Sub-district, Phu Phiang District, Nan Province and produces fermented or sour pork, which is a means of preserving pork (see Figure 4.1). CEt1 members agreed to produce fermented pork

because it is a popular food for people in the north, and most members of CEt1 had experience in producing fermented pork for household consumption. CEt1 was founded on April 1st 2000 with 11 members. All members are women between the ages of 40 and 65 years and all are primary school graduates. The objectives of forming CEt1 were to generate extra income for the group in addition to farming, to encourage members to use their free time for mutual benefit, and to promote joint activities to strengthen unity in the community. Initial funding for the operation of CEt1 came from the shares of the 11 members.

Figure 4.1: CEt1's Product_Fermented Pork

Source: Researcher's photos



When CEt1 was first founded, members were producing fermented pork at their own houses and brought their product together for selling. For sanitary and food safety reasons, they moved to a new production site on 1 August 2003, with support from a local government agency. The new place made the fermented pork production and packaging more standardised. Therefore, CEt1 decided to apply for the FDA Compliance Mark from the Food and Drug Administration Thailand to guarantee the quality and standard of their product. With support in training and education from officers of the

Nan Provincial Public Health Office, CEt1 finally obtained the FDA Compliance Mark in 2003. Later, CEt1 had to move to a new production site, an abandoned school in the community, where the local government agency provided offices for CEs and other groups in the community (see Figure 4.2).

Figure 4.2: Production Site for Tha Nao Community Enterprise

Source: Researcher's photos

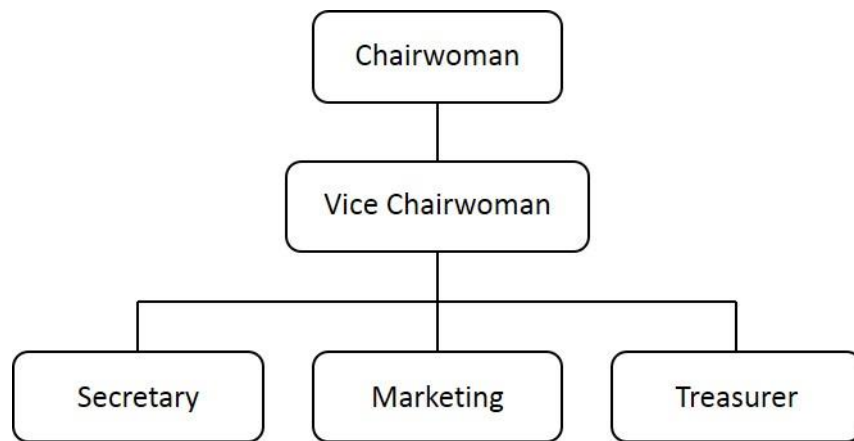


4.2.1.2 Organisational Structure and Management

When CEt1 was founded, it was managed by an executive committee that included five roles (see Figure 4.3): chairwoman, vice chairwoman, secretary, marketing and treasurer.

Figure 4.3: Organisational Chart of Tha Nao Community Enterprise

Source: Faculty of Economics (2008, p.25)



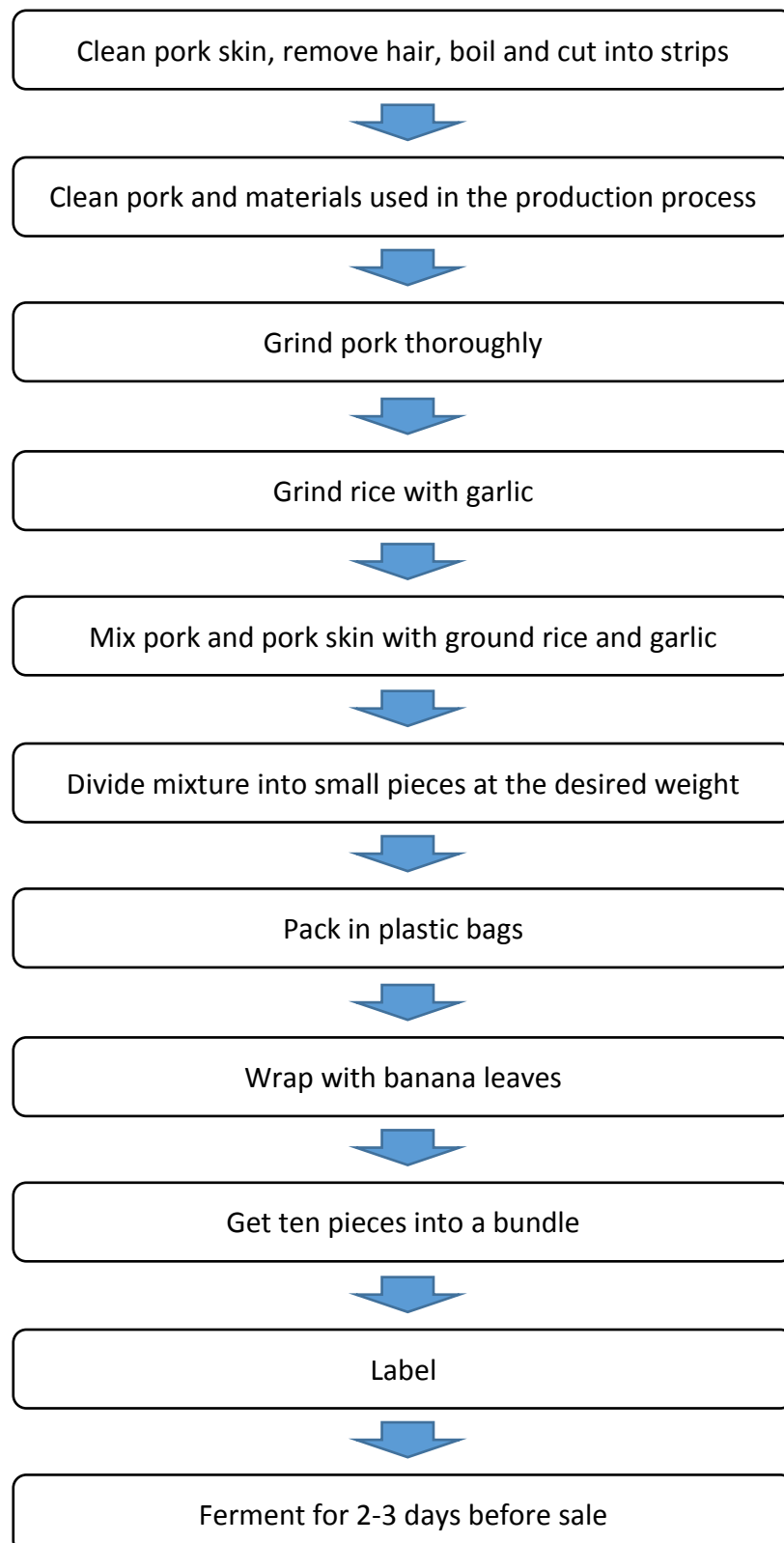
Later, CEt1's members gradually resigned from this CE. Some returned to be gardeners or farmers, while some returned to be merchants. CEt1 currently has three members working in the production. Although the chairwoman and the treasurer are two of the three remaining, there is no longer an executive committee. All of them help each other to produce fermented pork and make decisions on any matters concerning CEt1. However, the chairwoman still has responsibilities for procuring raw materials and coordinating with other external agencies, while the treasurer is responsible for the income and expenditure account.

4.2.1.3 Product and Production

The production process of CEt1 is presented in Figure 4.4. It is derived from the researcher's observation in this CE.

Figure 4.4: Process to produce fermented pork: Tha Nao Community Enterprise

Source: Researcher's data



In the past, when CEt1 had 11 members, fermented pork was produced twice a week. The number of workers at each time of production depended on the number of members who were available that day. Members working in the production process were paid 100 Baht (about two GBP) per day for eight working hours. In each fermented pork production round, pork of around 10-12 kilogrammes and pork skin weighing eight kilogrammes were used as the main raw materials. Production was increased in April because of the Songkran festival - Thai New Year - that month, when fermented pork was bought more than usual because people bought it as a gift or souvenir.

Currently, the manufacture and production volume is changed because there are only three people still working in production. Production volumes have decreased each time by around twenty-five percent from the previous. In each production around eight kilogrammes of pork and six kilogrammes of skin pork are used as the main raw materials. Moreover, the quantity produced each week/month is not planned in advance: the production is based on the amount of fermented pork remaining and the readiness of the three members - especially the chairwoman. Regarding the first condition, the production happens again when the fermented pork is almost sold out. This is because fermented pork cannot be kept over two weeks. Then, they only produce enough for sale. Concerning the second condition, readiness, this depends on the chairwoman's work schedule. Since the chairwoman, who is one of the production team, is employed in a catering service, she cannot come to work at CEt1 on the day that she works in her catering job. This job does not have an exact working schedule every week/month because it depends on customers who employ the catering company. Thus, the exact production date of CEt1 cannot be scheduled either. If the chairwoman, who is the youngest of the three members, is not available, the other two

members cannot produce fermented pork by themselves. This is because they are elderly and one of them is too old to lift heavy materials. With these conditions, CEt1 cannot produce fermented pork as much as they did in the past. Since there are fewer people working in production, they produce fermented pork at the production site in the abandoned school as before, but the packaging process is done at a member's house for the convenience of the elderly members (see Figure 4.5). These three members do not get a wage for producing fermented pork as before though the profits from selling each lot of fermented pork is shared among them.

Figure 4.5: Parts of Production Process_Packaging

Source: Researcher's photos



CEt1 has a brand image and a logo for their products (see Figure 4.6). The name of the brand is 'Phetra' which means a boat. The chairwoman chose a boat for the logo because Nan Province has a famous traditional festival, the annual regatta. Designing the logo was supported by a government agency to the extent of paying for the first lot of printed logos. After the free logo was used, CEt1 continued to print the logo using a personal computer belonging to a member's child. It is printed in colour on plain A4 paper. In this way, CEt1 can produce the logo at a lower cost than hiring a printing shop.

Figure 4.6: Logo 'Phetra' of CEt1

Source: Researcher's photos



4.2.1.4 Customers and Distribution

During the time that CEt1 was able to produce large quantities of fermented pork as mentioned above, there were two main distribution channels. The first was retail sales, which accounted for twenty percent of all sales. Retail sales refers to purchases by retail customers. Retail customers might come to buy fermented pork at CEt1 or they might buy the product when CEt1 attended trade fairs such as the Red Cross Fair in the province. The second channel was wholesaling, which was eighty percent of all sales. This way the pork was sold to middlemen or shops in the province.

At present, however, the distribution channels have changed. CEt1 currently has only one middleman. She was a member of this CE who worked in the marketing role on the executive committee (see Figure 4.3). Since she has a stall for selling vegetables in the market, she buys fermented pork at wholesale prices and sells it to her customers while adding a small margin.

4.2.2 General Information of Mueang Khong Community Enterprise

4.2.2.1 Background Information

Mueang Khong Community Enterprise (CEt2) is located in Mueang Khong Sub-district, Rasi Salai District, Si Sa Ket Province. It produces plastic basketry from plastic ribbons (see Figure 4.7). In 2012, Mueang Khong Sub-District Municipality provided public training on plastic basket making for two days. A leader of the sub-village, who was later a founder of CEt2, led residents in her sub-village to join that training course. Having knowledge from the basketry training combined with funding from the municipality made this leader decide to set up CEt2 in 2012. CEt2 has seven members, and all of whom were participants in the plastic basketry training programme. At present, however, there are only two members including, the chairwoman, who are key in making the plastic basketry. This is because some members are not as skilled, while some do not like handicraft. Therefore, these other members only occasionally do this job. The seven members of CEt2 consist of six women and one man, all of whom are 45 to 55 years old. Most of them are primary school graduates. They do not have routine jobs except seasonal farming.

Figure 4.7: CEt2's Product_Plastic Ribbon Baskets

Source: Researcher's photos



4.2.2.2 Organisational Structure and Management

There is no formal organisational structure in CEt2; no function or responsibility is formally assigned between the seven members. Since each CE has to have a representative to be the contact person with government agencies, the community leader as mentioned above was selected as the chair of CEt2. This is because she has leadership ability and she is a founder of this CE. However, there is no job description for the chair. In practice, she works like other members in producing plastic basketry and participating in decision-making about the CE's issues such as material purchasing. In addition, there is a member who takes responsibility for product pricing and sales, who does not hold an official position at CEt2. This member fulfils this function because he is the only person who has a skill for spotting profitable opportunities. Apart from the chairwoman and the member who takes care of sales, there is no other position or job function at CEt2. As CEt2 is a small enterprise with smaller production activities, it does not affect the operation and management of CEt2, although there is no division of labour.

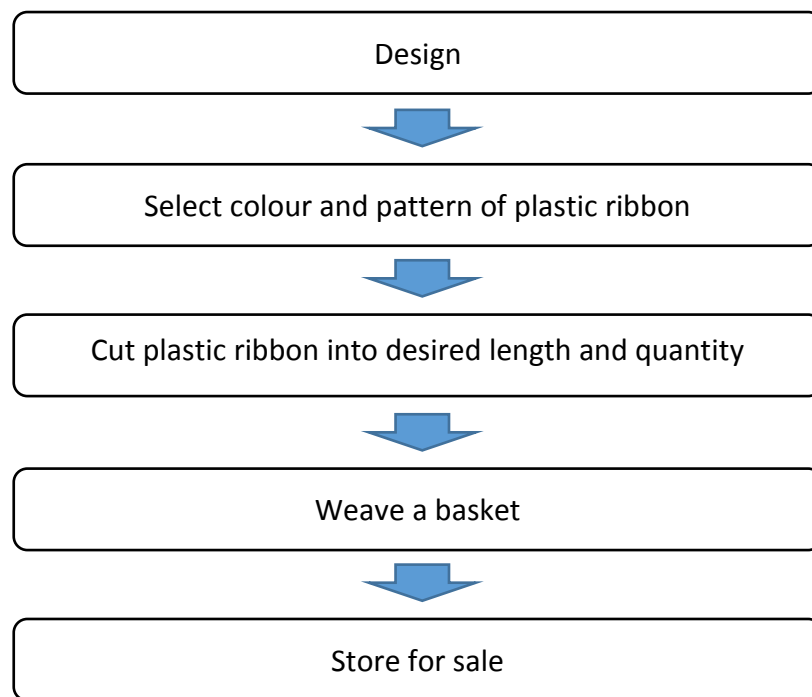
4.2.2.3 Product and Production

The production process of CEt2 is presented in Figure 4.8. It is derived from the researcher's observation in this CE.

Figure 4.8: Process to produce basketry from basket ribbons:

Mueang Khong Community Enterprise

Source: Researcher's data



As this CE was founded because they got funding from Mueang Khong Sub-district Municipality, they are not seriously concerned about making profit from selling products. It is true that most members joined this CE because they wanted to earn some extra income. However, enthusiasm and motivation for work may be less than in other CEs where members spend their own money to invest. In addition, CEt2 does not have a defined distribution channel and customer target group because it is a newcomer in

this business. These are some of the reasons why CEt2 does not have production targets. There is no production plan set either. Members will produce plastic baskets only if they have free time; they will take materials such as plastic ribbons to make baskets at their houses (see Figure 4.9). Finished baskets will then be collected from the chairwoman's house to be delivered for sale. CEt2 does not have a brand image for their plastic basketry. Members do not get a daily wage for making baskets, but they will receive money as a sales percentage. If a member's product is sold, that member will get twenty percent of the selling price. If a product sold belongs to the member who takes care of the sales, he will get thirty percent. Revenue from the sale, after deduction for labour, will be collected to purchase raw materials for the next time.

Figure 4.9: Production Place and Products in Process

Source: Researcher's photos



4.2.2.4 Customers and Distribution

Since CEt2 has been set up for just over a year, and members have considered this job as a hobby or a part-time job, they do not strive to find a market for their products. Their baskets will be shown at one member's house, which is located near the district hospital, which is a crowded area, and is the house of the man who takes care of product sales. Customers can choose from an existing product or order a new one with the model and colour they prefer. In addition to using this member's house as a shop, CEt2 occasionally brings baskets to sell in fairs or events arranged in the district by local government agencies. CEt2 does not have to pay the rent for these events because it is supported by the sub-district municipality.

4.2.3 General Information of Tha Ton Chan Community Enterprise

4.2.3.1 Background Information

Tha Ton Chan Community Enterprise (CEt3) is located in Lad Bua Khao Sub-District, Ban Pong District, Ratchaburi Province. CEt3 products are chilli and curry paste (see Figure 4.10). Chilli paste was the first product made by this CE and curry paste was added to the production line later by the group because most households use it in cooking; while chilli paste is only occasionally used. When the group was first founded, there was a discussion among the members about the CE's products. They finally chose to produce chilli paste for three reasons. First, chilli paste is a traditional food with which Thai people are familiar and commonly eat. Second, the raw material used to make pastes, containing various herbs such as galangal and lemon grass, can be obtained in the community. Lastly, members have experience in making chilli paste.

Figure 4.10: CEt3's Products_Chilli and Curry Paste

Source: Researcher's photos



CEt3 was founded in 2001 by a group of ten unemployed women in order to generate extra income and use their free time for benefit. When CEt3 was first founded, most members were 60-70 years old, except the chairwoman who was around 38 years old. The chairwoman is the only person who holds a Bachelor's degree, while other members are primary school graduates. At present, CEt3 has five members who remain in the production team. One member left the group to run her own business producing chilli paste after being a group member for years, while other, elderly members passed away.

4.2.3.2 Organisational Structure and Management

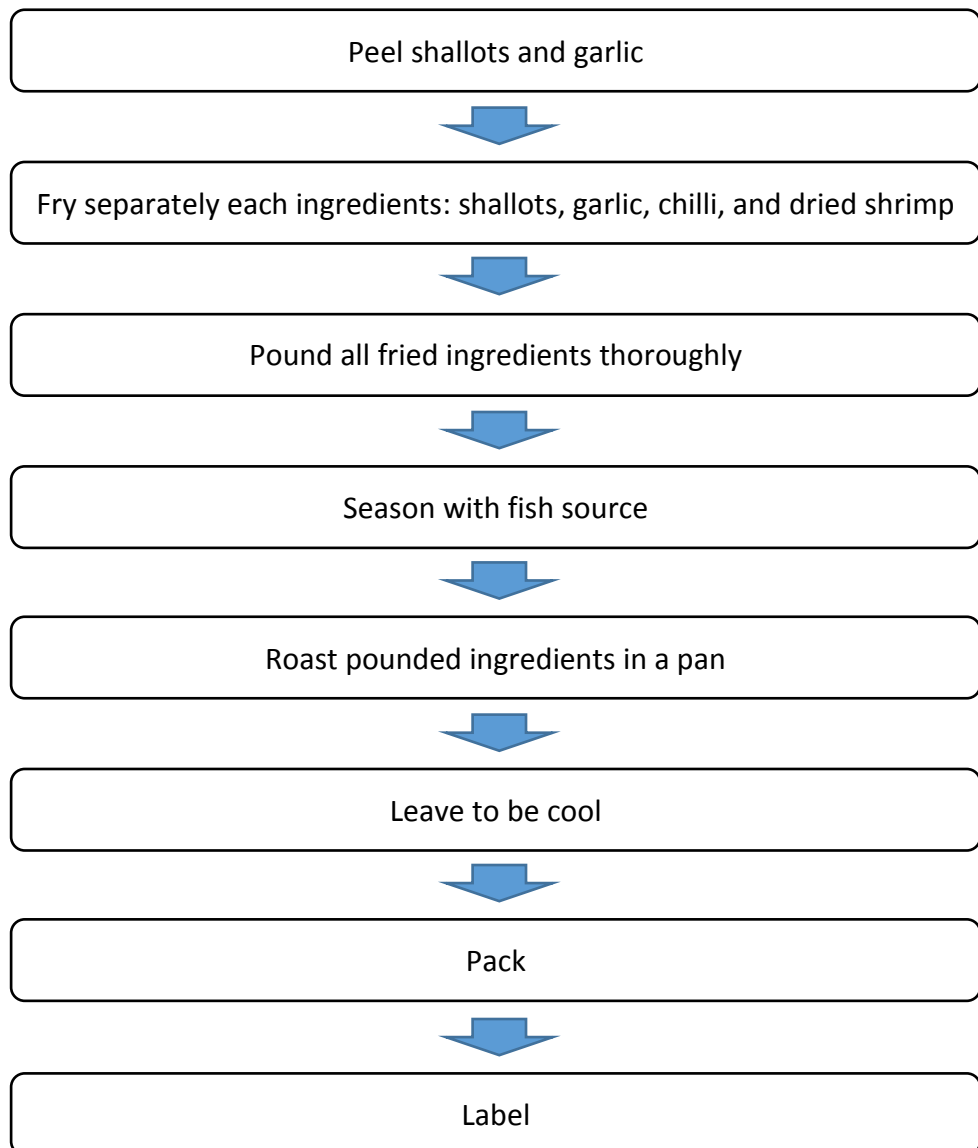
CEt3 does not have a formal organisational structure. The only defined position is the chair's, who takes responsibility for every matter from raw material procurement, production, marketing and distribution. The chairwoman was the key person in the foundation of CEt3. In managing this CE, the chairwoman performs like a business owner, while the other members are her employees. These members are not shareholders in the business; they get wages for working in this CE.

4.2.3.3 Product and Production

The production process of CEt3 is presented in Figure 4.11. It is derived from the researcher's observation in this CE.

Figure 4.11: Process to produce chilli paste: Tha Ton Chan Community Enterprise

Source: Researcher's data



Generally, CEt3 does not have a long-term production plan. The chairwoman is the person who determines the type and quantity of product to be produced each time. This decision depends on the inventory and the orders received. Occasionally, the chairwoman has to set a short-term production plan. For example, CEt3 got an order for 4,500 bottles of chilli paste from a company in the community. To be produced and finished by the deadline, which was twenty days, the chairwoman had to carefully plan the production because of the limitation in numbers and worker capacity.

The chairwoman hires members to prepare materials for producing chilli paste and curry paste. These jobs are removing the chilli calyx, peeling garlic and peeling shallots. Members who work in removing chilli calyx will be paid around one GBP for five kilogrammes of chilli; while members who work in peeling garlic or shallots will be paid around two GBP for five kilogrammes. When all the materials are prepared, the chairwoman will take responsibility for cooking the chilli paste or curry paste (see Figure 4.12).

Figure 4.12: Some Raw Materials and Parts of Production Process

Source: Researcher's photos



This CE has a brand image for their products (see Figure 4.13) which 'Duangkamol' and derives from the chairwoman's name. CEt3 obtained support from a government agency to create their brand and logo and to print the sticker logo for the first time. After the first set of logo stickers was used up, CEt3 had to pay for the logo printing itself.

Figure 4.13: Logo 'Duangkamol' of CEt3

Source: Researcher's photos



4.2.3.4 Customers and Distribution

There are two regular locations for the product distribution. The first is the chairwoman's house which is located next to the CEt3 production site (see Figure 4.14). The second is the Sunday market in the village. Most of CEt3's customers are people from the village and nearby communities. CEt3 also has a regular customer, a restaurant owner in northern Thailand, who always buys curry paste from this CE for cooking in his restaurant. Moreover, there are some occasions when CEt3 gets orders from irregular customers such as factories or companies in the neighbourhood to produce chilli paste to give to their customers as a souvenir. The chairwoman says that she uses her personal Facebook and Line applications to promote CEt3 products to her friends. When the researcher visited her Facebook, it was found that she used 'Nam Prig Duangkamol, Ban Pong, Ratchaburi' as her Facebook name. The word 'Nam Prig' means chilli or curry paste. She also uses photos of CEt3's products as a cover picture. However, the contents on her Facebook wall are her personal details, not the enterprise's. This means she does not fully use this channel for advertising. Excluding her personal Facebook, it

may be said that CEt3 does not formally advertise itself on any channel, but it draws new customers by word of mouth.

Figure 4.14: Production and Distribution Site

Source: Researcher's photos



4.2.4 General Information about Nopphitam Community Enterprise

4.2.4.1 Background Information

Nopphitam Community Enterprise (CEt4) is located in Nopphitam Sub-District, Nopphitam District, Nakhon Si Thammarat Province. CEt4's product is wooden furniture made from old roots or stumps which have been excavated from the land. These were roots or stumps left in the land from cut trees, and are big enough to make several types of furniture such as beds, tables and chairs (see Figure 4.15).

Figure 4.15: CEt4's Products_ Wooden Furniture

Source: Researcher's photos



CEt4 was founded in 2008 by a man interested in wooden furniture-making. Before setting up this CE, he made wooden furniture for his own use as a hobby. This was because he liked wooden furniture but he could not afford it. Later, he decided he would like to earn extra income, so he decided to turn this work into a business. The other advantage of being a community enterprise is that it helps to reduce any difficulties or

problems with government officials about possessing a large amount of wood. After gaining support from government officers in the Nopphitam District Office, he registered his business as a community enterprise.

This CE has seven members, following the regulations that govern registering as a community enterprise in Thailand. The first member is the man mentioned above, who is the founder and the chairman of this CE. Another four members are his friend, his son and his nephews. The others are teachers in the community, who do not work in the operational unit of CEt4. They serve as advisers if the chairman needs comments or suggestions. The member who is the chairman's friend has not worked in the operational unit for a while because he has to take care of his durian orchard. Therefore, there are only four members, including the chairman, who work in CEt4's manufacturing. The chairman is around 50 years old while the other three members, who are his son and nephews, are 22-30 years old.

4.2.4.2 Organisational Structure and Management

There is no formal organisational structure in CEt4. There is only one position, the chairman's, which is responsible for managing all the functions in this CE. He controls every step of the production process starting from finding raw materials to designing the furniture, controlling production and selling. CEt4 is similar to CEt3 in the sense that the chairman, who is the founder of this CE, is like a business owner, while other members are his employees. Capital or money used in the CE operation belongs to the chairman. Members do not have to invest in shares; they will be paid wages for working in this CE. On average, each member gets 10,000 Baht (around 200 GBP) per month.

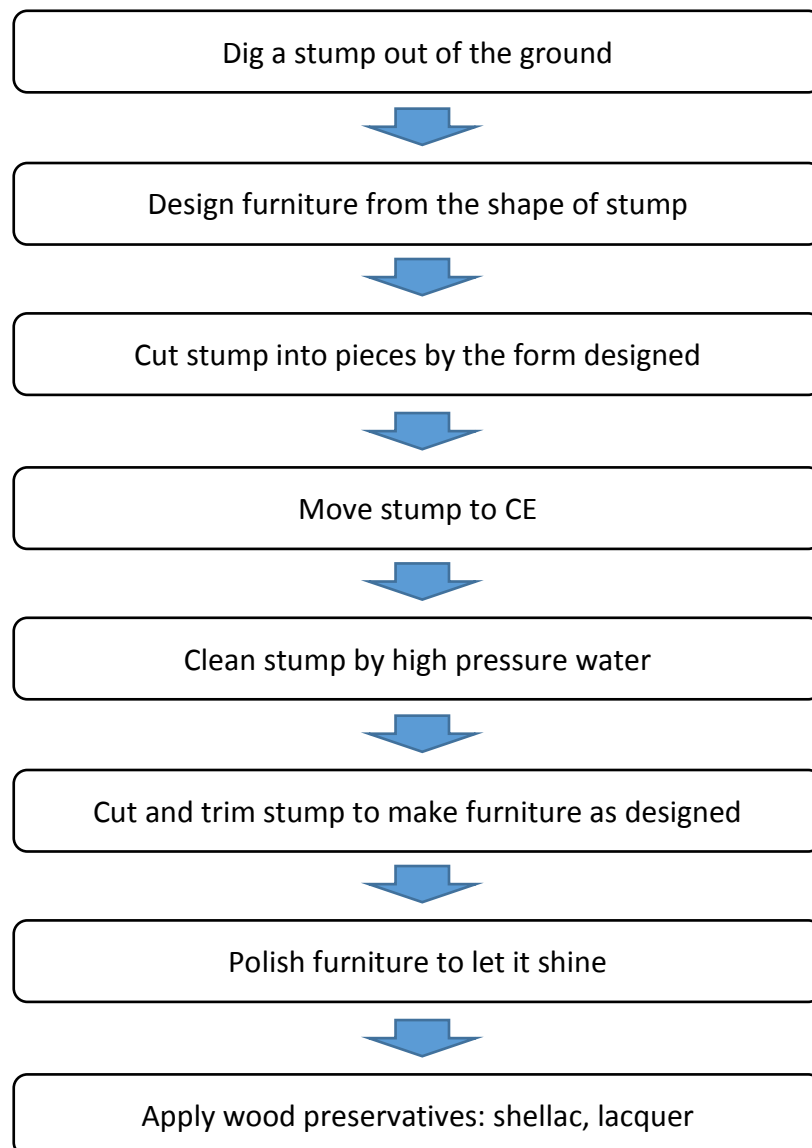
4.2.4.3 Product and Production

The production process of CEt4 is presented in Figure 4.16. It is derived from the researcher's observation in this CE.

Figure 4.16: Process to produce wooden furniture from stumps:

Nopphitam Community Enterprise

Source: Researcher's data



There is no production plan at CEt4. The production depends on the availability of old roots or stumps, which is the key material. The type and quantity of the wooden furniture cannot be set in advance either, because the roots derived are not the same shape and size each time (see Figure 4.17).

Figure 4.17: Old Roots and Stumps Excavated from the Land

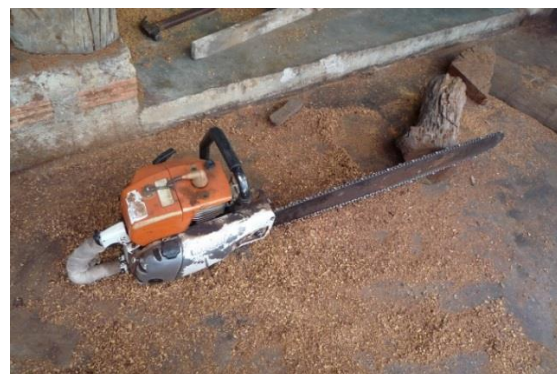
Source: Researcher's photos



The chairman will be able to estimate the type and quantity of furniture when he sees the root. In the production process, after the chairman designs the wooden furniture from the root's shape, three members will be hired to work as carpenters to make the furniture from that root (see Figure 4.18). The chairman will then monitor and control the quality of the furniture. CEt4 does not have a logo or brand image for its furniture.

Figure 4.18: Production Site, Tools and Parts of Production Process

Source: Researcher's photos



In addition to making wooden furniture from old roots or stumps, members of CEt4 are occasionally employed to do woodwork such as building a pavilion for a front yard, or making a swing for children, as requested by customers. There are some occasions when customers hire CEt4 to make wooden furniture from wood provided by such customers.

4.2.4.4 Customers and Distribution

All the furniture is displayed at CEt4's production site which is located in the same area of the chairman's house (see Figure 4.19). Most customers know this CE through word of mouth. Sometimes custom comes from people driving past the CE. Since wooden furniture can be used for a long time, most customers do not make repeat purchases; therefore, new customers are important for a business like this. However, CEt4 does not advertise through any channel, but depends on word-of-mouth marketing. Most customers are public officers such as doctors, teachers, soldiers and policemen. That CEt4 has a number of customers who are doctors may be because doctors can afford wooden furniture, which is expensive. For example, a set of living room furniture cost at least 20,000 Baht (around 400 GBP). However, the price will depend on the size and style of the furniture.

Figure 4.19: Displayed Products

Source: Researcher's photos



Now the four CEs have been introduced, the way the CEs have implemented their functions by focusing on the five VSM systems is analysed in the following section.

4.3 VSM Comparison between the CEs

As illustrated in Figure 2.3 (see Section 2.12) it is necessary to diagnose the VSM structure in these CEs in order to answer the research question about the kinds of knowledge that CEs need to remain viable. Therefore, this section presents a VSM diagnosis of the CEs in order to analyse what tasks they do and how they complete them in each function. The section then investigates the knowledge currently used by the CEs and the management of such knowledge in Section 4.4. Considering the way the CEs have implemented their functions using the VSM categories, the five systems can be described as follows.

4.3.1 System 1

System 1 (S1) represents the primary activities or production activities (Espinosa and Walker, 2011) of each CE. All the CEs have an explicit production process: CE1

produces fermented pork or sour pork; CEt2 produces plastic basketry from plastic ribbons; CEt3 produces chilli paste and curry paste; and CEt4 makes wooden furniture from old tree roots or stumps which have been excavated from the land. Details on the production processes of each CEt, from CEt1 to CEt4, are presented in Sections 4.2.1.3, 4.2.2.3, 4.2.3.3, and 4.2.4.3, respectively.

The key external stakeholders of these CEts are their suppliers and customers, except for CEt4 for which government officers take responsibility for permission to transfer wood, and are therefore involved in its S1. This is because wood transferral cannot be done arbitrarily. All the CEts have occasionally suffered serious problems, or encountered too much complexity, in their relationships with suppliers. With CEt1 and CEt3, which buy ingredients from suppliers within their community or their province, a problem that sometimes occurs concerns the quality of ingredients. In this case, CEt1's chairman can easily check the quality of the raw materials before purchasing, because each material purchase is not a large transaction. If she is not satisfied with the quality of the raw materials provided by a supplier, she can immediately change to another supplier. For CEt3, sometimes a supplier delivers low quality products such as nearly rotten chilli. In this case, the chairman needs to make an oral agreement with the supplier about the standard of material she wants. If the problem occurs again, she will move to another supplier. Changing a supplier is not a major issue because the raw materials used in the production are easy to find because there are a number of ingredients suppliers in the same province. In addition, the volume that she purchases each time is not small, which gives her the power to negotiate with suppliers. Regarding CEt2, there is only one supplier: a wholesaler located in a nearby province. The only

difficulty in purchasing materials from this supplier is traveling to that shop. The CEt2's chairwoman has solved this problem by asking for a car as support from the sub-district municipality. CEt4 has a different problem with their raw materials. Since the main raw material to make the wooden furniture is old tree roots or stumps which have been excavated from the land, it occasionally happens that CEt4 is faced with a scarcity of wood stumps. The CE chairman solves this problem by trying to identify new landowners who would like old tree roots or stumps removed from their land.

In dealing with their customers, none of the CEts have found severe issues comparable to the issues they face in dealing with their suppliers. Customers of all the CEts are retail customers because they are very small enterprises. For CEt1 and CEt4, which produce food, most of their customers are loyal customers living in the community, while most of CEt2's and CEt4's customers are irregular because of the characteristics of their products. Plastic baskets and wooden furniture are strong, and are not products that need to be purchased frequently. It is normal that sometimes these CEs receive comments or requests from their customers. However, such comments or requests are considered as suggestions or ways for improvement rather than problems or difficulty. The only difficulty related to customers found in the S1 of CEt3 is that they cannot accept large volume orders from customers. This is because their products are hand-made, not using machines, and they do not have enough workers. However, this problem does not occur frequently because it is very rare for a customer to place a very large order. Considering problem-solving when dealing with the external environment, it is found that the chair of each CEt is the person who takes responsibility for this task.

In all CEs, both the chair and CE members work in production. In CE1 and CE2, there is no authorised or assigned person to monitor the production. The difference between CE1 and CE2 is that everyone in CE1 works together on the production site, while each member of CE2 works individually at home. This results in differences in monitoring and controlling product quality. In CE1, everyone working in S1 encourages collective responsibility for monitoring and controlling product quality. If someone sees something wrong in the production, that may affect the quality of fermented pork, she will raise the issue and the members involved in that process will try to solve the problem. In CE2, each member controls the quality of products themselves because they take materials to work at home. The appearance and refinement of the basket dictate whether the product might be sold. Therefore, each member has to do his/her best to increase the chances of selling their products as they will get a percentage of the sales. This is the way CE2 members control their product quality. That members of CE1 and CE2 can take and complete the task, can be considered as the basis of self-organisation. Therefore, the way that knowledge is distributed in these CEs is interesting because it allows each person to be knowledgeable about a task. Details of knowledge sharing in CEs are presented below in Section 4.4.2.2. One thing that may result from operating on the basis of self-organisation is that these CEs have less need for structure. This may explain why their meta-systemic functions (S2-S5), which are discussed in the next sections, are apparently underdeveloped. Looking at CE3 and CE4, in contrast to CE1 and CE2, the chair is the person who monitors and controls the production. In addition, the chair is the key person in their CE's production: the CE3 chairwoman is the only person who cooks chilli/curry paste, while the CE4 chairman is the only person in his CE who can design wooden furniture from old roots

and stumps. This means the production in CEt3 and CEt4 cannot be continued without their chair. According to Beer (1981, 1985), S1 should have autonomy unless there is a risk that it may affect the whole CE. Thus, the fact that the chairmen who are also responsible for S3 operations interferes with S1 limits S1's autonomy. Moreover, the fact that CEt3 and CEt4 lack the features of being self-organised could affect the viability of S1, and this issue might extend to the whole CE.

4.3.2 System 2

System 2 (S2) involves reducing oscillations in the operation unit, cutting down the variety of its operational interactions (Beer, 1979) and handling conflicts of interest within S1 in an organisation (Espinosa and Walker, 2011). As all of the CEts have fewer than five people working in the only S1 in the operation unit, conflicts of interest or resource competition rarely happens. Moreover, the fact that these CEts focus on production, rather than administration, makes it difficult to find a record of day-to-day operations. However, income and expenditure accounts are the basic records of most of the CEts, whilst meeting minutes form another kind of document that can be found within some of the CEts from time to time. CEt2 also maintains a record of the number of ribbons taken and products completed by each member. This record can be considered as a tool to prevent conflict between members of the CE. Without this record, members may argue about items and the quantity of products which are produced by each individual which is related to the percentage of sales for which each member will be paid. In addition, this record can be used as an inventory of the materials and products of this CEt. Although information about stock, or an inventory of materials and products, is useful in making decision about purchasing and producing

for the CEts, most of the CEts do not have this record in written form. As already mentioned, among the records that the CEts do have, most are recorded manually. Only CEt3 uses a computer program to collect and manage information. This is quite different from the other CEts. This may be because members of the other CEts are primary school graduates, while the chairwoman of CEt3 graduated with a Bachelor's degree and has work experience in organisations; consequently, she is familiar with IT.

At CEt1, one problem that may affect the stability of the operational unit is the decline in members. As there are fewer members left in this CE, the production capacity is inevitably affected. The problem of labour shortage get worse when the production depends on the availability of the chairwoman, as described in Section 4.2.1.3. CEt1 cannot solve this problem by finding people to add to the production team, so it choose to adapt to changing circumstances by reducing the volume of production and moving production to the day when members are available.

4.3.3 System 3

Seeking synergies between S1 in the operation unit is a key function of System 3 (S3) (Beer, 1979). Moreover, the accountability channel, resource bargain channel, and command channel (legal and corporate norms) are other channels that S3 uses to deal with the operation unit (Espinosa and Walker, 2011). As mentioned previously, all of the CEts in this study have only one S1; therefore, the synergy in each CE is considered in terms of its S1. Synergy, here considered the interaction of two or more units to produce a combined result greater than the sum of each unit, is likely be created more

easily in one S1 which has fewer than five people. This is because each person can complement each other by sharing resources and knowledge more easily.

Regarding accountability, none of the CEts have any formal performance assessment, at either team or individual level. As none of the CEts studied have production plans, team performance cannot be measured. Even an informal performance assessment is lacking in CEt1 and CEt2 because of the way they work and monitor their production, as explained previously in Section 4.3.1. However, some informal performance assessment - talking about an individual's performance - can be found occasionally in CEt3 and CEt4, CEs in which the chair plays a role in monitoring and controlling the production and determining satisfaction with his/her worker's performance. This assessment intended to develop performance rather than be linked to wages.

In general, the result of the performance assessment can be linked to the resource bargaining channel and resource allocation. However, this does not happen in all of the CEts because they do not have formal performance assessment, as mentioned previously. They normally produce their products only when the products are almost sold out, when they get an order from customers, or when they have free time. Regarding the allocation of resources such as people and money in the production process, all the members of CEt1 and CEt2 allocate resources, whereas in CEt3 and CEt4 this task is done by the CE chair. However, it is not necessary for CEt1 or CEt2 to have a person taking responsibility for resources allocation because there are only a few people involved in production and these work as a team without a clear division of responsibilities. Regarding the command channel, which includes the legal and

corporate norms, the rules and norms in all the CEts studied are normally presented informally by word of mouth. If there is any violation, which does not normally happen, the chair will talk to individuals to address it.

Considering the functions of S3, it is evident that the S3 jobs are done by all members in CEt1 and CEt2, and by the CE chair in CEt3 and CEt4.

4.3.4 System 3*

System 3* (S3*) is required as an alternative and internal channel to collect data directly from S1 in order to enable S3 to work more effectively in monitoring and regulating internal matters (Espinosa and Walker, 2011). In CEt1, since S1 and S3 are performed by the same people, it may be said that what happens in S1 is known as S3. However, informal monitoring in CEt1 is performed by colleagues who work together in the production process and automatically observe and help each other to control and monitor the quality of products. In CEt2, an informal monitoring mechanism to control the production may be not necessary because each member produces basketry at home and controls the quality of the products autonomously. Moreover, the percentage of the sales that each member will receive from selling their products is the key factor in controlling product quality as described in Section 4.3.1. In CEt3 and CEt4, the CE chair may sometimes 'walk the walk' to monitor production. In addition, being a small enterprise also means everyone in each CEt is familiar with the others, so they can talk together including with the chair. If there is a problem, or an issue in production, they can talk to their colleagues and the CE chair. Then the chair is able to handle such problems immediately.

4.3.5 System 4

System 4 (S4)'s tasks include scanning the external environment, looking for threats and opportunities, and creating plans to handle the new circumstances. These tasks are necessary to ensure long-term viability (Espinosa and Walker, 2011). None of the CEts have an official person or function to monitor the external environment in order to prepare for change. They focus mainly on production rather than on the changing external environment, trying to act for the best today rather than looking to the future. They do not have production or development plans, but focus on daily tasks, their target being to produce enough for sale. However, some of the CEts sometimes adapt their product to market demands that result from the external environment. For example, in April each year CEt1 increases the volume of fermented pork production due to Thailand's New Year festival when fermented pork is sold more than normally because customers buy it as a gift or souvenir. From time to time, CEt2 adjusts its product styles and patterns following customers' requests or recommendations. As well as being without a production plan or development plan, the CEts also lack a strategic development plan. They may need to grow the business, but limitations in resources such as the workforce, money, knowledge or willingness are obstacles to their development. Most of the CEts occasionally get information related to their businesses from local government agencies, in the form of government policies, training programmes and knowledge support. However, it may be said that the way the CEts receive information is a passive style.

That the CEts do not focus on S4 tasks may affect their learning because S4 is directly related to the learning of an organisation (Leonard, 2000). Furthermore, this may cause

a disadvantage in competition with others who produce the same products. Although most of the CEt chairmen recognise that there are a number of sellers, both large and small manufacturers located both inside and outside the province, most of them do not have a plan to perform benchmarking or compete with others because of the limitation in resources mentioned above.

Although most CEts do not formally perform S4 tasks in the organisational level, S4 implementation at the individual level can be found in some CEts. In CEt3, for example, the chairwoman has had a good response to opportunities offered by external environment such as training programmes arranged by government agencies. Since she has a good connection with local government agencies, she can easily and rapidly get useful information from them. Attending training programmes helps her to develop her knowledge and skills. Although some programmes are not directly associated with CEt3 production, it may be said that she can broaden her horizons by taking these opportunities. This is just an example for considering VSM at the individual level which is a lower level of recursion for VSM in CEs, the organisational level. To expand VSM implementation at the individual level, the researcher adds some details in Section 4.3.7.

4.3.6 System 5

The role of System 5 (S5) involves organisational closure, identity and ethos. S5 also takes responsibility for ultimate authority and overseeing the interaction between S3 and S4 (Espinosa and Walker, 2011). The ethos of each CEt is evident through the way S5 is performed. In CEt1 and CEt2, the S5 job is exercised by all members. For CEt3 and CEt4, on the contrary, the CE chair is the person who takes this role. That the ultimate

authority in CEt1 and CEt2 represents the views of all members may show that they are democratic organisations. The S5 role in monitoring the balance between S3 and S4, which is the main activity of S5, cannot be found in all of the CEts because they rarely focus on S4 as described in Section 4.3.5.

Regarding the setting of policies and regulations, all the CEts' S5s hardly use authorities in policies/regulations setting. That all the CEts focus on their production (S1), combined with the fact that S3 and S5 jobs in these CEts are taken by the same person/people, means most of the decisions concern matters in S1, which is actually the role of S3. If there is a policy or regulation setting, this will happen in a formal way: that is, a decision on the CE's identity often comes in the form of discussion and a decision by the CEt's members or CE chair, depending on who assumes this role in each CEt, as mentioned above. This may be because they all are very small CEs without a formal structure.

Considering S1-S5, it is found that all people including the chair and CE members in CEt1 and CEt2 work together in every system. The exception is the S2 job which is assigned to a member who takes responsibility in recording. This may be a reason that these CEts are less in need of structure. This also makes it difficult at times to identify under which function a task has been performed. For example, solving production problems could fall under the function of S1 or S3. However, successfully completing a task is likely to be more important than identifying which person did it, especially in a very small organisation like a CE. In CEt3 and CEt4, CE members only work in S1 while the chair works in S1-S5. That S2-S5 jobs are done by the same person/people in all the CEts may be a reason why their meta-systemic functions (S2-S5) are underdeveloped.

4.3.7 VSM Analysis at the Individual Level

As mentioned at the end of Section 4.3.5, this section presents some highlights regarding the VSM analysis at the individual level, in order to complement VSM analysis in CEs. As the VSM analysis at the individual level is not the aim of this study, this section only briefly introduces this level of analysis, to reveal possible future developments for this research project.

To analyse the individual level in CEs at the light of the VSM, the researcher set a question concerning a key task in each system as detailed as below.

System 1: What skills does a worker need to develop to better contribute to performing the primary tasks?

System 2: What skills and capabilities does a chair/staff need to prevent and deal with conflicts among other operators within the CE?

System 3: Does a chair/staff know how to promote synergies among the employees in CE? How to manage resources? And how to guarantee adherence to organisational norms and processes?

System 4: Is a chair/staff able to maintain an interest in exploring change and innovations in the external environment and to respond to these challenges?

System 5: Does a chair/staff know how to provide clear policies, strategies and a clear direction to the CE?

At the individual level, this type of analysis could be better done by analysing individual skills and capabilities from a particular person to develop certain types of roles. In order to explore this type of analysis, the researcher considers the chairwoman and a member of CEt2, using the same data collected by participant observation in CEt2. The answers to the questions from this particular role in this CE are presented in Table 4.1.

Table 4.1: VSM Analysis at Individual Level in CEts

VSM	Position	
	Chairwoman	Staff member
System 1	Basketry skill	Basketry skill
System 2	Communication skill	Communication skill
System 3	Yes	Yes
System 4	Yes	Yes
System 5	Evidence not found	Evidence not found

Table 4.1 reveals that basketry is a skill that is needed by both the chairwoman and staff members in System 1. As they are beginners in this job, it is useful, and helps them to better contribute to do the primary tasks, to have skills in producing more delicate patterns or a wide range of product. Regarding the question in System 2, to prevent and deal with conflicts among other operators within the CE, both the chairwoman and the staff need communication skills. As mentioned in Section 4.3.2, conflicts of interest, or

resource competition, rarely happens in CEt2 because the way CEt2 works is that each member brings materials home to work on. The conflict that may occur is the issue about compensation, because members will not receive a daily wage for making baskets, but they will receive money as a sales percentage. Therefore, clear guidelines and quality standards in producing the baskets, and clear communication and agreements on the conditions for receiving the sales percentage, need to be in place.

To support the answer in System 3's question, some evidence that shows that the chairwoman and the staff know how to promote synergies is the way they manage members to complete a basket. If a staff member cannot do a difficult part of the process of weaving a basket - such as a basket handle, - they will ask for help from other members who can do this better. Further evidence showing that the chairwoman is good in utilising existing resources around CE to its benefit is revealed in her asking for a driver and a car from a local government agency to go and buy materials in another province. Regarding the question about guaranteeing adherence to the organisational norms and process, no evidence has been found. This may be because they did not have clear norms or process at the time of the data collection.

Both the chairwoman and the staff are interested in developing their products by obtaining new ideas from other sources such as other sellers, customers and magazine. Although this is far from being innovative, this may be considered as an attempt to improve themselves by responding to the external environment. With regards to the last question, System 5, the researcher did not see any evidence during the data

collection period because they do not have clear policies, strategies or direction. However, the researcher believes that both the chairwoman and the staff can provide clear policies, strategies or direction to the CE, as they normally meet and talk with other in this small CE which has less than five members.

Considering VSM at the individual level allows the researcher to more precisely realise the skills and capabilities that would help in developing each system. Moreover, it shows that some systems, which are hard to find at the organisational level, can be found at the individual level. For example, System 4 which is the important function for learning and creating competitiveness, can be found in the chairwoman, though this function is not explicit in operating the CEt, as the example given in Section 4.3.5 shows.

The way the CEts implement their functions using the VSM categories has now been explained. In the next section, knowledge currently used in the CEts and the management of such knowledge are presented.

4.4 KM Comparison between CEts

In this section, knowledge currently used in implementing the CEts' functions using the VSM categories (System 1 - System 5) is first presented in subsection 4.4.1. Later, KM analysis is discussed in subsection 4.4.2.

4.4.1 Knowledge Currently Used in CEts

After diagnosing the five systems of the VSM in all the CEts under study, the knowledge currently used in these CEts can now be investigated. The knowledge currently used in each CEt is listed in Table 4.2 in order to compare the knowledge between each CEt. Later, in Table 4.3, the summary of the knowledge currently used in the CEts is presented.

Table 4.2: Knowledge Currently Used in Each CEt

VSM	Kinds of Knowledge			
	CEt1	CEt2	CEt3	CEt4
S1	- List of ingredients raw materials	- List of materials	- List of ingredients/raw materials	
	- Ingredients/raw materials' properties	- Materials' properties	- Ingredients/raw materials' properties	
	- Fermented pork recipe		- Chilli and curry paste recipes	
	- Fermented pork production methods	- How to weave basketry	- Chilli and curry paste production methods	- Furniture production methods
	- Standard of fermented pork	- Standard of baskets	- Standard of chilli and curry paste	- Criteria of furniture/furniture standard
		- Customers' needs		
				- Furniture design

VSM	Kinds of Knowledge			
	CEt1	CEt2	CEt3	CEt4
S1				- Carpentry
(cont.)	- Problems in production	- Problems in production		
S2	- Income and expenditure account recording	- Income and expenditure account recording	- Income and expenditure account recording	
		- Day-to-day stock/inventory management		
S3	- Raw materials' market	- Materials' market	- Raw materials' markets	- Sources of old roots and stumps
	- Raw materials' prices	- Materials' prices	- Raw materials' prices	- Materials' prices
	- How to select ingredients/raw materials		- How to select ingredients/raw material	

VSM	Kinds of Knowledge			
	CEt1	CEt2	CEt3	CEt4
S3 (cont.)	- Stock/inventory of materials and product	- Stock/inventory of materials and products	- Stock/inventory of raw materials and products	- Stock/inventory of materials
	- Fermented pork production methods	- Basketry production methods	- Chilli and curry paste production methods	- Furniture production methods
	- Target of each production		- Target of each production	
				- Law on timber transportation
	- Problems and needs of the management of S1	- Problems and needs of the management of S1	- Problems and needs of the management of S1	- Problems and needs of the management of S1
S4	- Market demands	- Customers' needs	- Market demands	-
S5	- CEt1's performance in terms of production and sales	- CEt2's performance in terms of production and sales	- CEt3's performance in terms of production and sales	- CEt4's performance in terms of production and sales

Table 4.2 reveals that the knowledge currently used in each function of each CEt is quite similar. This is particularly so for CEt1 and CEt3, which may be because they both produce food.

To perform the S1 tasks, all the CEts need knowledge of production, which covers various factors from ingredients/raw materials to the standard of product. CEts must know their lists of ingredients/raw materials and their properties, because the quality of raw materials affects the quality of the final product. Knowledge of production methods is inevitable for all the CEts and specific professional skills are needed in some; for example, carpentry skills are needed in CEt4 in order to produce wooden furniture. Moreover, knowledge of the criteria or required standards of product are needed, especially in CEt1 and CEt3 which produce food, in order to check the quality of their product in the production process. As they do not use machines in every step of production, the quality of the product in each production run may be varied. Knowing the criteria or required standards of products allows CEts to solve problems or improve their product before completing the production. CEt2 additionally needs to know the customers' needs because the products of the CEt2 are various in terms of sizes, patterns and styles of baskets. Understanding customers' requirements makes it easier to sell their products.

Regarding S2, knowledge about income and expenditures (accounting) is required in most CEts even if it is just for simple accounting. In CEt2, knowledge about day-to-day stock/inventory management is also required. To perform S3 tasks, knowledge about the production process of S1 is needed in all the CEts in order to make decisions concerning production. Knowledge of market, price, selection criteria, and stock of

materials are all needed in making decisions about material procurement. The CEt4 chairman needs to know about sources for old roots and stumps because this material is not available in a shop as general goods or other materials. The law on timber transportation is another kind of knowledge that is vital for CEt4 because it is involved in this business. Without this knowledge, the operations of CEt4 may break the law unintentionally. Stock of product and production targets are also needed in CEt1 and CEt3 in order to make decisions about production. Although CEt2 and CEt4 do not have production targets, they do need to know about their stock of the product to make decisions about production. In addition, knowledge about problems and needs of the management of S1 is necessary for all the CEts when making decisions concerning S1.

The knowledge required for S4 is difficult to identify because all the CEts rarely performs S4 tasks as described in Section 4.3.5. However, market demands or customers' needs may be considered as knowledge used in adjusting the production in some CEts. Although S5 roles are as hard to identify in the CEts as S4 tasks, information about the CEs' performance in terms of production and sales is required in order to set their position or determine their goal. For example, CEt1 decides not to expand its business because of shortages in the workforce.

After comparing the knowledge currently used in each function of each CEt, the summary of knowledge used in the CEts is illustrated in Table 4.3. This will then be used to compare with the summary of the knowledge used in the CEbs in Chapter 6 in order to identify the knowledge required for CE's viability.

Table 4.3: Summary of Knowledge Currently Used in CEs

VSM	Kinds of Knowledge
S1	<ul style="list-style-type: none"> - Production methods - Professional skills needed in production - Product recipe (for food CEs) - List of materials and their properties - Criteria of product/product standard - Customers' needs - Problems in production
S2	<ul style="list-style-type: none"> - Income and expenditure account recording - Day-to-day stock/inventory management
S3	<ul style="list-style-type: none"> - Production methods - Sources of materials/materials' market - Materials' price - Materials selection - Production target - Stock/inventory of materials - Stock/inventory of product - Law/regulation concern CEs' production - Problems and needs of the management of S1
S4	<ul style="list-style-type: none"> - Market demands - Customers' needs
S5	<ul style="list-style-type: none"> - CEt's performance in terms of production and sales

After the knowledge currently used in the CEts has been identified, the ways the CEts manage such knowledge are discussed next.

4.4.2 The Management of Knowledge Currently Used in CEts

As described in Section 4.3, all the CEts give priority to their production (S1) over the meta-systemic management (S2-S5). This makes them pay attention to knowledge concerned with production rather than knowledge on management matters. In managing their knowledge, none of the CEts formally employ KM in their enterprises. This may be because they are small enterprises with limited resources and they only focus on the production process. To discuss the ways these CEts manage their knowledge, however, the four main steps in the KM process are applied. They are knowledge generation, knowledge sharing, knowledge retention, and knowledge application.

4.4.2.1 Knowledge Generation

Knowledge generation represents the creation and the acquisition of knowledge both from inside the CE, by learning, and from outside by importing. Most of the CEts normally obtain knowledge from outside with such activities as attending training programmes arranged by government agencies. For example, CEt1 learned to produce fermented pork, CEt2 learned to produce basketry from plastic ribbons, and CEt3 learned about brand design and accounting. Some may get knowledge from outside by working with others with a certain expertise, such as the CEt4 chairman who acquired knowledge through learning by doing when he was working in another CE which made wooden furniture from old roots or stumps. Only a few of the CEts have generated knowledge from inside by learning, such as CEt3 in which the chairwoman acquired

knowledge in producing chilli paste through learning by doing after a considerable amount of trial and error. This is because she was not successful in producing chilli paste when following cookbook instructions, but then she applied her mother's recipe -which was appropriate for producing small amounts for family consumption- to producing commercially.

In addition to knowledge from training courses, there are some kinds of knowledge used in production that the CEt members gain from learning by doing, or developing from knowledge gained outside. For example, CEt1 members know about selecting raw materials and quality control of their product; CEt2 members apply basic knowledge for producing basketry from attending a two-day training course to produce various styles or different patterns of basketry; and the CEt4 chairman gets new ideas to develop their products by feedback from customers. However, knowledge generated inside by CEt members is considered a small part of all the knowledge they have.

According to Nonaka and Takeuchi (1995), an organisational structure that is suitable for the knowledge creation process should be flat, flexible, and suitable for communication between members. Individuals should also be allowed to have autonomy when circumstances permit. Considering CEt1-CEt4, they all have a flat organisational structures which support communications within the CEs. The difference is that CEt1 and CEt2 members have autonomy, while the authority in CEt3 and CEt4 belongs to the chair. This could indicate that these CEts rarely generate their knowledge, even if their organisational structures enables them to do so.

4.4.2.2 Knowledge Sharing

Knowledge sharing refers to the distribution or transmission of knowledge from one person to others. As mentioned, all the CEs focus on knowledge concerning production, so knowledge shared with other members within each CE is about production. This sharing occurred most often at the time of the CEs' foundation. When all the members can do their jobs properly, this sharing does not often happen again. The serious coaching or sharing of knowledge in the production process may occur if one of the CEs recruits a new member. However, there are no new members in these CEs; therefore, it is difficult to find evidence of knowledge sharing in these CEs. In addition, CEs such as CE1 refuse to share knowledge with outsiders about their production, especially their recipe, because they do not want to let others know their recipe and become competitors.

In this regard, CE3 is different from the other CEs. Knowledge about the production and product recipes are not shared with members in this CE because the chairwoman is afraid that a trained member will become her competitor. In the past, the chairwoman trained a member until she was able to produce the same quality of chilli paste as the chairwoman; later, that member resigned from CE3 to produce her own brand of chilli paste. At present, it seems that this ex-member is a competitor of CE3 because she sells the same products, with the same quality, in the same area. This is why the chairwoman no longer shares her knowledge of producing chilli paste with other members. She is the key person in producing chilli and curry paste while other members are only employed to prepare ingredients, such as peeling garlic and shallots. However, the chairwoman is occasionally invited to be a trainer for short-term

vocational training courses. In this situation, she will share all her knowledge and experience in producing chilli paste to the participants. She explains that participants cannot produce the same quality chilli paste as her by learning for one day. In other words, it takes time to accumulate experience in cooking chilli paste.

Considering the knowledge sharing in CEt3, this corresponds to Lim and Klobas (2000), observation that in some small organisations where power and knowledge is tightly controlled by the owner, knowledge sharing/transfer tends to be limited to the owner's domain. Employees' roles in sharing knowledge in such organisations tend to be limited as well. However, the limitation in knowledge sharing/transfer in small organisations may not have a serious effect on such organisations, because it is easier for owners to become fully involved with every aspect of the enterprise.

Although the limitations in knowledge sharing in small organisations may not seriously affect the organisation, as is argued by Lim and Klobas (2000), the different levels of knowledge sharing within each CEt may affect their ability to operate as a self-organisation, which is one condition contributing to CE viability. That CEt1 and CEt2 members share knowledge with each other allows all the members to be able to assume and complete tasks, as mentioned in Section 4.3.1. This means that, despite the absence of any member, the others can produce the CE's product. In CEt3, on the contrary, the production cannot be completed if the chairwoman is absent. The survival of CEt3 then depends solely on the chairwoman. The condition of CEt4 as a self-organisation lies between CEt1/CEt2 and CEt3: the CEt4 chairman shares knowledge with all the members working in S1 and they can work on their own. At present, however, they cannot design furniture as the chairman does. It may take time to gain enough

experience in this task: therefore, the chairman plays a significant role in the CEt4's viability.

Most of the knowledge currently used in all the CEts, as presented in Section 4.4.1, is tacit knowledge - knowledge that is rooted in individuals' experiences and actions (Nonaka, 1994). The way they share their tacit knowledge is through telling, teaching and coaching. Working together in production with other members of the CEt can also enable knowledge sharing within the group. This is because members can learn tips and tricks from colleagues in production and then apply these in performing their jobs. According to Grant (1996), tacit knowledge transfer between individuals is slow, costly and uncertain. Although people can gain more knowledge from explicit knowledge, rather than from tacit knowledge (Polyani, 1975, cited in Alavi and Leidner, 2001), typical CEs hardly ever transform their tacit knowledge into an explicit form. This may be because such a transformation creates difficulties and complications for them in terms of financial costs, manpower and time. In addition, they do not realise the necessity of explicit knowledge in knowledge sharing because knowledge sharing does not happen consistently in the CE.

4.4.2.3 Knowledge Retention

Knowledge retention stands for the process of keeping or storing existing knowledge in order to make it easy to access and reuse. Most of the knowledge in all the CEts is in the form of tacit knowledge embedded in people. In CEt1, CEt2 and CEt4, knowledge about their production is embedded in all the members while knowledge about management is embedded in the CE's chair. In CEt3, knowledge about both production and management are embedded in the chairwoman. The retention of explicit

knowledge - the knowledge presented in symbolic form (Nonaka, 1994) - is scarcely found in the CEs. Most of the CEs record only some important matters, especially money matters such as income and expenditure accounts (CEt1-CEt3), or record the amount of ribbon taken and products completed by each member (CEt2). In addition, CEt1 and CEt2 record meeting minutes from time to time. CEt3 is the only CE that has explicit knowledge about production. The amount of each ingredient used in producing chilli and curry paste was recorded in order to produce the same quality products every time. However, the way to cook chilli and curry paste is not recorded. CEt3 is also the only CE that uses a computer program to record their explicit knowledge, while other CEs record manually as explained in Section 4.3.2.

4.4.2.4 Knowledge Application

Knowledge application means the process of using existing knowledge in working or solving problems. The CEs' members apply their knowledge and experience, which is tacit knowledge, in the production process, while the CE chairmen apply their knowledge and experience in both production and CE management. Applying explicit knowledge rarely occurs in most CEs because they hardly retain their knowledge in an explicit form, as explained in Section 4.4.2.3. A few pieces of evidences have been found about the application of explicit knowledge using the records of individual products in paying sales percentages in CEt2, and using the chilli paste recipe in production in CEt3. Although some CEs have minutes from their meetings, they have hardly brought them to apply to running the enterprise. This may be because these CEs are small enterprises which are not complicated to operate and manage: working, or making decisions, can be done without supporting documents or detailed information.

The exploration knowledge currently used in CEs, and the ways they manage such knowledge, is contained in the CE level study in the first part of the conceptual framework (see Figure 2.3, Section 2.12). The second part, the community level, which is the matter of collaborative learning, is discussed in the next section.

4.5 Learning and Collaborative Learning Comparison between CEs

As discussed in Section 2.12, the viability of a CE is not only the result of its internal management, but also the result of the external environment as the CE is a subsystem in the bigger system, which is the community. Since learning is vital for CE viability, (Phongphit, 2005a, 2009) and one can learn more effectively by collaborating with others in order to learn from others' abilities and competencies (Bångens and Araujo, 2002), a study of the collaborative learning between CEs and their communities is needed. According to Selnes and Sallis (2003), knowledge sharing is necessary for collaborative learning. Thus, this section focuses on knowledge sharing between CEs and other groups in the community as a way to improve their collaborative learning and their viability as a community.

However, to study collaborative learning in the community in which the CE is located, learning in the CE is examined first. This is because learning at the community level will not occur unless it has happened at the organisational level, which means within CEs (Beesley, 2004). Therefore, the next two sections deal with Learning in CEs and Collaborative Learning between CEs and Their Communities.

4.5.1 Learning in CEs

Most of the learning in CEt1-CEt4 happened at the time of their foundation, when CE members had to learn not only the way to produce a quality product, but also the ways to operate and manage an enterprise. However, as they normally focused on production rather than management, as mentioned above, learning about production is more obvious than learning about operation and management. It may be said that the learning curve of most CEs was high in the first few years, compared with subsequent years because members had already learned the new things that they needed to know for production and running the enterprise. Later, learning new things rarely happens in such CEs because producing products and operating CEs can be done as usual drawing on the CEs members' experience. However, learning about general matters may occasionally occur when they are trying to solve their problems: for example, CEt1 learned to reduce production costs by redesigning product packaging.

Learning in all the CEs normally occurs when they need to solve problems, improve the production process, improve their performance or respond to customers' requirements. Such learning can be considered maintenance learning, which is learning that involves finding better ways to do jobs (Botkin et al., 1979), and adaptive/survival learning, which is learning from experience to provide the appropriate reaction to situations (Senge, 1997). These types of learning are common in characters with single-loop learning (Argyris and Schön, 1978) and instrumental learning (Senge and Fulmer, 1993) as summarised in Section 2.5.1. This group of learning types is important and necessary for organisations (Senge, 1997) in order to get everyday jobs done, so it is appropriate for routine jobs (Argyris, 1993).

As mentioned previously, in Section 4.4.2.1, most of the CEts' members attended training courses and workshops arranged by government agencies. This allowed them to learn how to produce/improve their products and operations. There were a few courses that CEts members requested for support from local government agencies, such as the fermented pork production course requested by the CEt1 members. Most of the training courses, on the contrary, were offered by local government agencies who wanted to support the CEs in their responsibilities. This shows that most of the learning by training in the CEts is generated by others, not the CEts themselves.

Regarding the key factors for supporting learning in the CEts, the chair and members of each CEt give various opinions. In CEt1, they agree that working together in production with other members can enable learning within the group, because individuals can observe others and apply what they see to improve their own work. Moreover, awareness and alertness to information from government agencies is another factor to support learning for CEt1. As most members of this CE are rather old and lack higher education, searching for information by themselves is quite difficult. Thus, information from government agencies is important for their learning. The chairwoman admits that key factors often mentioned for supporting learning are hardly found at present because there are only three members remaining and the production processes are the same.

In CEt2, they agree with CEt1 that working with other members can support learning because a member can ask for help, suggestions and comments on basket production from other members. However, there is a difference between CEt1 and CEt2, which is that learning about production in CEt1 finished within the first year of its foundation

because all members can produce fermented pork. On the other hand, learning about production in CEt2 can occur at any time, as long as any member is trying to produce a new product or new style of basket. In addition to working together with colleagues, the requirements from customers are another key factor that helps to stimulate learning in this CE. This is because CEt2 members have to find ways to produce what customers require. Although these key factors to support learning can be found in CEt2, learning in CEt2 happens very rarely. This is both because members produce baskets when they have free time, but also because they do not expect their main income from this work, which means each member does not focus on production. Enthusiasm in acquiring knowledge and learning is also small.

In the view of CEt3's chairwoman, the key factor to support learning in her CE are the problems in producing and operating. Learning occurs when these problems have to be solved. For example, she had to learn to produce various kinds of chilli paste in order to meet customers' needs. The CEt4 chairman indicates two key factors to support learning in the CE, namely trainers' willingness to teach and the learners' willingness to learn. This is consistent with Zhang et al. (2003) and Wu and Lin (2013) observations about the willingness of knowledge senders. In this case, the chairman -who is a knowledge sender- is willing to share his knowledge and experience with the learners because they are his son and nephews. Kinship is an important factor in the willingness to share knowledge. According to Cabrera and Cabrera (2002), positive interpersonal relationships can support the sharing of knowledge. Kinship or relatives can be considered as a kind of positive relationship. The willingness to learn, or the curiosity of the learners, is also important for learning. In this case, for example, if his son or

nephews do not want to learn carpentry, it is useless for the chairman to train them. It is quite obvious that the willingness of the knowledge sender and the willingness to learn can be found in this CE.

Examining learning in CEs, it can be said that most learning happened at the time of their foundation and concerned their production process. Such learning is mainly caused by the attempt to solve problems, improve the production process, increase productivity, or meet the needs of customers. In the next section, collaborative learning between CEs and their communities is investigated.

4.5.2 Collaborative Learning between CEs and Their Communities

To examine collaborative learning between CEs and their communities, four groups in the community which are directly correlated with CEs are highlighted. As described in the conceptual framework presented in Section 2.12, they are the local food/raw material providers, community members, other CEs and local government agencies.

Most CEs purchase some, or all, of their raw materials from local food/raw material providers and sell their products to community members. It is only CE2 which purchases materials for producing ribbon plastic basketry from a nearby province because there is no shop selling these materials in their community. As mentioned in Section 4.2.4.4, it is also only CE4 that has customers outside of the community, which is because of the characteristics and the price of the CE4 product. Since each CE is a very small enterprise, with limited production capacity, the quantity of raw materials purchased from suppliers for each order is not great. Then, for CEs contacting

suppliers/local providers is as the case with normal customers. There is no knowledge sharing in a way to improve the collaborative learning between CEts and local suppliers. This is also the case with customers who buy products from CEts, as they normally buy a small amount of the product. Information-sharing between CEts and their customers may happen in the form of sellers providing information to customers, and customers providing feedback or comments to sellers. However, this cannot be considered as knowledge sharing in the way of improving the collaborative learning between CEts and customers.

Regarding community members, it is sometimes the case that CEts have a chance to share their knowledge and experience with educational institutions. For example, schools and colleges in the community and areas near CEt4 occasionally arrange a study trip to visit this CE for a few hours. Although this sharing cannot include all the details of making wooden furniture, because of the time limitations, students have the opportunity to learn from CEt4's sharing. This sharing may be considered CEt4's involvement in promoting collaborative learning in the community.

Considering the interaction between the CEts and other CEs in their communities, it can be said that most of the CEts rarely share their knowledge with other CEs. This is because some CEts, such as CEt1 and CEt4, do not want a competitor in the same area, as was mentioned in Section 4.4.2.2. Another reason is that most CEts rarely have the opportunity to share knowledge with outsiders because they are too small to attract other CEs, or other groups, to visit. Furthermore, it seems that CEts are not active enough to find an opportunity to share their knowledge, both because they consider themselves as a 'normal' CE without any extraordinary experience or knowledge to

share with others and because they see no benefits of doing so. Although leaders of each CE in the community occasionally meet each other in a meeting concerning CE issues arranged by local government agencies, knowledge sharing between the CEs rarely happens in the meeting. If there is knowledge sharing between CEs in the community, what normally happens is that CEs receive assistance or information from other CEs that are larger or more successful, such as the best practice for CEs.

However, sometimes CEs have the opportunity to share their knowledge with other CEs in a way to improve their collaborative learning. For example, the CEt3 chairwoman advises other CEs on project writing for funding. As the local administrative unit, the Sub-District Administrative Organisation (SAO), allocates budgets for developing CEs and groups in its area, CEs or groups that want to obtain funding have to write a proposal to describe the purpose of the grant. The problem is that some CEs and groups in the community, whose members have only elementary education, have no knowledge of project writing so they fail to obtain funding from the SAO. CEt3's chairwoman helps them to write their proposals by joint arranging a meeting to write the proposal. If anyone has a question or a problem in writing, she can explain immediately. She can help others in this way because she has a Bachelor's degree and was once employed in the SAO. This example can be considered as knowledge sharing, leading to collaborative learning, in the community. However, events like this occur occasionally rather than consistently.

Local government agencies have an important role in sharing knowledge or information with CEs. This is because they have direct responsibility to inform, educate and support the operations of CEs. However, this sharing may be considered as one-way sharing.

This is because, in most sharing, local government officers are senders while CEts are receivers. Although a representative from each CEt has a chance to question and express opinions, this cannot be considered as knowledge sharing.

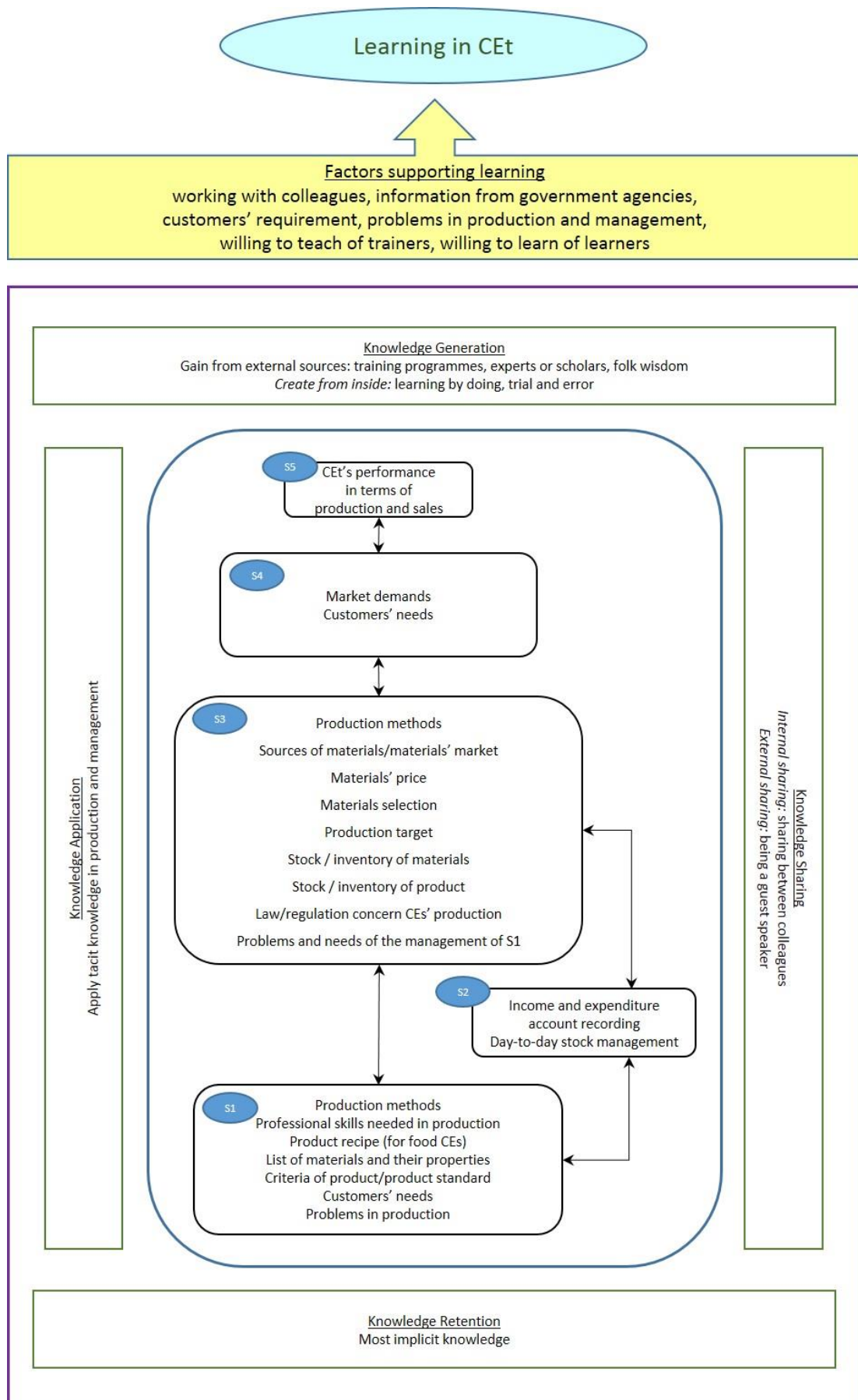
While most CEts rarely play a role in sharing knowledge with others in their communities, they normally participate in community development activities as requested. For example, CEt1 members join in eliminating mosquito larvae in a residential area; the CEt3 chairwoman participates in Big Cleaning Day; and the CEt4 chairman supplies sportswear for students in schools located in the community. However, such participation occurs when CEts are invited or asked by others; they are not a key person in arranging community development activities or integrating with others to solve the community's problems. It is only the chairwoman of CEt3 who is quite actively involved in community development activities because she is a leader of a sub-village in her community.

Regarding knowledge sharing and collaborative learning in the community, it can be summarised that CEts infrequently share their knowledge with others in the community. However, they regularly receive information or knowledge from local government agencies. Although they rarely play a role in sharing knowledge in a way to improve their collaborative learning, and their viability as a community, they are all willing to participate in community development activities as requested.

4.6 CEt/KM Model

Figure 4.20 summarises the knowledge currently used in CEts, the management of such knowledge, and factors supporting learning in these CEts.

Figure 4.20: CEt/KM Model



This CEt/KM model applied the five systems (S1-S5) of the VSM as a structure in finding knowledge currently used in each function. Then, such knowledge was placed in the structure, with the four main functions of knowledge management around the five systems which are knowledge generation, knowledge sharing, knowledge retention, and knowledge application. The model is intended to illustrate that each system needs all four KM functions to manage its required knowledge. This model also presents factors supporting learning in CEts.

4.7 Summary

This chapter has presented general information, VSM analysis, KM analysis, and collaborative learning in relation to CEts. Using VSM categories to see the way CEts implement their functions, it has been found that all CEts focus on the operation unit which is production (S1), but seldom focus on the meta-system (S2-S5), especially S4. This results in most knowledge currently used in all the CEts being related to their production. The management of such knowledge is tacit rather than in an explicit form. Learning can be found in all the CEts, even if it does not happen constantly and consistently. However, the role in promoting collaborative learning in their communities is minimal. The next chapter offers general information, VSM analysis, KM analysis and collaborative learning of the best-practice CEts (CEbs) including their common attributes. Then, the discussion of the findings based on comparing the CEts and CEbs will be presented in Chapter 6.

Chapter 5

Data Analysis: Best-Practice Community Enterprises

5.1 Introduction

Following Chapter 4, where the analysis focused on a discussion on typical community enterprises (CEt), this chapter focuses its analysis on a discussion of the best-practice community enterprises (CEb). CEb is a community enterprise that is a good role model for others because of features that include continuous learning, ability in administration and management, initiative, economic stability, self-reliance, and viability. As in Chapter 4, four CEbs are presented and discussed under the four main themes which are: general information, VSM analysis, KM analysis and collaborative learning. General information includes background, location, founding, organisational structure and management, product and production, and customers and distribution. This will help provide the four CEs' profiles. The VSM analysis studies the structural criteria for viability by analysing the three interacting elements (operations, meta-systemic management, and environment) and the five systems (System 1 – System 5). Each CEb is analysed using these structures to discover the kinds of knowledge used in each system. Subsequently, the ways CEs manage such kinds of knowledge are presented in the KM analysis, which is the analysis of four main activities in the KM process; these are, namely, knowledge generation, knowledge sharing, knowledge retention and knowledge application. Details of the VSM and KM can be found in Chapter 2. The last topic, collaborative

learning, is the way CEs share their knowledge with, and learn from, others in order to support collaborative learning in the community.

The four CEs discussed in this chapter are Nam Kian Community Enterprise (CEb1) in northern Thailand, Oom Saeng Community Enterprise (CEb2) in north-eastern Thailand, Lad Bua Khao Community Enterprise (CEb3) in central Thailand, and Karoh Community Enterprise (CEb4) in southern Thailand. All of them are selected as case studies because of their features, as mentioned previously. Details of case study selection were presented in Section 3.6.

5.2 General Information on the CEs

In this section, general information including the enterprise's background, organisational structure and management, product and production, and customers and distribution is presented in order to give an overview of each CEb.

5.2.1 General Information of Nam Kian Community Enterprise

5.2.1.1 Background Information

Nam Kian Community Enterprise (CEb1) is located in Nam Kian Sub-district, Phu Phiang District, Nan Province. Their products are herbal personal cleaning products such as shampoos, conditioners, soaps and cream baths, herbal lotions, herbal scrubs and multi-purpose cleaners.

Figure 5.1: Images of Nam Kian community Enterprise

Source: Researcher's photos



This CE was formed from the common needs of people in the village who wanted to reduce their living costs and decrease the use of chemicals such as detergents, dish-washing liquid, toilet cleaner and other chemicals used in everyday life, in the household. The reasons for forming CEb1 are consistent with reasons suggested by Peredo and Chrisman (2006). They suggest that the social and economic stress triggering the founding of community-based enterprises consists of various aspects, including economic problems and degrading local environment conditions.

In October 2007, the leaders of the group that would become the CE had an idea to produce herbal shampoo from Bai Mee (*Litsea glutinosa*), a local plant which is easily found in the community. The older generation used Bai Mee for hair-washing because the slime (mucilage) in Bai Mee helps to make hair black and strong. This is folk or local

wisdom that this group of people wanted to apply. They tried producing Bai Mee shampoo to use in households following the suggestion from district health officials; later, this group became the pioneers in founding CEb1.

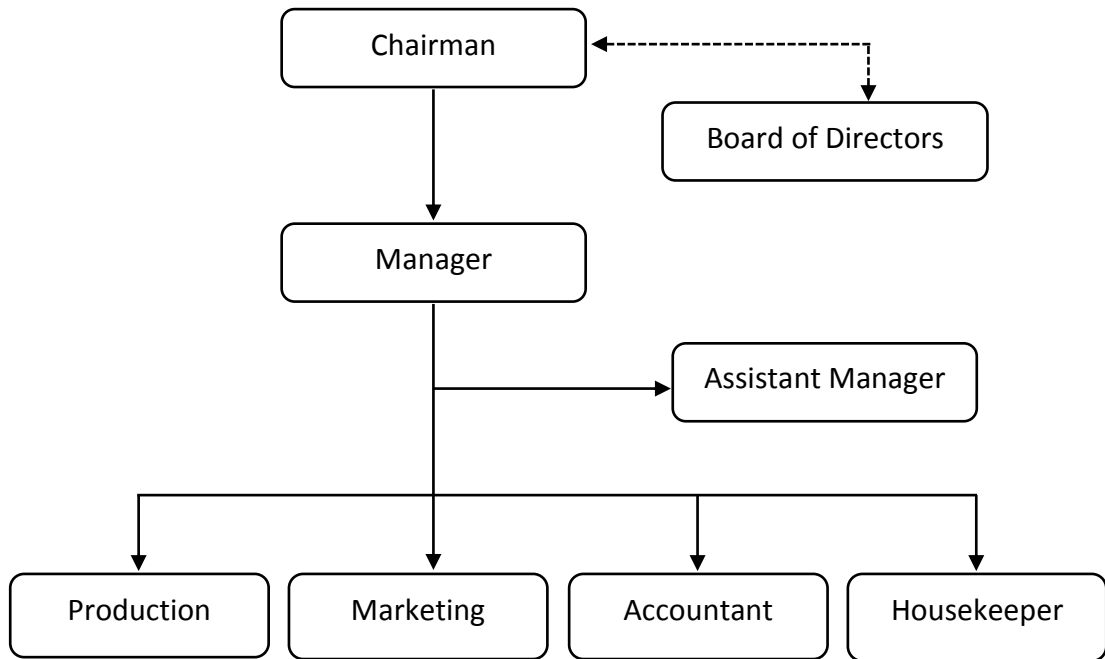
CEb1 was founded in December 2007 with 79 members. Fundraising was organised by selling shares at 100 Baht (around GBP 2) each to the members. CEb1 received 59,900 Baht (around GBP 1,198) as a capital. The objectives of CEb1 are to reduce expenditure on the purchase of household washing products, to reduce the use of chemicals in everyday life, to increase opportunities and generate income for CEb1 members and the community, and to develop and promote the use of local herbs (Nam Kian Community Enterprise, 2012). The first activities of the newly founded CEb1 were producing multi-purpose cleaner (biological formula), bio-laundry liquid, fabric softener and Bai Mee herbal shampoo in order to sell to members and villagers in the Nam Kian Sub-district. At present, CEb1 produces various other kinds of herbal products (details are presented later in Section 5.2.1.3).

5.2.1.2 Organisational Structure and Management

CEb1 is operated by the committee as per Figure 5.2.

Figure 5.2: Organisational Chart of Nam Kian Community Enterprise

Source: Nam Kian Community Enterprise (2012, p.36)



The chairman is responsible for overseeing the management of CEb1 while the Board of Directors advises CEb1 and participates in making decisions at the policy level. The manager takes responsibility for overseeing the activities of production, processing and marketing with help from the assistant manager. Production staff serve by producing the goods as planned. The responsibilities for marketing are selling the products and finding marketing channels. The accountant is responsible for recording income and expenditure and preparing the yearly balance sheet.

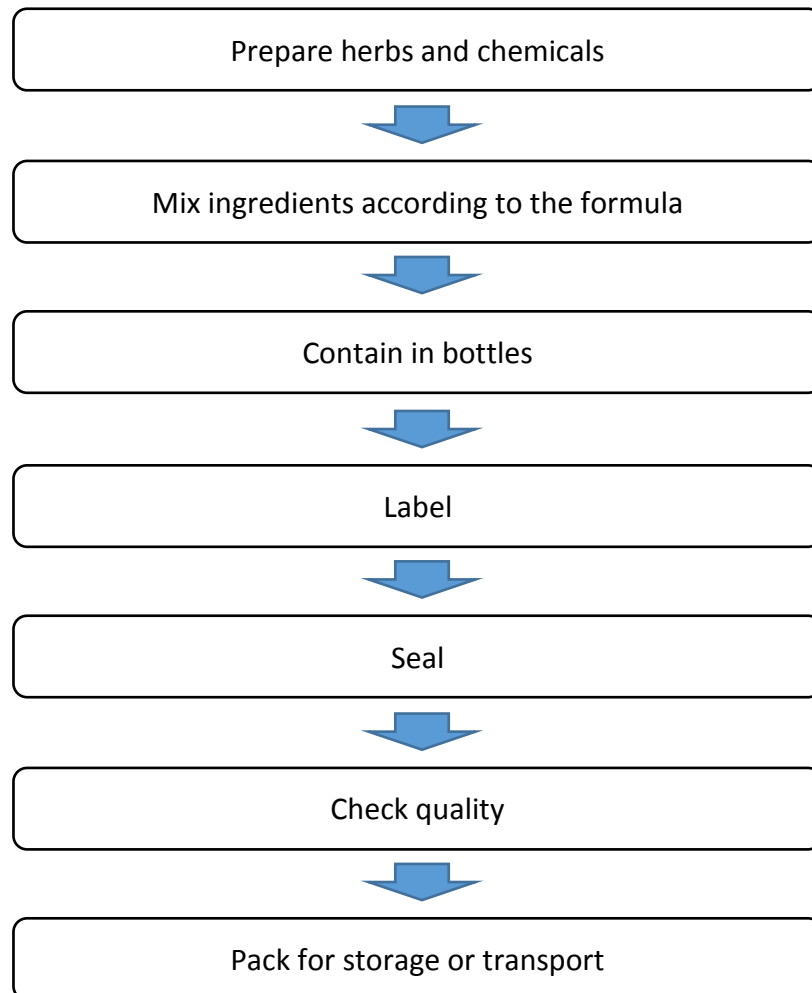
In the everyday operations of CEB1, the manager plays the most important role in managing all the issues. Her roles in production are production planning and production control. In marketing matters, she can find corporate customers for CEB1 such as hotels in Nan Province. With her connections, CEB1 has been hired to produce herbal lotions for a cosmetic company. It may be said that the manager is the key person in contacting external parties for CEB1. However, the manager has to have an assistant for her roles, because she has a full-time job as a public health officer. The assistant manager has contributed greatly in assisting the manager and has an important role in the production process because she is knowledgeable about the chemical production process. She has to be present at all productions in order to prevent errors that may occur in the manufacturing process.

5.2.1.3 Product and Production

The production process of CEB1 is presented in Figure 5.3. It is derived from the researcher's observations in this CE.

Figure 5.3: Process to produce herbal products: Nam Kian Community Enterprise

Source: Researcher's data



The products from CEb1 can be grouped into six categories as detailed as below:

1. Shampoo and conditioner products: Bai Mee & butterfly pea shampoo, Bai Mee & butterfly pea conditioner, star fruit shampoo, star fruit conditioner, aloe vera shampoo and aloe vera conditioner
2. Cream bath products: tamarind cream bath, turmeric cream bath, star fruit cream bath and rice milk cream bath

3. Soap products: tamarind soap, star fruit soap, aloe vera soap and soap made using water from washing rice
4. Body lotion products: rice milk body lotion and sesame oil body lotion
5. Spa product: turmeric & honey scrub
6. Washing products: multi-purpose cleaner (biological formula) and enzyme ionic plasma

Figure 5.4: Products of Nam Kian Community Enterprise

Source: Researcher's photos



The trademark of CEb1 is presented in Figure 5.5. The concept of this trademark was created by the CEb1 committee including the Board of Directors, chairman, manager and assistant manager. It is a Ga Lae roof covering on a wagon wheel. The Ga Lae roof is a characteristic of traditional Thai houses in northern Thailand. In this trademark, CEb1 uses the Ga Lae roof to represent the unity and cooperation of people in Nam Kian Community. A wagon wheel means moving forward; the five spokes in the wheel represent the five villages in Nam Kian Sub-district. The overall meaning of this trademark represents the community products of Nam Kian Sub-district which arose from the cooperation of people in the community, and aims to contribute to the continual development of Nam Kian Community.

Figure 5.5: Trademark of Nam Kian Community Enterprise

Source: Website of Nam Kian Community Enterprise

(<https://www.facebook.com/OTOPNamkian?fref=ts>)



One of CEb1’s main concerns is reducing synthetic chemicals in products. For example, the herbal shampoo from CEb1 contains only 18% chemicals. This helps to reduce allergic reactions or irritation in users. All the products are focused on quality, starting from raw materials selection and production process through to quality control. CEb1 uses fresh herbs collected daily, such as Bai Mee and turmeric, in the production.

Cleanliness is emphasised at all stages in the production process. Machines are used to increase the capability in production, such as a shampoo stirring machine. Regarding quality control, products from each production are tested for pH¹ value by Nam Kian Health Station. Moreover, products are submitted to the Office of Consumer Protection in Nan Province for quality checks. Some products, such as the Bai Mee herbal shampoo, turmeric cream bath, body lotion and turmeric and honey scrub, achieve the Standard of Community Product from the Thai Industrial Standard Institute at the Ministry of Industry.

CEb1 has a yearly production plan initiated by the manager and the assistant manager. This plan will be approved by the committee before it is implemented. Details about sales information from the previous year will be considered in the future planning. There is also a monthly production plan initiated by the assistant manager and the head of production. Sales information from the previous month, and orders for the next month, are considered in the monthly production planning. This plan will then be proposed to the manager for approval.

5.2.1.4 Customers and Distribution

The products from CEb1 are sold at both retail and wholesale levels. Moreover, attending exhibitions and trade shows both within and outside Nan Province are additional channels to promote and sell the products. CEb1 classifies its market into two groups, which are the internal market (within Nan Province) and external market

¹ Potential of Hydrogen ion

(outside Nan Province). Details of each market are as follows (Nam Kian Community Enterprise, 2012):

1. Internal market

1.1 Sales booth at CEb1's location: customers are people in Nam Kian Sub-district and participants in study trips who come to visit this CE. Normally there will be at least one study trip per month visiting CEb1.

1.2 OTOP (One Tambon One Product) Centre and beauty salons in Mueang Nan District, Tha Wang Pha District, Pua District and Chiang Klang District, Nan Province.

2. External Market

2.1. Northern Thailand: Chiang Mai Province, Lamphun Province and Chiang Rai Province.

2.2. Central Thailand: Bangkok, Samut Songkhram Province, Chon Buri Province and Pathum Thani Province.

2.3. Internet Channel: getting orders from customers in all regions and shipping by post.

Furthermore, CEb1 is hired to produce products for two cosmetic companies, Sense Beauty Co., Ltd. and Bio Way Natural (Thailand) Co., Ltd. in Sam Phran District, Nakhon Pathom Province. These products will be sold under the brand of such cosmetic companies with the name of CEb1 listed as a manufacturer.

5.2.2 General Information of Oom Saeng Community Enterprise

5.2.2.1 Background Information

Oom Saeng Community Enterprise (CEb2) or Kaset Thip Group is located in Oom Saeng Village, Du Sub-district, Rasi Salai District, Si Sa Ket Province, which lies in north-eastern Thailand. The history of this CE is as follows.

Figure 5.6: Images of Oom Saeng Community Enterprise

Source: Researcher's photos



Originally, most of the farmers in Oom Saeng Village used broadcasting rice cultivation - the way to sow paddy rice in the field and let the crops grow in the field without moving the seedlings - in their farming. Chemical fertilisers and pesticides are used widely in farming; however, using chemicals not only results in increasing production costs, but

also impacts directly on the health of farmers and indirectly affects the health of consumers. Therefore, farmers in this village led by Mr Boonmee Surakhod had the idea to reduce production costs by reducing the use of chemicals. At the same time, farmers were introduced to the idea of a 'sufficiency economy' in training arranged by the Department of Agricultural Extension at the Ministry of Agriculture and Cooperatives. This group of farmers, therefore, applied the sufficiency economy concept to reduce farming costs and protect the environment. They started by not burning rice stubble in their fields but instead ploughing the stubble. Moreover, they tried using green manure from sunhemp (*Crotalaria juncea*) and sword bean. Later, in March 2004 these farmers formed Kaset Thip Group and Mr Boonmee Surakhod was appointed as the chairman. The main activity of this group was producing bio-organic fertilizer for farming use by the group members. Comparing the reasons for this group's foundation with that of CEb1, the local environment's condition was one reason that stimulated the establishment of both CEs. This corresponds to the study by Peredo and Chrisman (2006) that the local environment's condition is one of the social and economic stresses triggering the founding of community-based enterprises.

When the Community Enterprise Act came into force in 2005, Kaset Thip Group was registered as on 13th March 2006 a community enterprise with 74 members and 608,000 Baht (around GBP 12,160) as capital under the name 'Oom Saeng Community Enterprise'. In 2013, this CE had 436 members with 10,757 shares worth 1,075,700 Baht (around GBP 21,514). It is clear that the previous and existing community collective activities known as Kaset Thip Group became a channel to create a community-based enterprise (Somerville and McElwee, 2011). The main activity at the beginning of CEb2 was processing the agricultural products of its members. After attending several trade

fairs arranged by government agencies, CEb2 realized that there were marketing opportunities and marketing channels for organic rice. Therefore, CEb2 has supported and encouraged members to increase organic rice farming. As a result, organic rice farming, processing and distribution became the main activities of this CE and packaged organic rice is its main product.

The vision of CEb2 is to be a CE that runs a full range of agricultural activities by employing sufficient economy principles and good corporate governance as guidelines for operating and managing the enterprise. The mission statements of this CE are to: develop CE management by focusing on participation; develop the production, processing and distribution of organic rice and other organic agricultural products; develop CEb2 members and the CEb2 network members to be strong and self-reliant; and to develop CEb2 and the CEb2 network to be sources of learning for people. CEb2's goal is to accomplish all four mission statements as mentioned (Oom Saeng Community Enterprise, 2013).

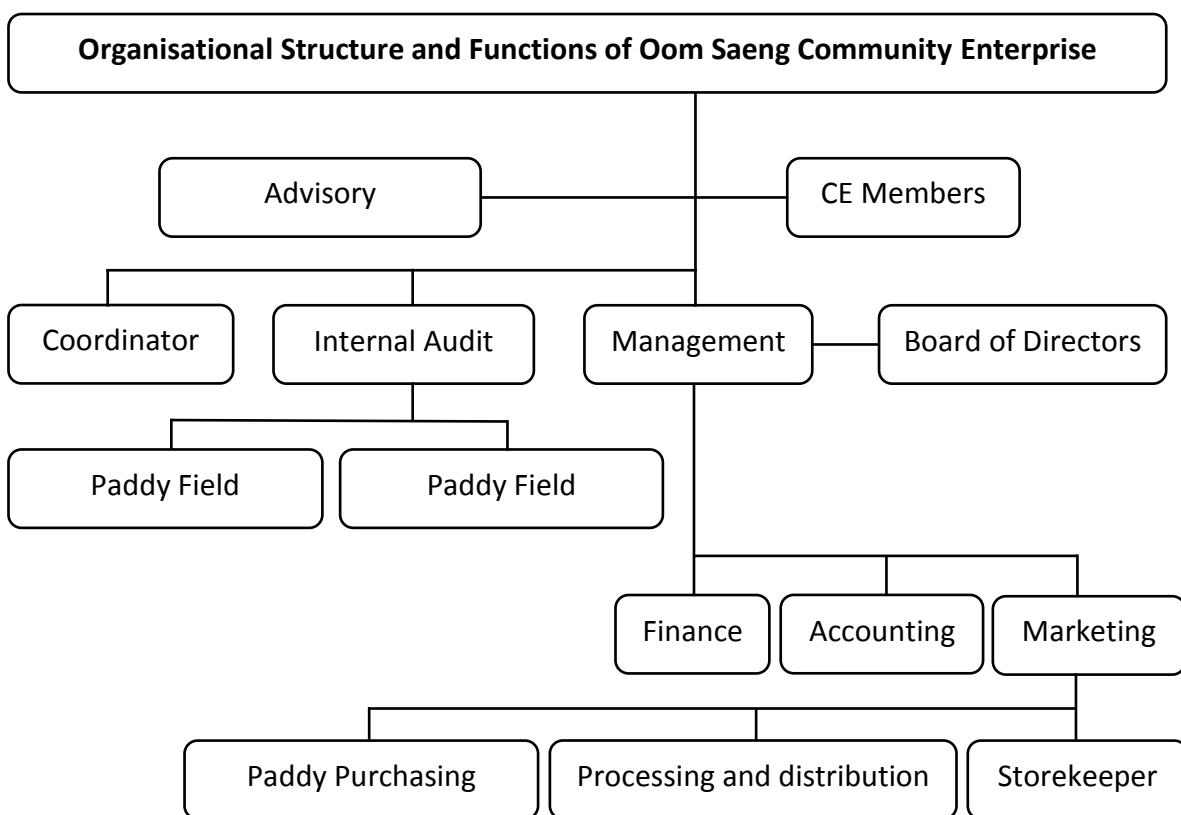
5.2.2.2 Organisational Structure and Management

CEb2 is operated by the committee, as per Figure 5.7.

Figure 5.7: Organisational Chart of Oom Saeng Community Enterprise

Source: Document of Oom Saeng Community Enterprise

(Oom Saeng Community Enterprise, 2013)



The Advisory Commission plays an advisory role in the management of CEb2. It consists of two general advisors, who are a teacher and the Chairman of the Volunteer Board in Du District; two law advisors, who are the Deputy Attorney and an enquiry official, and five committee members, who are school directors, a village headman, the Chief of Rasi Salai District Agricultural Extension Office, and a senior agricultural officer. The Board of Directors is responsible for monitoring and supervising CEb2's management as well

as the use of profits. They are also responsible for issuing regulations and guidelines for the management of CEB2. The Board of Directors consists of fifteen people which are the CEB2 chairman, vice chairman, treasurer and his assistant, the internal auditor and his assistant, the public relations manager and his assistant, committee members, and secretary. They are selected by CEB2 members and have a term of office of two years and serve no more than four consecutive terms.

The Coordinator Division serves as an intermediary between CEB2 and outsiders, whether individuals or organisations. The Internal Audit Division consists of two parts, namely the paddy field inspector and paddy field guarantor. The former takes responsibility for auditing the paddy fields of CEB2 members, while the latter is responsible for guaranteeing the paddy fields which meet the criteria for organic rice farming.

Since CEB2 is a small enterprise, one person may have more than one role and responsibility. For example, the chairman also serves as a coordinator, the vice chairman takes another role as storekeeper, and two people on the Board of Directors are responsible for paddy purchasing and processing, and distribution of organic rice. Another interesting aspect of this organisation's structure is that there is Advisory Commission, which consists of various people who have knowledge and social positions as mentioned previously. This may be because most members of this CE are farmers who have less education. They may be good at farming, but they do not have extensive knowledge in other aspects. Therefore, other professionals have been invited to work with CEB2.

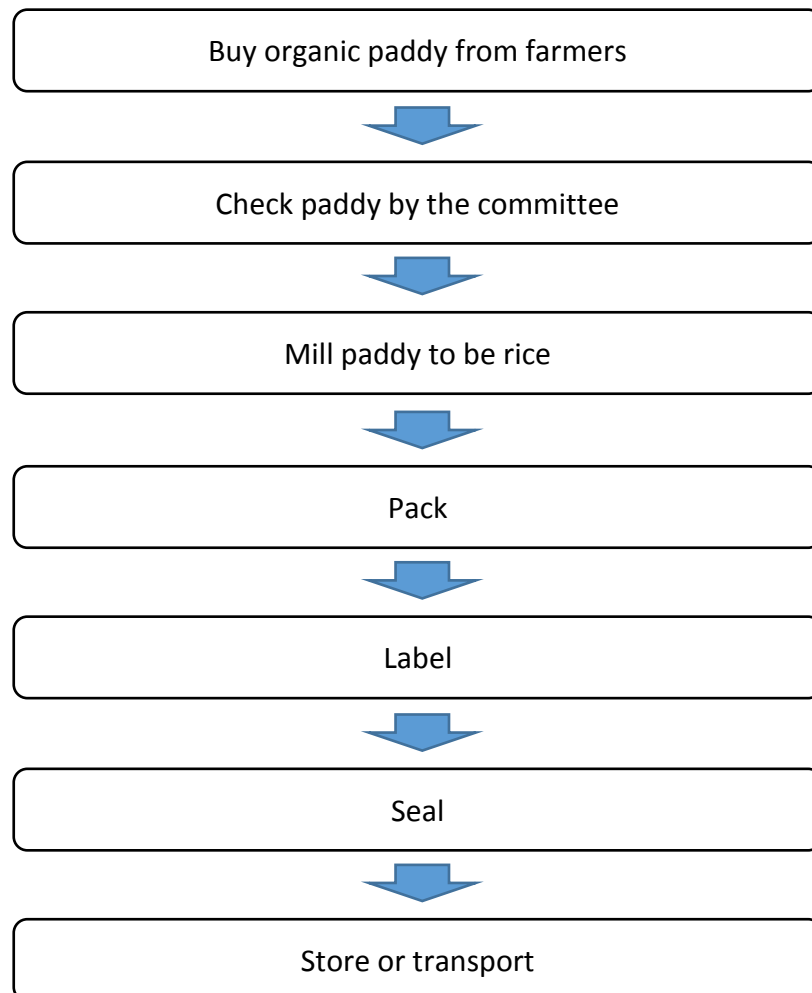
5.2.2.3 Product and Production

The production process of CEb2 is presented in Figure 5.8. It is derived from the researcher's observation in this CE.

Figure 5.8: Process to produce packed organic rice:

Oom Saeng Community Enterprise

Source: Researcher's data



The products from CEB2 are various kinds of organic rice including jasmine brown rice or jasmine unpolished rice, red jasmine brown rice, black jasmine brown rice and riceberry brown rice. CEB2 has encouraged and supported farmers who are members of the CE to engage in organic farming. Then, CEB2 purchases the organic paddy from these farmers and processes them to be organic rice which is packed in one-kilogramme plastic bags to sell in Thailand. Some parts of the organic rice will be exported to other countries (a detailed description follows in Section 5.2.2.4). CEB2 can export its organic rice to foreign markets because it has an international organic certification from organisations such as Fairtrade, IFAOM (International Federation of Organic Agriculture Movements), EU Organic Farming, and USDA Organic (The United States Department of Agriculture).

Figure 5.9: International Organic Certification

Source:

Website of Fairtrade Foundation (<http://www.fairtrade.org.uk/>)

Website of IFOAM-Organics International (<http://www.ifoam.bio/en>)

Website of European Commission, Agriculture and Rural Development, Organic Farming (http://ec.europa.eu/agriculture/organic/index_en.htm)

Website of United States Department of Agriculture

(<http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=organic-agriculture.html>)



In addition to processing organic paddy to become organic brown rice, CEb2 processes organic paddy to become germinated brown rice or GABA rice. This is made by soaking the paddy in water until it germinates to around 0.5-1 millimetre, then heating it up by steaming, baking or boiling before dehumidification by drying it in the sun or using a dehumidifier. The last step involves grinding it with a standard brown rice milling machine in order to save the germ. Germinated brown rice or GABA rice contains greater nutritional value than ordinary brown rice and this is one way that CEb2 adds

value and price to ordinary brown rice. CEb2 also uses germinated brown rice to produce germinated brown rice flour, germinated brown rice ice cream, and germinated brown rice snacks. It is not only a way to add value to brown rice, but also a way to create jobs and income for people in the community. Even if this food processing occasionally occurs, it is not the main job of CEb2.

The brand name of CEb2 organic rice products is 'Loong Boomee' which means 'Uncle Boonmee'. The name Boonmee is the name of the founder and the chairman of this CE. The logo of CEb2 products is presented in Figure 5.10.

Figure 5.10: Logo and Products of Oom Saeng Community Enterprise

Source: Researcher's photos



CEb2 has a yearly production plan for organic rice. Orders from loyal customers will be considered in order to set a production plan for each kind of rice such as black jasmine rice and riceberry, which are demanded by customers because of their high nutritional value. Furthermore, there are plans for organic farming developments such as organic rice paddy field development and the improvement of the organic fertilizer formula. Even though these plans are not directly related to production, they contribute to the increasing productivity of the farmers who are members of this CE.

5.2.2.4 Customers and Distribution

The organic rice from CEb2 is sold at both retail and wholesale levels as well as domestically and abroad. Products sold in Thailand will be packed in a plastic bag as packaged organic rice which weighs one kilogramme per pack. Distribution channels are classified into three major categories: distribution by CE itself, representing ten percent; distribution to domestic suppliers both retail and wholesale, representing twenty percent; and exports through trade partners to consumers in the EU and America representing seventy percent of the total distribution. Distribution by the CE itself refers to the sale at the CEb2 office and the sale from attending trade exhibitions or trade fairs arranged by both the public sector and private sector, such as Thailand SMEs Expo, THAIFEX – World of Food Asia, OTOP City and Agricultural Fair. CEb2 also presents products via the website www.rakbankerd.com and on Facebook, www.facebook.com/kasedtip. In the latter, there is information about CEb2 activities and knowledge on organic farming.

5.2.3 General Information of Lad Bua Khao Community Enterprise

5.2.3.1 Background Information

Lad Bua Khao Community Enterprise (CEb3) is located in Moo 1, Lad Bua Khao Sub-district, Ban Pong District, Ratchaburi Province in central Thailand.

Figure 5.11: Images of Lad Bua Khao Community Enterprise

Source: Researcher's photos



CEb3 was founded in order to generate extra income for women in the community. In general, the occupation of most families in Lad Bua Khao Sub-district involves agriculture, such as farming and gardening. The women in each household are the key people in agriculture, but after the harvest season these women are unemployed. Due to the economic recession and the rise in living costs, Mrs Phachara Malithong gathered together a group of women who wanted to use their free time and set up Lad Bua Khao Agricultural Housewife Group on 15 November 1999. There were twenty members with 144 shares, which were worth 7,000 Baht (around GBP 140) as capital at the beginning. The group members initially agreed to produce water balm, dishwasher liquid and fabric softener for sale to group members and villagers. However, the group did not succeed in producing these products for sale. In 2001, the group launched a new product called

'Thipparod Banana', which was a snack made from bananas; this was an abundant product in the region and available at very low prices. Later, cereal-topped banana chips and dried shredded pork-topped banana chips were developed. When the Community Enterprise Act came into force in 2005, the women's group was registered as a community enterprise on 3rd November 2006 under the name 'Lad Bua Khao Agricultural Housewife Group Community Enterprise'. In 2013, this CE had 57 members with 351 shares which were worth 17,550 Baht (around GBP 351) (Lad Bua Khao Community Enterprise, 2013).

The vision of CEb3 is to be a leading supplier of processed agricultural products both in Ratchaburi Province and at the regional level by considering the environmental impact and social benefit as important matters. The mission statements of this CE are concerned with four aspects, which are production, marketing, personnel and society. The production aspect of the mission statement is to produce quality products and enhance quality standards to a five-star level. The marketing aspect is to make the brand well known by expanding distribution channels to cover both Ratchaburi Province and the region, and to increase service efficiency by taking the needs of customers into account. In the personnel aspect, the mission statement is to create and maintain a good working environment in order to let staff work most effectively. The last aspect is the social aspect, and the mission statement includes a commitment to support society and help to maintain a sustainable environment. The objectives of CEb3 are to enable women to use their free time in a second job in order to earn extra income, to create jobs and income for the community, to add value to local resources, and to encourage the community to manage itself (Lad Bua Khao Community Enterprise, 2013).

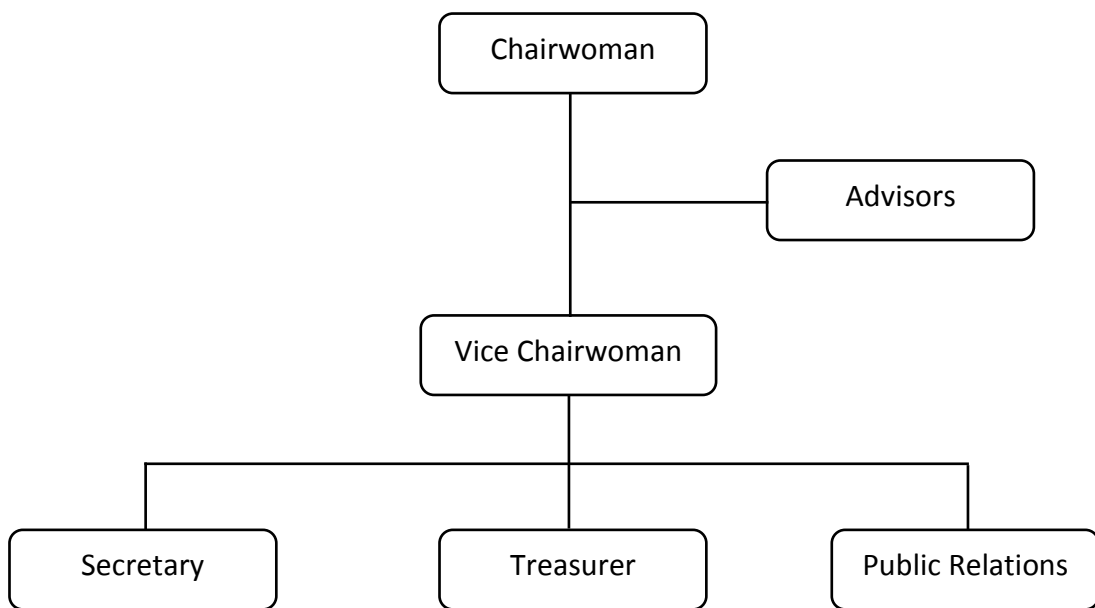
5.2.3.2 Organisational Structure and Management

CEb3 is operated by the committee, as per Figure 5.12.

Figure 5.12: Organisational Chart of Lad Bua Khao Community Enterprise

Source: Document of Lad Bua Khao Community Enterprise

(Lad Bua Khao Community Enterprise, 2013)



There are five people on the Board of Directors, who are the chairwoman, vice chairwoman, secretary, treasurer and public relations officer. They will be in post for a period of four years. The main functions of the board are disseminating the CE's information to CE members, being a mainstay in the formulation of plans and projects to develop CE and solve members' problems, conducting marketing promotion, and coordinating with public and private sector. Advisors for CEb3 consist of community leaders, a teacher, and officers from the Department of Agriculture Extension. In addition to the roles illustrated in this organisational chart, there are six committee

members taking responsibility for various aspects of the CE's operation including procurement, production, marketing, quality control, public relations, and finance and accounting.

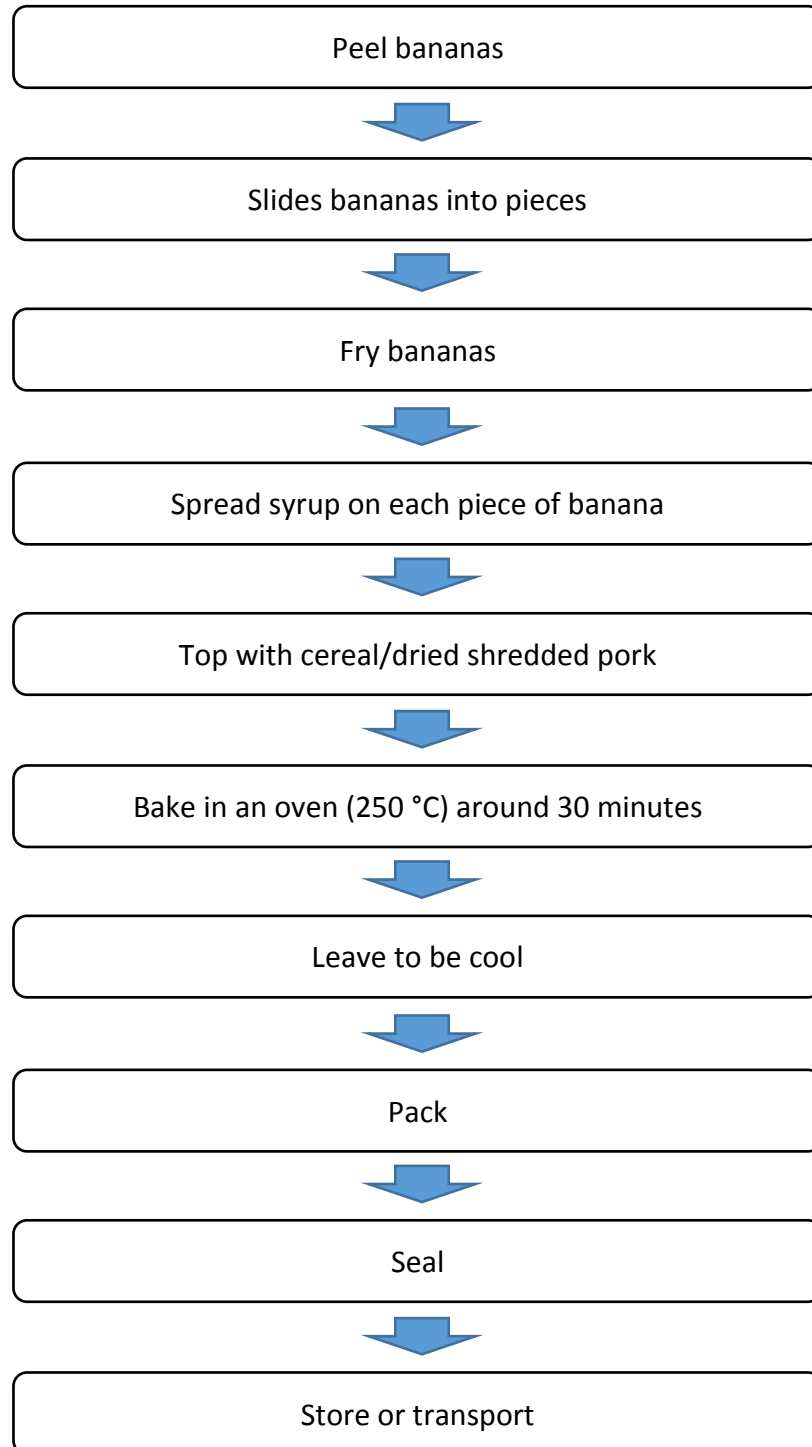
As with CEb2, one person in CEb3 may play more than one role in the management of the CE. For example, the chairwoman has to be in charge of production, marketing and control, while the treasurer takes part in production, marketing, control, finance and accounting. Another similarity with CEb2 in terms of organisational structure is having a group of people with higher levels of education as advisors or consultants. Most members of CEb3 have only finished the fourth year of primary education; therefore, external people have been invited to act as advisors. Furthermore, inviting community leaders and government officials who support the operation of the CE to be advisors is a way to show respect to them.

5.2.3.3 Product and Production

The production process of CEb3 is presented in Figure 5.13. It is derived from the researcher's observation in this CE.

Figure 5.13: Process to produce cereal-topped/dried shredded pork-topped banana chips: Lad Bua Khao Community Enterprise

Source: Researcher's data



The main activity of CEb3 is food processing. Besides the banana products mentioned above, other products that were later developed are cereal-topped rice crackers, dried shredded pork-topped rice crackers, supplemental vegetable rice chips, supplemental fruit rice chips, and deep fried beans with herbs. All products are produced by one production team and each day the team will produce a different product. The chairwoman will decide on the type and quantity of product to be produced by considering orders, existing stock, or available raw materials.

The brand name of the CEb3 products is 'Pa Tim', which means 'Auntie Tim'. The name Tim is the nickname of the founder and chairwoman of this CE. The logo for CEb3 products is presented in Figure 5.14.

Figure 5.14: Logo and Products of Lad Bua Khao Community Enterprise

Source: Researcher's photos



CEb2 has a yearly production plan for producing each kind of product, the plan being established by considering production information from the previous year. However, this is just an estimate as in actual practice, production may be more or less than planned. This is because CEb3's products have a short shelf life and CEb3 prefers to sell only fresh products to customers. Therefore, CEb3 will not produce its products in order to keep them in stock for a long time and production is usually based on purchase orders.

5.2.3.4 Customers and Distribution

CEb3's products are sold at both retail and wholesale levels as well as domestically and abroad. In Thailand, the distribution locations are not only CEb3's office, stores in Ratchaburi and the neighbouring province, but also stores in Bangkok, Surat Thani and Phuket. Furthermore, CEb3 can sell their products by attending trade exhibitions or trade fairs such as OTOP City Fair arranged in the Ban Pong District, Ratchaburi Province, or other provinces. Internationally, two countries (Malaysia and China) order banana products from CEb3. Products from CEb3 are also presented on the website of government agencies involved with CE matters, such as Community Enterprise Promotion Division (<http://smce.doae.go.th/>), Ban Pong District Agricultural Extension Office (<http://banpong.ratchaburi.doae.go.th/>), and Thai Tambon (<http://www.thaitambon.com/>).

5.2.4 General Information of Karoh Community Enterprise

5.2.4.1 Background Information

Karoh Community Enterprise (CEb4) is located in Moo 5, Karoh Sub-district, Nopphitam District, Nakhon Si Thammarat Province, which is located in southern Thailand.

Figure 5.15: Images of Karoh Community Enterprise

Source: Researcher's photos



The product from this CE is Khanom Jeen dough. “Khanom Jeen” is a traditional noodle which is sometimes called Thai rice vermicelli. This CE was founded on August 15th 1994 under the name of ‘Food Network Company Limited’ with 122 shareholders, 50,000 shares, and 5,000,000 Baht (around GBP 100,000) as capital. The shareholder group consisted of 95 individuals, five saving groups, and two private enterprises (Walailak University, 2005). This CE is different from other CEs in this research, in that the others were registered as a community enterprise under the Community Enterprise Act 2005, while this CE is registered in the form of a limited company. Although CEb4 is a limited

company, the philosophy behind this enterprise is the same as the community enterprise because it is an enterprise of the community, managed by the community, and for the benefit of the community. Significantly, the people who founded CEb4 were an important part of a group who called for the Community Enterprise Act in Thailand. However, CEb4 has not registered as a community enterprise under this law since it came into force in 2005. CEb4 commented that this law differs substantially from the original proposal and does not meet the actual intent of being a community enterprise.

The idea to form this enterprise arose from the meeting of several group leaders in southern Thailand. Leaders who participated in this meeting came from the Village Foundation, Yommana Network in Nakhon Si Thammarat, the Rehabilitation Fund in Songkhla, the Kler Yan ('Close Friends') Network in Phatthalung and the Saving Groups Network and other networks in southern Thailand. This meeting was arranged to discuss ways to create jobs for the community in the form of community businesses. It was hoped that these community businesses would lead to cooperation among the mentioned networks in mutual development. After developing an idea to produce Khanom Jeen dough, this group of leaders arranged a study trip to visit a factory that produced Khanom Jeen dough in north-eastern Thailand. Then, they saw the opportunity to run a Khanom Jeen dough business in southern Thailand as it was greatly used there and there was no large-scale commercial production in the region. Most sellers produce Khanom Jeen dough and Khanom Jeen noodles by themselves using traditional instruments. This traditional production not only takes a lot of time and labour, but also causes environmental problems with waste water. After a feasibility study and data collection to examine the advantages and disadvantages carefully, a project to found a Khanom Jeen dough factory was presented for fundraising to the

members of the group network mentioned previously. Finally, CEb4 was founded, and first produced Khanom Jeen dough for sale on 9 March 1996.

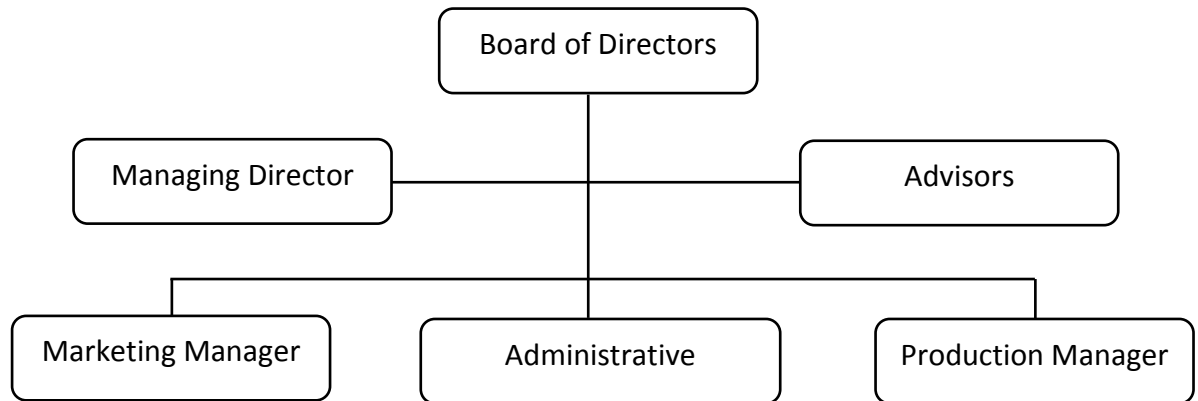
The purposes of CEb4's establishment are categorised into two aspects, which are the economic and social aspects. Regarding the economic aspects, the objectives of this CE are: 1) to produce Khanom Jeen dough for Khanom Jeen sellers; 2) to process and add value to an agricultural produce; 3) to generate income for the people and community who are shareholders; and 4) to create jobs for local people. The social objectives are: 1) to promote the development of community business in order to strengthen the community; 2) to train community leaders in business management so that they may found their own community businesses by using available resources in their communities; 3) to be a place for studying local wisdom; and 4) to preserve the environment from water pollution problems and maintain the ecosystem (Karah Community Enterprise, 2005).

5.2.4.2 Organisational Structure and Management

CEb4 has employed a modern form of organisational management to run the enterprise which results in an emphasis on management empowerment. There are three divisions including Marketing, Administration, and Production with the Board of Directors at the centre in order to meet customers' requirements. The organisational structure of CEb4 is presented in Figure 5.16.

Figure 5.16: Organisational Chart of Karoh Community Enterprise

Source: Karoh Community Enterprise (2005, p.64)



The Board of Directors consists of nine people selected from the annual general meeting who will be in charge for two years, and the Managing Director is selected from the Board of Directors. The Administrative division consists of an administrative manager, finance officer, accounting officer, and administrative officer.

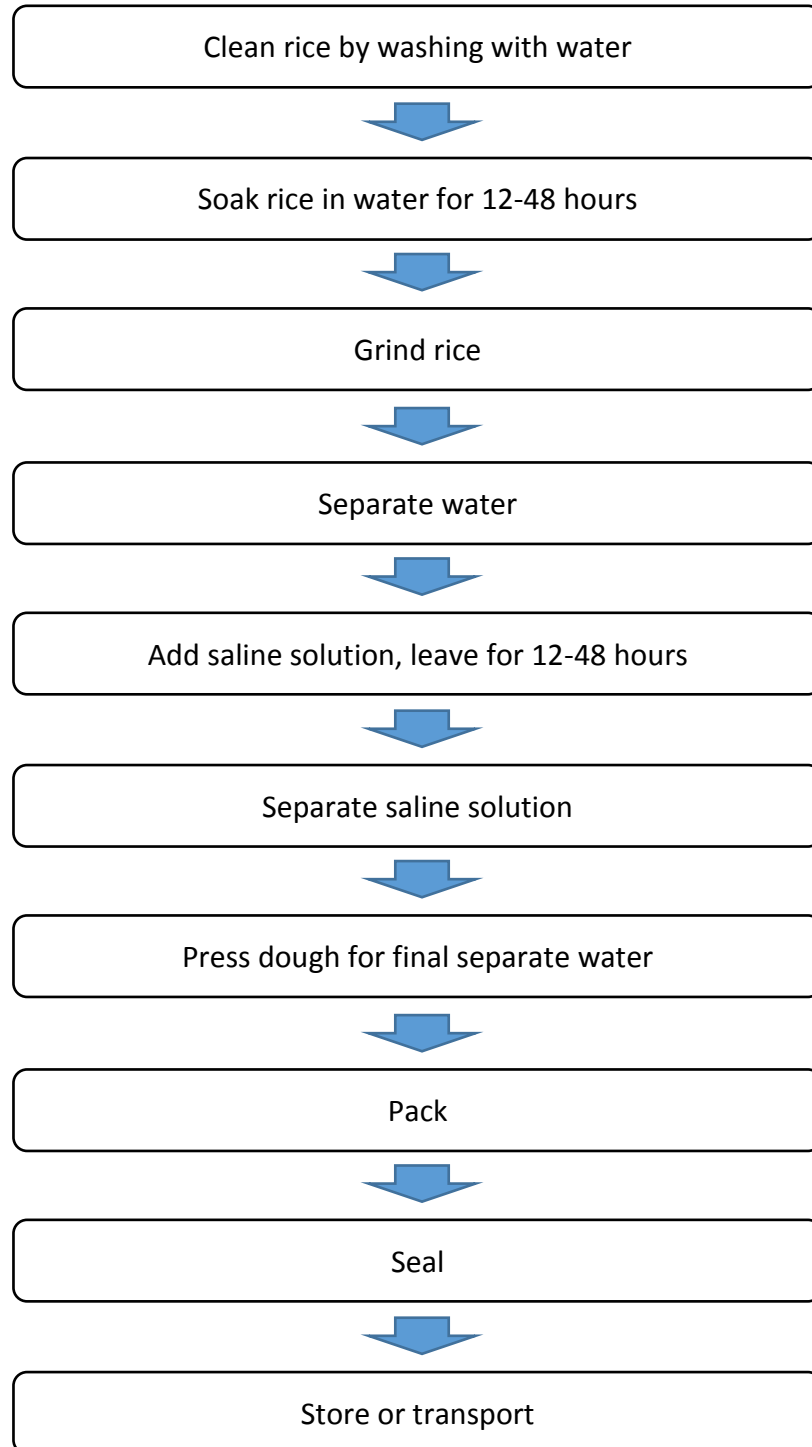
5.2.4.3 Product and Production

The production process of CEb4 is presented in Figure 5.17.

Figure 5.17: Process to produce Khanom Jeen noodle dough:

Karoh Community Enterprise

Source: Karoh Community Enterprise (2005, p.73)



CEb4 produces only one product, dough, for producing Khanom Jeen or Thai rice vermicelli, which is a round-type noodle for serving with curry. This dough is packed in 20-kilogramme bags for sale and the production capacity of CEb4 is roughly 8,000 to 10,000 kilogrammes per day in a factory with a floor area of 800 square metres. CEb4 is located in an area of 1,600 square metres. The main raw material used in producing the dough is rice which CEb4 purchases from the Pak Phanang River Basin which is a locally available resource. Using local rice is a way to add value to the final product and, moreover, strengthen the farmers economic position and so enables farming to be truly sustainable.

CEb4 uses stacked trapezoids and the company's name on the logo. These trapezoids represent collaboration between several groups and networks. The logo of CEb4 is presented in Figure 5.18.

Figure 5.18: Logo and Product of Karoh Community Enterprise

Source: Researcher's photos



CEb4 sets a yearly production plan as a production guideline. Sales information from the previous year will be considered when setting this plan. However, the volume of production in each day, or each month, depends on orders from customers as well. Typically, the production team will work eight hours a day. When CEb4 gets a larger number of orders, they have to work overtime. On the contrary, they may work only four hours a day when CEb4 does not get many orders. This work hour adjustment does not affect the wages of production staff because their wages will be calculated based on the amount of dough produced.

5.2.4.4 Customers and Distribution

The distribution channels of CEb4 consists of three parts: retail sales at the CEb4 office, wholesale sales to Khanom Jeen noodle factories, a loyal customer, and the sales team at CEb4 which tries to find new customers to buy Khanom Jeen dough. The target customers of this CE are clients who come to buy dough at the CEb4 office, Khanom Jeen noodle factories, new Khanom Jeen noodle producers, eating places selling Khanom Jeen noodles with curry, and people who are interested in doing business with Khanom Jeen noodles. For the last group, the sales team of CEb4 is willing to act as an investment advisor. Those who interested in attending this business can buy Khanom Jeen making machines from the sales team as well. At present, Khanom Jeen dough from CEb4 is distributed to several provinces in southern Thailand, including Nakhon Si Thammarat, Songkhla, Surat Thani, Trang, Chumphon, Ranong Phuket, and Krabi.

Now that the four CEbs have been introduced, the way the CEbs have implemented their functions by focusing on the five VSM systems is analysed in the next section.

5.3 VSM Comparison between the CEbs

As in Chapter 4, diagnosing the VSM structure in all the CEbs is required in order to answer a research question about the kinds of knowledge that CEbs need to remain viable. Therefore, this section utilises the VSM diagnosis of the CEbs to examine what tasks are done, and how, in each function before moving to explore the knowledge currently used in the CEbs, and the management of such knowledge, in Section 5.4. The way the CEbs have implemented their functions using the VSM categories is described below.

5.3.1 System 1

System 1 (S1) takes responsibility for activities that implement the purpose of organisation. This means primary activities or production activities (Espinosa and Walker, 2011). All the CEbs and CEts have an obvious production process. That is, CEb1 produces herbal products, CEb2 commercialises organic rice, CEb3 produces snacks, and CEb4 produces Khanom Jeen noodle dough. Details of the production processes of CEb1-CEb4 are presented in Sections 5.2.1.3, 5.2.2.3, 5.2.3.3, and 5.2.4.3, respectively.

As with the CEts, the key external stakeholders of these CEbs are their suppliers and customers. In dealing with such suppliers and customers, each CEb encounters some problems from time to time. Although most of such problems might not be considered as complicated issues for CEbs, because they can cope with them easily, there are some problems that can affect production and the whole CEb if they are not resolved appropriately and timely. Examples of problems that S1 of each CEb found in dealing with external stakeholders are as follows.

Regarding CEb1, a cosmetic company of which CEb1 is a subcontractor sometimes rejects products because they do not meet their specifications, or they do not like the sample products. This problem significantly affects CEb1's operation because CEb1 has to expend time and money in replacing and, moreover, there is potential damage arising from the loss of credibility. Since the production process is mainly carried out by humans rather than machine, errors can occur at any time. A little inaccuracy in mixing the ingredients or processing may cause product failures (for example, shampoo becoming too fluid to be sold). To solve this problem, production has to be strictly controlled at every step by the CE's assistant manager who has more expertise and skills than the other staff.

A problem for CEb2 is a lack of capacity to meet demand from customers. One cause of this problem results from their limited budget for buying paddy from farmers. Details of this problem will be discussed in Section 5.3.3 because it is S3's job. Another cause of this problem is the size of CEb2's only, small rice mill, which has a limited capacity. To mitigate the problem of demand over supply, and to increase the performance of the operational unit, CEb2 management has signed MOUs (memorandums of understanding) with outside rice mills. This allows CEb2 to expand its production capacity.

CEb3 sometimes has problems with banana farmers about the purchase price of bananas. CEb3 pays eight baht (around 16 pence) for a hand of bananas. This price is normally higher than general market price. However, sometimes the price of bananas in the market is higher than 16 pence, in which case, some banana farmers prefer to sell in the local market. This action significantly affects the productivity of CEb3. To solve this problem, the chairwoman announced that CEb3 will no longer buy bananas from

banana farmers who sell their bananas to the market while CEb3 is facing a shortage of bananas. The other way to solve this problem is that the chairwoman transfers the shipping costs to the banana farmers. Then the money they receive from selling bananas to CEb3 is equal to the price in the market. The chairwoman refuses to increase the price of bananas because she does not want to set a new standard in purchasing. She knows that it is just a temporary situation when the banana price in the market is higher than CEb3 price.

For CEb4, customers who buy dough to produce Khanom Jeen noodles occasionally complain about the quality of dough. As the quality and properties of dough have a considerable impact on producing Khanom Jeen noodles, customers will give feedback to CEb4 immediately when they encounter problems. A common problem is when Khanom Jeen noodles are not sticky enough and easily torn, which makes noodles unappetizing. Regarding the quality issue, although CEb4 tries to strictly control manufacturing standards, Khanom Jeen dough may be different in each batch of production because the quality of the dough depends on the quality of the rice. The marketing manager, who interacts directly with customers, will solve customers' problems by providing instructions on how to fix such issues. Customers are normally satisfied with his recommendations because they can ultimately use the problem dough to produce Khanom Jeen. Satisfaction in solving problems quickly and effectively by CEb4 is confirmed by customers who were also interviewed. Another problem in contracting external agencies usually occurs with rice mills. There are problems about the quality and weight of the rice. If any rice mill delivers rice which does not meet the agreed standards, it will be told to recall that rice. Since CEb4 buys rice from several rice mills, the problem of rice shortage will not occur. If non-standard rice is used in the

production, the output will lack quality which increases CEb4's production costs and undermines customers' trust.

In the production process, most of the CEbs have an assigned person to monitor production. However, there are differences in the details between each CEb. In CEb1, a member of staff has been assigned as Head of Production. In the actual operations, however, this member of staff performs the same roles as others in the production division. The person who plays an important role in quality control during the production of substances such as shampoos, soaps or lotions is the assistant manager because of her expertise and skills as mentioned above. In other stages, such as preparing herbs, bottling, labelling or sealing, staff working at each stage will help each other to monitor their work. In CEb2, the staff works as a team similarly to CEb1. They can normally run day-to-day operations by themselves and nobody is officially assigned as a particular supervisor. However, at least one member from the Board of Directors will participate in each process in case there is a minor problem requiring a decision. In CEb4, the production manager is the person who monitors and controls the production processes. He has a role in supervising employees in the production plant as well. If there are any problems in the production plant, the production manager will have the authority to make decisions in order to solve the problems. Then, those problems and solutions will be raised in the weekly meeting at CEb4 in order to let others know what happened. However, some big issues such as changing machines or improving the production plant are beyond his authority; these must be approved by the board.

Comparing CEb1, CEb2 and CEb4, it may be said that CEb4 has the most formal monitoring and control in the production process, while CEb1 and CEb2 staff working at

each step will help each other to monitor their jobs even when there is an assigned person to monitor. In CEb3, on the contrary, there is nobody appointed as Head of Production and work is done without official control. This may be because the production process - which is presented in Figure 5.13, Section 5.2.3.3 - is not complicated. Experienced workers help to supervise and guide new workers. It may be said that all workers are involved in monitoring the production process. They help each other to monitor the production in order to ensure that the production goes smoothly and meets the expected standard. Moreover, having all workers involved in the production monitoring helps reduce the problem of free riders in the workplace, because if someone slacks on the job, the others will let the chairwoman know.

Although the staff in the operation unit of each CEb can perform their routine jobs without interference from management, dealing with their external environments such as suppliers is normally the responsibility of management, which is the CE manager or CE chair, especially when issues or difficulties happen. This may be because most people who work in the operation unit of the CEbs are not highly educated, and do not feel confident enough to contact outsiders by themselves (Phothisita, 2013). According to Espinosa and Walker (2011), the operation should be as self-governing as possible to deal with its environments. If the operation can do this, it can be viable by itself. Considering all the case studies in this chapter, it is still difficult to find an S1 that is absolutely viable in its own right, even if they are part of the best-practice CEs. However, all the CEbs also have responsible autonomy; that is, staff can decide the matter within the scope of their jobs.

5.3.2 System 2

System 2 (S2) involves reducing oscillations in the operation unit, cutting down the variety of its operational interactions (Beer, 1979) and handling conflicts of interest between S1 units in an organisation (Espinosa and Walker, 2011). It has been identified that a conflict of interests or competition for resource rarely arise as problems in the CEbs, having only one S1 in the operation unit. Although some of the CEbs produce several kinds of products, all the products are produced by the same people and the same equipment/machines. Therefore, the operational plan or production schedule, which is a tool to keep the production running smoothly, is very rare among the CEbs. However, all the CEbs have records about day-to-day operations such as an income and expenditure accounts, sales reports, product inventory records, materials inventory records, membership records, and customer information records. The inventory records are used in setting a production plan in most of the CEbs. In CEb1, they emphasise accounting because they believe that transparency and accountability is important in running a business, especially a community business or multiple-owners business. Most of these CEbs use IT or computer programmes to record their information in order to make it easy, convenient and accurate to store and retrieve. It is only CEb3 that has not used IT or computer programmes to support its recording of information. All paperwork is done manually because most people working in CEb3 are aged 50 or more and only finished primary education; they are not familiar with technology and cannot use computer programmes. To prevent errors in the manual recording of income and expenditure accounts, the chairwoman claims that she normally checks it again. However, if anything needed to be recorded in a computer file,

the chairwoman would ask her daughter, who can use a computer, to complete that task.

Although a conflict of interests, or competition for resources, infrequently occur as problems in the CEbs, some of them realise that rules and regulations are necessary when working with others in order to reduce oscillations in the operation unit. In CEb1, the rules and regulations of the operational unit have been posted in CEb1 in order to remind all staff to follow the agreements. Examples of these regulations include times to start and finish work, no food and drink in the production area, and wearing a gown and a hat when entering the production room. In CEb4, human resource regulations about working hours, benefits and compensation are announced in order to reduce interference in the workplace.

Another way to maintain stability in CEb4 is arranging a weekly meeting in the CE every Monday morning. As Walker (2001) mentioned, improving organisation information systems, such as weekly business information, can help to maintain stability which is a part of S2 in the organisation. Therefore, the weekly meeting in CEb4 may be considered a way to improve organisation information system. The managing director, deputy managing director, advisor, production manager, marketing manager, administrative manager, finance officer, accounting officer, and administrative officer attend this weekly meeting. Each division will report their work, problems that have occurred and solutions and results in the meeting in order to share information with others. Issues that need others' opinions will be raised as well. In addition, as S2 deals with a conflict of interest, Espinosa and Walker (2011) note that another S2 activity is allowing members in the operation unit know the needs of another in terms of operations and

resource management. They also give examples of tools to support this activity, which are the information tools and systems, technical standards, and communication protocols. In relation to CEbs, this activity of S2 happens informally; that is, they normally use word of mouth to let others know, rather than applying any formal systems. This may be the result of being a small enterprise with a small number of people who work closely together.

5.3.3 System 3

A key function of System 3 (S3) is generating synergies between S1 in the operation unit (Beer, 1979). According to Espinosa and Walker (2011), examples for seeking synergy are joint purchasing, expertise sharing, and using by-products of one S1 as a raw material of another S1 in the operation unit. Considering CEbs, the synergy in each CEb is considered from its S1 because all CEbs in this study have only one S1 in the operation unit, as with the CEts. These synergies can be found from time to time: for example, in CEb3, they use small pieces of banana from making banana chips to produce banana rice crackers. In some CEbs, such as CEb1, job rotation is a way to generate synergy. Job rotation allows workers to perform several functions in the production. When there is a shortage of labour in a function, these workers can replace others immediately. This may be considered as expertise sharing, which is a way to seek synergy in an organisation. That CEb2 has signed MOUs with outside rice mills as mentioned above in Section 5.3.1 can be considered as seeking synergy as well.

In addition to synergy function, another role of S3 is to make sure that the autonomy of S1 must not endanger the viability of the organisation as a whole. The accountability channel, resource bargain channel, and command channel (legal and corporate norms)

are three channels that S3 uses to manage the operation unit (Espinosa and Walker, 2011). Regarding the accountability channel, most of the CEbs have performance assessment both for teams and individuals. It is clear that the CEbs have more formal accountability channels than the CEts. Team performance is assessed by comparing actual performance against targets. In CEbs, generally, team performance assessment is organised in an explicit or formal way. This is because they all have explicit production plans which can be compared with the actual performance. However, individual performance may be done both in a formal way, such as at CEb1 and CEb4, or an informal way, such as at CEb3. In CEb1, staff in the operation unit will be assessed by the CE manager and colleagues, including the number of working days, while in CEb4 individual performance will be calculated from the number of bags of the dough produced divided by the number of staff at work on a specific day. In CEb3, the CE chairwoman will be an assessor observing diligence and performance of staff working in the operation unit. Whether through a formal or informal assessment, the individual's performance is also linked to individual rewards. The results of team performance assessment can be linked to the resource bargaining channel and resource allocation.

Considering resource allocation, most of the CEbs have an explicit annual budget which is allocated by the CE Board or Board of Directors. In day-to-day working, the CE chair or CE manager is the person who takes responsibility for allocating people and money. All of the CEbs rarely have competition over budget because there is only one S1 in each CEb. Therefore, the budget is allocated after considering the priority and necessity of tasks. However, sometimes difficulties occur in allocating resources, as the following examples show.

In CEb1, sometimes labour shortage problems may occur in the farming season. This is because most of the production staff in CEb1 have to plant rice to feed their families throughout the year. To resolve this potential tension, the manager is responsible for the division of labour based on the urgency of jobs. Part-time workers will occasionally be hired to alleviate this problem. In CEb2, there is a major problem in allocating resources because CEb2 cannot afford to buy all the organic rice, owing to its limited budget, from farmers who are shareholders of CEb2. Surplus rice will be sold in the regular market, which offers around eight baht (16 pence) per kilogramme lower than selling it to CEb2. To solve this problem, CEb2 management made the decision to give the shares in CE to farmers instead of paying money to buy organic paddy. This solution is regarded as a win-win strategy because farmers can sell a greater volume of paddy to CEb2, while CEb2 can buy a great deal of paddy without paying more. In CEb3, conflicts sometimes occur between staff working together. The chairwoman uses people allocation to solve the problem by arranging people who are in conflict to do the same work, such as packing together. This provides two advantages for the CE. First, they work faster and achieve better performance because they do not waste time talking to each other at work and it also appears that they have a little competition in productivity. Second, working together will allow them a chance to be reconciled with each other.

In addition to the explicit annual budget, all the CEbs have a production plan and production target to be a guideline and target for their production. Yearly production plans in each CEb are normally set by considering the sales information from the previous year and the capacity of the CEb. These production plans, which are set in advance, may be changed or adjusted to suit the changing environment, such as orders from customers. CEb1 and CEb3 work with production targets and always achieve them;

therefore, they do not need to use budget as a tool to control CE performance as a resource bargain channel. CEb4 works with production targets and orders received, and normally reaches the target as well. Although CEb2 has a yearly production plan, it does not mean that this CE can achieve the plan every year. Weather conditions and rainfall are the important factors in organic farming. If there is too little rainfall, farming will be futile. Furthermore, paddy purchasing in each year depends on CEb2's budget and the price of rice in the market. CEb2 may be unable to trade rice following the plan if they have limited budget. Apart from the yearly plan, most of the CEbs also have short production plans, such as monthly or weekly plans. In setting such plans, sales information from the previous month, orders for the next month, and the number of products in stock will be considered.

The last channel used to manage the operation unit - legal and corporate norms, rules and norms - can commonly be found in the CEbs. Some of them are presented in written form. These rules are strictly enforced, especially the rules relating to safety and hygiene in production. Examples of rules and regulations in the CEbs were mentioned above in Section 5.3.2.

5.3.4 System 3*

S3 needs to know complete and real time information about the operation unit in order to react or provide timely and effective support. However, information delivered to S3 by formal channels may be neither complete nor timely. Therefore, an alternative and internal channel to collect data directly from S1 – System 3* (S3*) - is required. Informal monitoring techniques (S3*), which are normally used to gather more information and feedback from its S1 in S3 at each CEb, include walking the walk and informal talks with

workers in the operation unit. These informal monitoring techniques can be used, and work well, in these CEbs because they are not large organisations with high numbers of employees. Moreover, everyone in a CEb is intimately familiar with one another. The less hierarchical structures in the CEbs also allow people in different positions and levels to avoid gaps in communication. Therefore, talking with each other, not only within the working team but also with management, happens regularly. If there is something wrong, the CE chair or CE manager will be able to handle the problem immediately.

5.3.5 System 4

System 4 (S4) is required to ensure that the operation unit can survive in a changing environment. Therefore, S4 jobs are scanning the external environment, looking for threats and opportunities, and creating plans to handle the new circumstances. These tasks are necessary to ensure long-term viability (Espinosa and Walker, 2011). None of the CEbs have an official function to monitor its external environment. However, all the CEbs have at least one person to do the S4 jobs. It is common that the individual who takes this job is either the chair or the manager. Information obtained from the external environment, that may affect the CE, is taken into consideration in order to prepare for changes. This may be proof that they are active in monitoring and responding to the external environment. Continuous tracking of the external environment, and the need to develop and remain viable, result in the setting of product development plans and strategic plans in most CEbs. This means they do not want to stay in their comfort zone without any development. On the contrary, they would like to keep developing their CEs. Most of the new ideas and innovations at the policy level normally arise from the CEbs' management and the majority of workers are rarely involved in creating new ideas, even though their ideas are very welcome. However, it may sometimes be seen that

workers use their creative ideas at the implementation level, such as decorating gift sets. Examples of the S4 job in each CEb are as follows.

CEb1 management plans to launch at least one new product in a year. To create the development plan, the manager and the assistant manager, who are the key persons in this task, need to possess information about customer satisfaction and market trends. For example, when Lakoocha or Monkey Jack were becoming popular because, a researcher revealed, it has a component that reduces the dark pigment of skin, CEb1 bought into this trend and began to produce Lakoocha cleansing soap. CEb1 also use social media to promote their products and activities at <https://www.facebook.com/OTOPNamkian>. This is a channel that allows customers and consumers to access CEb1 easily. It can be said that CEb1 uses technology, which is an external environment, as an opportunity for the CE. CEb2 is another CEb that presents their products, information and activities through social media and websites. These can be seen at <https://www.facebook.com/kasedtipboonmeeorganicrice> and <http://www.rakbankerd.com/>. Furthermore, CEb2 management has been able to gain certifications of organic rice standard in order to increase the value of the products and the confidence of customers. The standards that CEb2 have achieved include FAIRTRADE, USDA Organic Standard, Thai Geographical Indication, Organic Thailand's Brand, and Good Agricultural Practice.

At present, CEb3 and CEb4 do not have product development plans. CEb3's chairwoman reasons that staff in CEb3 have no more time to produce a new product because the production of existing products consumes all their time. The creation of the new product would only take place on special occasions such as a product contest arranged

by a government agency. In addition to producing regular products as planned, CEb3 sometimes produces a product that is compatible with a festival: for example, baking cakes to sell at the New Year festival. In CEb4, as with CEb3, the main goal at present is to produce quality Khanom Jeen dough as required within the time limits. However, the managing director has an idea that CEb4 may have the ability to produce other kinds of noodles, such as rice vermicelli, as a result of the experience in producing Khanom Jeen noodle dough.

5.3.6 System 5

System 5 (S5) is needed to make the whole organisation work in the same direction. The role of System 5 (S5) involves organisational closure, identity and ethos. S5 also takes responsibility for the ultimate authority and overseeing of the interaction between S3 and S4 (Espinosa and Walker, 2011). In all the CEbs, people taking responsibility for the jobs of System 5 in all best-practice CEs are on the Board of Directors or the committee of each CE. The board/committee was selected from the CE's members. They have a period of time for working in their position on the board/committee. This means every member has a chance to be selected to work on the board/committee. Therefore, this is the way to strengthen the democratic environment in the CEs and communities.

Regarding organisational values, which can be considered as guidelines for operating and managing each CEb, CEb1-CEb3's were announced explicitly, while they were quite implicit in CEb4. The organisational values of CEb1 were derived from a brainstorming session of the board. The values consist of four pillars, which are the use of local materials, the use of inherit local wisdoms, following sufficiency economy concepts, and avoiding using chemicals (Nam Kian Community Enterprise, 2012). Then, CEb1 always

strictly follows these values in running the enterprise. The organisational values of CEb2 also come from the mutual agreement of the board. The values consist of members' participation, transparency and collaborative learning (Oom Saeng Community Enterprise, 2013). The sufficiency economy concept is adopted as a guideline for CEb2 operation. Based on these values, CEb2 then gives priority to agricultural development, community development and collaborative learning, rather than focusing on profit. The organisational values of CEb3 are to produce processed foods with dedication and return profits to the community (Lad Bua Khao Community Enterprise, 2013). These values came from what really happens in CEb3. All the staff try their best to produce quality products. Some of profit is allocated to members of the CE who are part of the community, some is used to buy raw material from banana farmers in the community, while some contributes to community development such as feeding people who join the community development activities in the village. These are the reason behind the words 'return profits to the community'.

Regarding establishing policies and regulations in the CEbs, these are normally written or announced to the CE's members. This allows everyone to understand and follow the same guidelines. Examples of policies or regulations that are commonly found among the CEbs are the composition of CE board/committee with their responsibility and authority, membership qualifications, rights and duties of members, termination of membership, the annual budget, and the allocation of benefits.

Regarding the function to oversee the interaction between S3 and S4, this S5 role may not be obvious because the S3 and S4 jobs in all the CEbs are performed by the same person- the CE manager/chair. Moreover, the CE manager/chair is a part of the CE

committee which performs the S5 job. With this structure, it is quite unlikely that S3 and S4 will have a conflict or ignore agreed policy to the point at which S5 has to use the ultimate authority.

5.3.7 VSM Analysis at the Individual Level

As well as CEts, the VSM analysis at the individual level of CEbs will be expanded here in order to complement VSM analysis in the CEbs. Although every function of the VSM categories can be found in CEbs implementation, which is at an organisational level, considering VSM in a lower level of recursion may be helpful for CE's study as mentioned in Section 4.3.7. Since the VSM analysis at the individual level is not the aim of this study, the researcher will present this point only briefly.

To analyse the individual level in CEbs at the light of the VSM, the same questions as used in CEts are employed. These questions are:

System 1: What skills does a worker need to develop to better contribute to performing the primary tasks?

System 2: What skills and capabilities does a chair/staff need to prevent and deal with conflicts among other operators within the CE?

System 3: Does a chair/staff know how to promote synergies among the employees in CE? How to manage resources? And how to guarantee adherence to organisational norms and processes?

System 4: Is a chair/staff able to maintain an interest in exploring change and innovations in the external environment and to respond to these challenges?

System 5: Does a chair/staff know how to provide clear policies, strategies and a clear direction to the CE?

To answer these questions, the researcher consider a manager and a member of CEb1 as an example. Data collected by observation in CEb1 are applied and the answers presented in Table 5.1.

Table 5.1: VSM Analysis at Individual Level in CEbs

VSM	Position	
	Manager	Staff member
System 1	-	Skill in producing herbal products and packaging
System 2	Communication skill Negotiation skill Planning skill Human resources management skill	Communication skill Time management skill
System 3	Yes	Yes
System 4	Yes	Yes
System 5	Yes	Yes

Data from Table 5.1 reveals that a worker in CEb1 needs to improve her skills in producing herbal products. Although there is a formula for producing an herbal product, it is sometimes found that the product produced by different staff has different qualities, even though they use the same formula. Consequently, there are only three staff that can work in the process of mixing ingredients according to the formula, which is one of the production process as shown in Figure 5.3. If other staff can develop this skills, they could better contribute to the primary tasks.

To prevent and deal with conflicts among other operators within the CE, both the manager and the staff need these type of relational and communication skills. That means they need communication skills such as being able to speak clearly, to be polite with others, and to listen to other opinions. Moreover, the manager needs planning skills to prioritise and schedule jobs in the CE. This can help to reduce conflict among workers in terms of role allocation. Negotiation skills are also important for dealing with conflict and reducing staff dissatisfaction. In addition to the conflict in work allocation and production schedule mentioned previously, another conflict among workers in this CE comes from the fact that they feel upset with some colleagues who often arrive late and do not work properly, but receive the same wage as others. To alleviate this problem, the manager needs skill in human resource management such as being able to design and implement compensation schemes: e.g. setting a special bonus for a worker who has never come late in a year. Regarding staff, they need time management skill in order to manage things on time. If each staff member could finish their work on time, conflict among the operatives would be reduced.

Regarding System 3's skills, the manager normally tries her best in promoting synergies among the employees. The way she organises task allocation and job rotation in CEb1 is an example of her possessing such skills, as described in Section 5.3.3. The staff member and colleagues also do the division of labour by expertise, in order to finish the production on time and with good quality. With regard to guaranteeing adherence to the organisational norms and process, the manager knows and performs this job well by using performance assessment in CEb1. In addition, she always encourages workers to adhere to the rules relating to safety and hygiene in production by strictly following the rules herself.

The manager of CEb1 is very active in exploring changes and innovations in the external environment. She is also active in responding to these challenges. As mentioned in Section 5.3.5, she is the key person who takes System 4's job. Not only does she explore the changes, but she also responds to such changes. The example of Lakoocha cleansing soap mentioned in Section 5.3.5 is evidence of proof that the CEb1 manager performs well in System 4. Although the staff considered as this specific level may not be as active as the manager, she is updated about the external environment through both formal meetings and by informally talking with the manager and others in the CE.

The last question about System 5, is whether the manager can provide clear policies, strategies and direction to CEb1 member. She does it by meeting and talking with both workers in the CE and other members. She also offers CEb1's policies and direction to external visitor who come to visit CEb1. The researcher found that not only the

manager, but also the staff, can provide clear guidance concerning CEb1's work to outsiders when she was welcoming a group visiting the CE.

After examining the way the CEbs implement their functions using VSM categories, knowledge currently used in the CEbs and the management of such knowledge are considered in the following section.

5.4 KM Comparison between the CEbs

In this section, knowledge currently used in implementing the CEbs' functions using the VSM categories (System 1 – System 5) is presented, first in subsection 5.4.1. Later, KM analysis is discussed in subsection 5.4.2.

5.4.1 Knowledge Currently Used in CEbs

After diagnosing the five functions of the VSM, knowledge currently used in all the CEbs now can be identified. Knowledge currently used in each CEb is illustrated in Table 5.2 in order to compare knowledges between CEb1-CEb4. Then, the summary of knowledge currently used in the CEbs is presented in Table 5.3.

Table 5.2: Knowledge Currently Used in Each CEb

VSM	Kinds of Knowledge			
	CEb1	CEb2	CEb3	CEb4
S1	- List of materials		- List of ingredients/raw materials	- List of raw materials
	- Materials' properties	- Paddy properties	- Ingredients/raw materials properties	- Rice properties
	- Materials selection			
	- Sources of materials			
	- Products formula		- Products recipes	- Products formula
	- Production methods	- Production methods	- Production methods	- Production methods
	- Criteria of product/product standard	- Criteria of product/product standard	- Criteria of product/product standard	- Criteria of product/product standard

VSM	Kinds of Knowledge			
	CEb1	CEb2	CEb3	CEb4
S1 (cont.)	- Rules and regulations for working in the Operation unit			- Rules and regulations for working in the production plant
	- Problems in production	- Problems in production	- Problems in production	- Problems in production
	- Criteria to evaluate the performance of workers in S1			- Criteria to evaluate the performance of workers in S1
	- Expected performance (target) of S1	- Expected performance (target) of S1	- Expected performance (target) of S1	- Expected performance (target) of S1
	- Gap between target and actual results	- Gap between target and actual results	- Gap between target and actual results	- Gap between target and actual results

VSM	Kinds of Knowledge			
	CEb1	CEb2	CEb3	CEb4
S1 (cont.)	- Causes and consequences of the gap between target and actual results	- Causes and consequences of the gap between target and actual results	- Causes and consequences of the gap between target and actual results	- Causes and consequences of the gap between target and actual results
	- Actions to handle the gap between target and actual results	- Actions to manage the gap between target and actual results	- Actions to manage the gap between target and actual results	- Actions to manage the gap between target and actual results
S2	- Income and expenditure account recording	- Income and expenditure account recording	- Income and expenditure account recording	- Income and expenditure account recording
	- Day-to-day stock/inventory management	- Day-to-day stock/inventory management		- Day-to-day stock/inventory management
	- IT complementing/computer software use	- IT complementing/computer software use		- IT complementing/computer software use

VSM	Kinds of Knowledge			
	CEb1	CEb2	CEb3	CEb4
S2	- Production methods	- Production methods		- Production methods
(cont.)	- Interdependencies between S1 activities	- Interdependencies between S1 activities		- Interdependencies between S1 activities
S3	- Organisational goals	- Organisational goals	- Organisational goals	- Organisational goals
	- Sources of materials	- Materials market	- Raw materials markets	- Sources of raw materials
	- Materials' price	- Materials' prices	- Raw materials' prices	- Raw materials' prices
	- Materials selection	- Paddy selection	- Materials selection	- Rice selection
	- Stock/inventory of materials and products	- Stock/inventory of materials and products	- Stock/inventory of raw materials and products	- Stock/inventory of materials
	- Production methods	- Production methods	- Production methods	- Production methods
	- Expected performance (target) of S1	- Expected performance (target) of S1	- Expected performance (target) of S1	- Expected performance (target) of S1

VSM	Kinds of Knowledge			
	CEb1	CEb2	CEb3	CEb4
S3 (cont.)	- Monitoring and controlling methods	- Monitoring and controlling methods	- Monitoring and controlling methods	- Monitoring and controlling methods
	- Gap between target and actual results	- Gap between target and actual results	- Gap between target and actual results	- Gap between target and actual results
	- Causes and consequences of the gap between target and actual results	- Causes and consequences of the gap between target and actual results	- Causes and consequences of the gap between target and actual results	- Causes and consequences of the gap between target and actual results
	- Development plan from S4	- Development plan from S4		
	- Desired goals for S1 based on the development plan	- Desired goals for S1 based on the development plan		
	- Gap between desired and current goals of S1	- Gap between desired and current goals of S1		

VSM	Kinds of Knowledge			
	CEb1	CEb2	CEb3	CEb4
S3		- Organic certifications		
(cont.)	- Problems and needs of the management of S1	- Problems and needs of the management of S1	- Problems and needs of the management of S1	- Problems and needs of the management of S1
S4	- Organisational goals	- Organisational goals		
	- Production methods	- Production methods		
	- Operational plans for S1	- Operational plans for S1		
	- Development plan from S4	- Development plan from S4		
	- Development or change in the relevant environment of the CE (including market or customer trends)	- Development or change in the relevant environment of the CE	- Development or change in the relevant environment of the CE	- Development or change in the relevant environment of the CE

VSM	Kinds of Knowledge			
	CEb1	CEb2	CEb3	CEb4
S4 (cont.)			- Comments and feedback from customers	- Comments and feedback from customers
S5	- Organisational goals	- Organisational goals	- Organisational goals	- Organisational goals
	- CEb1's performance in terms of production and sales	- CEb2's performance in terms of production and sales	- CEb3's performance in terms of production and sales	- CEb4's performance in terms of production and sales
	- Development plan from S4	- Development plan from S4		

Table 5.2 demonstrates that the knowledge currently used in each function of each CEb is quite similar. To perform S1 tasks, knowledge on production methods is indispensable. Information related to materials such as lists of materials used in the production and their properties are important as well. Knowledge of the criteria for products or product standards is necessary in order to control product quality. It is also essential to know the criteria that S3 uses to evaluate the performance for S1 in terms of preparing for such an evaluation. Information about S1's targets allows S1 to know the gap between target and actual results. Subsequently, the causes and consequences of the gap must be identified in order to identify policies to manage the gap.

In S2, knowledge on using computer software is necessary because most of the CEbs use IT in recording and storing information. Knowledge about income and expenditures (accounting) and knowledge about day-to-day stock/inventory management is also required in the CEbs. In addition, production methods and interdependencies between S1 activities are necessary in terms of recording information concerning S1 jobs. As S3 has to monitor and control S1, the manager who takes this job has to have information about S1 such as production methods, problems and needs of the management of S1, S1 targets and gaps between target and actual results. Information about stock/inventory of materials, stock/inventory of products, and material prices is needed in purchasing and resource allocation. Furthermore, S3 needs to know about the development plan from S4 to estimate the gap between current and future goals of S1. Thus, organisational goals are another element of information that is important for the S3 jobs.

Regarding S4, information about any developments or changes in the relevant environment of each CEb is vital for S4 jobs. Information for S1, such as production methods and S1's operation plan, is still required in order to establish a development plan. As with S3, organisational goals are the kind of knowledge that S4 has to have. For S5, organisational goals, the CE's performance in terms of production and sales, and development plans from S4 are essential in order to set policies for the whole CE, provide the ultimate authority, and supervise the interaction between S3 and S4.

From comparing knowledge currently used in each function of each CEb, the summary of the knowledge used in the CEbs is presented in Table 5.3. Then, this will be compared with the summary of knowledge used in the CEs in Chapter 6 in order to identify the knowledge required for CEs viability.

Table 5.3: Summary of Knowledge Currently Used in CEbs

VSM	Kinds of Knowledge
S1	<ul style="list-style-type: none"> - Production methods - Product recipe/formula - List of materials and their properties - Sources of materials - Materials selection - Stock/inventory of materials - Rules and regulations for working in the Operation unit/production plant - Criteria of product/product standard - Problems in production

VSM	Kinds of Knowledge
S1 (cont.)	<ul style="list-style-type: none"> - Criteria to evaluate the performance of workers in S1 - Expected performance (target) of S1 - Gap between target and actual results - Causes and consequences of the gap between target and actual results - Actions to handle the gap between target and actual results
S2	<ul style="list-style-type: none"> - Income and expenditure account recording - Day-to-day stock/inventory management - IT complementing/computer software use - Production methods - Interdependencies between S1 activities
S3	<ul style="list-style-type: none"> - Organisational goals - Production target/expected performance (target) of S1 - Production methods - Sources of materials/materials' market - Materials prices - Materials selection - Stock/inventory of materials - Stock/inventory of product - Law/regulation concern CEs' production - Problems and needs of the management of S1 - Monitoring and controlling methods - Gap between target and actual results - Causes and consequences of the gap between target and actual results

VSM	Kinds of Knowledge
S3 (cont.)	<ul style="list-style-type: none"> - Development plan from S4 - Desired goals for S1 based on the development plan - Gap between desired and current goals of S1
S4	<ul style="list-style-type: none"> - Organisational goals - Production methods - Operational plans for S1 - Development plan from S4 - Development or change in the relevant environment of the CE (including market or customer trends) - Comments and feedback from customers
S5	<ul style="list-style-type: none"> - Organisational goals - CEB's performance in terms of production and sales - Development plan from S4

After the knowledge currently used in the CEBs is examined, the ways that the CEBs manage such knowledge are discussed next.

5.4.2 The Management of Knowledge Currently Used in CEBs

In relation to KM, KM activities can be found in the operations of all the CEBs, although they do not apply KM officially. The four main steps in the KM process, knowledge generation, knowledge sharing, knowledge retention and knowledge application, are considered below.

5.4.2.1 Knowledge Generation

Knowledge generation stands for the creation and acquisition of knowledge both from inside the CE by learning, and from outside by importing. All best-practice CEs obtain knowledge from both outside and inside. They attain knowledge from outside by attending training programmes, learning from books/the Internet/experts, arranging study trips, applying local wisdom, attending roadshow programmes, and conducting research to collect the required information. Knowledge generated within CEs comes from trial and error, self-study and learning by doing. This indicates that the CEs do not rely only on knowledge from outside. Adapting and applying such outside knowledge to develop their own knowledge, is also important. Examples of notable knowledge generation from each CEb are as follows.

CEb1 applied local wisdom to produce its Bai Mee shampoo. In the production of this herbal shampoo, CEb1 used the learning by doing method. Shampoo produced during the experiment period would be distributed to local people to try and make comments. Then CEb1 used the feedback to improve the shampoo formula. After several rounds of trial and error, CEb1 finally got the right formula for the Bai Mee shampoo. They then use this formula to produce shampoo for sale. At present, CEb1 produces various kinds of products using different herbs. In the development of each new product, the CE manager and CE assistant manager have to read books, search the Internet and consult experts in order to gather enough information. They also get help from cosmetic specialists to adjust product formulae.

Creating knowledge from inside CEb2 is a result of self-study and 'learning by doing' methods. CEb2's chair is a key person who experiments with different ways to do

organic farming. Folk wisdom about organic fertilisers and the properties of plants is adopted to use in his farming as well. From his long experience of farming with trial and error, he has become one of the local experts in organic farming. Moreover, knowledge can be created by the need to work easily. The invention of plastic blocks to use in the rice packaging is a good example of this. Since CEB2 products will be presented in a rectangle shape, which is difficult and takes time to do so, a plastic block of the desired size has been invented. It makes all rice packs similar, even though the different packs come from different people. It also helps staff to reduce the time spent packing. CEB2 also acquires knowledge from various sources, such as books and the Internet. One example of this method is the research into standards and certifications of organic products, which CEB2 wants to achieve in order to add value to its products.

Since the chairwoman of CEB3 likes to travel and enjoys tasting foods, she has had an opportunity to find and taste different kinds of food from various places. If she likes some food or snacks, she will try cooking that food or snack. After several rounds of trial and error, she can create her own recipe. From this sort of learning by doing, CEB3 can generate knowledge to improve its products. Sometimes, the chair applies knowledge from cooking books to create CEB3 products as well. In addition, attending road show programmes arranged by the public sector in other provinces allows CEB3 members to learn about selling and marketing their products.

One of the interesting ways to obtain the required information, as found by CEB4, is conducting quick research. They collected data in Nakhon Si Thammarat Province to get information about the history and production process of Khanom Jeen, problems and solutions in producing Khanom Jeen by villagers, and the income from selling Khanom

Jeen. This information was brought for consideration, and discussed, in a meeting of the founder group in order to examine the advantages and disadvantages of the CE's foundation in detail. Moreover, CEb4 management adapted the production process of Khanom Jeen noodle dough from visiting another producer in north-eastern Thailand in order to get the perfect dough for southerners. CEb4 also tried several times to produce a dough that can be stored for a long time without preservatives. At this stage, folk wisdom about the use of salt-preserved food was brought into consideration. After several experiments, CEb4 found a satisfactory recipe. Moreover, throughout the duration of the operation, CEb4 had adopted 'learning by doing' to run and develop the organisation. Examples of learning by doing adoption include dealing with rice mills, quality inspection of rice, and troubleshooting about waste water from the production process.

It is evident that the CEbs have their own knowledge, both from applying knowledge from outside and generating it themselves; this makes their products unique and competitive.

5.4.2.2 Knowledge Sharing

Knowledge sharing refers to the distribution, or transmission, of knowledge from one person to others. Knowledge sharing within all the CEbs can be classified into two groups, namely formal and informal sharing. Formal sharing happens in a meeting such as a monthly board meeting or a weekly staff meeting from which those attending can know what situations are developing and problems occurring in the CEb. They may discuss and brainstorm to make decisions on management issues or to find a solution to a problem. In a weekly staff meeting, staff in each function/role can share information

or problems with others who can give feedback or make suggestions about the issues. This sharing allows people to know about what has happened in their CE and leads to cooperation in dealing with the resultant situations. All information sharing is normally recorded in a meeting's minutes, which may be used as a reference if the CEbs face the same situation or problem in the future. This is the transformation of tacit knowledge into explicit knowledge, which is a part of the process that could contribute to the creation of knowledge (Nonaka and Takeuchi, 1995).

Informal sharing normally occurs in the operational unit and in basic, day-to-day jobs. Informal knowledge and information sharing is usually the result of talking, explaining, demonstrating, and working together. Job rotation or helping other workers in different functions is another way to support knowledge sharing in CEs. In CEb1, for example, workers in production or packing job may be allocated to work in the labelling section if they are available. Staff working in the labelling section then need to explain the job to other staff, who join them temporarily, which allows a worker to learn and gain more experience. There is a difference in sharing knowledge in the operation unit between CEb3 and the other CEbs in that CEb3 shares knowledge in an explicit form by presenting ingredients and methods to produce each product in the CEb3 production room while the other CEbs normally share knowledge informally as mentioned above. This allows everyone working in the operation unit of CEb3 to be to produce the same product.

Experience sharing between farmers who are members of CEb2 is useful and has an impact on these CEs. They usually talk to others about things or problems that occur in running an organic farm. Sharing information and problems with others sometimes lets a farmer find an idea for a solution to his/her problem, when others have solved it

already. It may be said that knowledge or information sharing among farmers is a community of practice (CoP) in this CE. According to Wenger and Snyder (2000, p.139-140), a CoP is a group of people “...informally bound together to shared expertise and passion...”. These people also “...share their experience and knowledge in free-flowing, creative ways that foster new approaches to problems”. Such sharing in CEb2 also leads to collaborative learning in the community. Details will be discussed in Section 5.5.2.

In addition to sharing knowledge within their own CEb, these four CEbs also frequently share their knowledge, information and experience with outsiders. As they are successful CEs, other CEs and various groups occasionally arrange study trips to visit them. Occasionally, the CEbs’ chairs are invited to be a guest speaker or a trainer to share their knowledge and experience on a certain topic such as organic farming or managing a CE. It may be said that all CEbs are willing to share knowledge with others, even with those people who produce the same types of product.

5.4.2.3 Knowledge Retention

Knowledge retention is the process of keeping or storing the existing knowledge in order to make it easy to access and apply. All the CEbs keep their knowledge and information both in explicit and tacit knowledge. Knowledge and information in explicit forms are formulae, recipes, and records such as income and expenditure accounts, inventory and membership records. For example, in CEb1, all product formulae are recorded and stored as both computer files and hard copies. This is because accurate formulae are necessary for productions. Any inaccuracy in the ingredients may cause failure in production, which causes a waste of time and cost to CEb1. Moreover, if production staff change in the future, it can be assured that CEb1 will get the same products, at the

same quality, from the new staff. Most CEbs use IT to retain their information as mentioned in Section 5.3.2. Other knowledge and experience, such as working in the production and managing the CEbs, are embedded in people as tacit knowledge.

5.4.2.4 Knowledge Application

Knowledge application refers to the process of using existing knowledge in working or solving problems. People in CEb1-CEb4 applied both explicit and tacit knowledge in their jobs, not only in the production process, but also in management. For example, sales information from each year is used to set the production plan for the next year. Product inventory records are used to set monthly or weekly production plans. Members' records are used in dividend management. Customer records are used for conducting marketing promotions. However, the knowledge/information used most frequently is knowledge/information concerning production, such as product formulae and product recipes. These records are always used in production in order to maintain standards and product quality. It is clear that stored information allows staff to work easily and efficiently. This contributes to the performance of the CEbs. If there is no stored information, it may result in delay and errors.

Examining four KM activities, as mentioned above, reveals that KM activities occur consistently in the CEbs. These common characteristics of the four KM activities are added in Figure 5.19 to show the management of knowledge in the CEbs. In the next section, the comparison of learning in the CEbs and collaborative learning between the CEbs and their communities is presented.

5.5 Learning and Collaborative Learning Comparison between the CEbs

As with the previous chapter, in this topic learning in the CEbs is examined before moving to collaborative learning in the community.

5.5.1 Learning in the CEbs

Learning in the CEbs has occurred continuously since their foundation. This learning is concerned with both the production and management of the CEbs and happens when they attempt to solve problems that have occurred in the CEs, develop their products, improve their production, respond to customers' requirements, and plan their future. According to the types of learning reviewed in Chapter 2, it may be said that most of these CEs have both types of learning that are essential for organisations. The first one is learning that is suitable for routine jobs (Argyris, 1993), helps to control or handle the environment (Habermas, 1972), and is important and necessary for organisations (Senge, 1997). This group includes single-loop learning (Argyris and Schön, 1978), instrumental learning (Mezirow, 1991), survival or adaptive learning (Senge, 1997), and maintenance learning (Botkin et al., 1979). The second group is generative learning that helps to boost the capacity of organisations to create their future (Senge and Fulmer, 1993). Details of the learning in each CEb are as follows.

Learning in CEb1 has occurred at both operational and management levels. In the operational level, there is learning in improving the quality of existing products, developing new products, and improving packaging and labelling. These kinds of learning have occurred among CEb1's members who work in the operation unit. At the management level, there is learning in matters both within and outside CEb1. Within

the CE, the learning applies to managing CE matters such as human resources management, while outside matters concern marketing and customers. Learning at the management level normally occurs with a CE manager who is the key person in managing this CE. It can be said that learning in CEb1 takes place throughout the CE and occurs continuously.

Moreover, learning in CEb1 is not only learning problem-solving, but also learning to create their future. The evidence to confirm this statement is that CEb1 has created the Chewa brand, which sells the same products as the Nam Kian brand but with higher quality at higher prices to expand the customer target group. Without creating the Chewa brand, CEb1 can survive with no difficulty; therefore, creating a new brand is not instrumental learning, which is adapting when the organisation deals with changing situations as suggested by Senge and Fulmer (1993). On the contrary, it can be considered as generative learning, which is learning that encourages an organisation's capacity to create their future (Senge and Fulmer, 1993). Furthermore, creating the new brand can be considered as a way to exhibit the perceived self-efficacy of CEb1's management. According to Welsch and Kuhns (2002), this is a pattern that leads to successful formation and operation of a community-based enterprise.

Most learning in CEb2 relates to organic farming, pest control and bio-organic fertiliser. CEb2's members have learned from various methods including learning by doing, folk wisdom, experts, books, the Internet, and study trips. These kinds of learning have been occurring since Kaset Thip Group was founded. Although it is more than ten years ago, such learning still happens continuously in order to improve the quantity and quality of their organic rice. Learning about pest control can be considered as instrumental

learning because it is learning through problem-solving in performing jobs (Mezirow, 1991). To develop organic rice and bio-organic fertiliser is an effort to find a better way to do farming, which can be considered a kind of maintenance learning (Botkin et al. (1979). In addition to focusing on improving organic farming and increasing productivity, CEb2 also focuses on marketing matters - how to sell as much organic rice as possible at a reasonable price. To achieve this objective, CEb2 has tried to get international organic certification as mentioned in Section 5.2.2.3. Even if CEb2 does not have this international organic certification, their organic rice will still undoubtedly be sold in Thailand. It is certain that CEb2 can survive by trading solely domestically, but having the international organic certification allows them also to sell their products abroad. This is a form of generative learning which encourages CEb2's capacity to create their future, which is the expansion into overseas markets (Senge and Fulmer, 1993).

Most learning in CEb3 has happened due to the efforts of the chair. Regarding production, she has learned to create her own recipes for snacks by applying knowledge from books and learning by doing. With regard to management, although this CE is managed by a committee, the chairwoman is still the key person in managing matters. Therefore, she and the committee have to learn about CE management by learning from experts, training programmes, study trips and learning by doing. The chairwoman states that most learning occurs from efforts to handle problems that arise in production and management. This may be considered as single-loop learning because it is the process of detecting and correcting problems (Argyris and Schön, 1978). According to Argyris (1993), this kind of learning is suitable for routine jobs or repetitive matters. It is then reasonable to say that this kind of learning is also suitable for CEb3's production because it is a routine job. Furthermore, learning in CEb3 may be considered as survival learning

or adaptive learning as well. This is because it is learning from experience which helps to offer suitable responses to the situations and predict or avoid difficulties (Senge, 1997). It is difficult to find evidence to show that there is generative learning in CEB3; this is the difference between CEB3 and the two previous CEBs.

At the initial stage of CEB4's foundation, both learning in production and management were required. Regarding production, CEB4 learned from arranging study trips, applying folk wisdom, and learning by doing as described in Section 5.4.2.1. When they had a satisfactory recipe to produce Khanom Jeen noodle dough, the level of learning required to develop the product was reduced. Although CEB4 does not have to improve their recipe, learning in the production is still important and necessary. This is because problems or difficulties can occur in each production. This learning has occurred among workers and the production manager who work in the operation unit. In addition to learning concerned with production, learning related to management has happened continuously since CEB4 was founded. Examples of this type of learning are human resources management, time management, supplier management, and customer management. Responding to customer questions enhanced learning in CEB4, especially in the marketing manager and his team. Varying dough quality can cause problems for customers who buy dough to produce Khanom Jeen noodles. If they face problems in producing noodles, they will call the marketing manager to solve the problems, which then leads to learning.

With regard to the key factors that support learning, different opinions from people in each CEB are given. CEB1's members suggest errors in the workplace, problems-solving in the workplace, working as a team, and communication within the CE. Errors adversely

affect the workers and the CE's performance- to avoid the same mistakes, workers need to learn about the causes and effects of the errors. Trying to solve a problem can support learning as well. Working as a team allows members who work in the operation unit to see the ways their colleagues work and their performance. Then they can learn from their colleagues. It is certain that communication is also important for learning in the CE because it allows workers to know what happened and what will happen, and they can then learn from others' experiences. The CE manager further suggests that tracking news and information from the external environment is another factor to support learning in the CE. This is because such news and information may become inspirations to do new things and it also helps to increase enthusiasm in working which may lead to creativity and learning. In addition, keeping moving and trying to get out of the comfort zone is a factor that enhances learning in this CE. From the interviewing and observation process, it was clear that these factors supporting learning can be found in CEb1.

The chair of CEb2 comments that the need to reduce chemicals used in farming is the key factor encouraging him to experiment with organic farming. These experiments allow him to learn more and more about organic farming, bio-fertiliser and organic fertiliser. Although the chairman is a key person, and has created learning in the CE from the beginning, later learning has occurred purely among farmers who are members of the group. As mentioned in Section 5.4.2.2, knowledge or information sharing about problems between farmers, and how to solve problems, is another key factor to support learning in the CE. The management team agree that problems in the workplace, whether from within or outside the CE, can encourage learning in order to find a solution. Even if they have not been able to solve a problem, they believe that learning still

happens as they know one more way that cannot solve the problem. Their opinion different from Argyris (1993), according to whom learning happens when a problem in an organisation is detected and corrected. If the problem continues, that means learning has not occurred. In addition to finding a solution to the problem, setting the future of CE can lead to learning. That CEb2 pays attention and tries to gain the international organic certification (as described above) can be considered as setting the future of a CE which contributes to learning.

For CEb3, the chair suggests that problem solving is key. Support from local government agencies is another key factor to support learning in this CE. Such support may be in the form of providing information or knowledge, delivering training programmes, or generating activities such as roadshows in which CEs are allowed to join in order to promote their products. The opportunity to join the roadshows helps to broaden the views of members of CEb3. This can then lead to their improvement, development and learning as well. This corresponds to Soviana's study which states that good collaboration with other stakeholders can contribute to performance of community-based enterprises. CEb3's members add that sharing and coaching in the operation unit can help new staff to learn about production. Furthermore, comments and suggestions from customers is the other key factor to support learning in this CE.

In CEb4, workers in the operation unit agree that coaching from the production manager and their colleagues is a key factor supporting learning in manufacturing, while solving production problems is the other key factor. The marketing manager and his team agree that problems and solution-finding allow them to learn continually. The MD adds that seeking maximum benefits to the CE, without sticking to its comfort zone, can encourage

learning in CEs. In addition, information from the external environment can be another factor that stimulates learning in the CE. This is because such information may give some ideas to MD for applying to this CE.

After examining learning in the CEs, collaborative learning between the CEs and their communities is investigated in the following section.

5.5.2 Collaborative Learning between the CEs and Their Communities

As with the CEs in Chapter 4, in order to explore collaborative learning between the CEs and their communities, this section focuses on four groups in the community, which are directly correlated with the CEs. As described in the conceptual framework presented in Section 2.12, these are local food/raw material providers, community members, other CEs and local government agencies.

All the CEs purchase some raw materials from local food/raw material providers. For example, CEb1 buys herbs used in the production from villagers, CEb2 buys paddy from local farmers, CEb3 buys bananas from local gardeners, and CEb4 buys rice from mills in the same province. This corresponds to what Valaisathien (1996) said, that CEs usually produce goods or provide services by using local and natural materials. Raw materials purchased by the CEs can help to stimulate the local economy because of the large volume purchased. This is consistent with an objective of the CEs to strengthen the local economy (Community Business Scotland, 1991, cited in Pearce, 2005). Knowledge sharing between CEb2 and the farmers who are local raw material providers for this CEb is a noticeable example that demonstrates knowledge sharing and collaborative learning in the community. Since CEb2's chairman has knowledge and experience in organic

farming, he shares his knowledge and experience with farmers and allows them to improve productivity in terms of the quality and quantity of rice. Conversely, the chairman can learn from other farmers as well.

Considering interaction between the CEbs and other CEs in their communities, there is knowledge sharing between them as well. For example, CEb1 learned how to manage the accounting system from Saving Group CE. However, what usually happens is that other CEs and other groups, both in the same province and outside, have arranged study trips to visit all the CEbs in order to learn from the CEbs' experience. From time to time, some of the CEbs arrange a study trip to other CEs or organisations in order to broaden their knowledge and experience from others.

In addition to sharing knowledge with other groups or organisations, as mentioned previously, the CEbs sometimes share knowledge with people in the community. For example, CEb2 arranges special sessions for students in the community to learn about organic agriculture and folk traditions. This knowledge sharing by CEb2 leads to collaborative learning at both the community level and national level. In Nam Kian Community, in which CEb1 located, sharing and communicating regularly happen; to communicate with people in this community is not difficult for CEb1 because the community area is not too large. Moreover, there is only one school, one temple and one health centre in Nam Kian Sub-district. These are places where a lot of people join together, and news or information can therefore be distributed efficiently. In addition, the community leader holds a village meeting every month, so CEb1 can use these events to share information such as disadvantages of using chemicals, the new member registration, new products or the CE's activities. Sharing about the disadvantages of

using chemicals can be considered as collaborative learning in this community. Considering knowledge sharing between the CEbs and people who are their customers, CEb4 is outstanding in this regard. As mentioned in Section 5.3.1, the marketing manager at CEb4 occasionally had to solve customers' problems when producing the Khanom Jeen noodles. Knowledge sharing from the manager, and solving such problems, allows both the manager and customers to learn together.

As well as the CEts, local government agencies have an important role in sharing knowledge or information with the CEbs. However, the difference is that the CEbs not only get support from local government agencies, but also give cooperation. For example, CEb1 normally joins exhibitions or participates in projects arranged by government agencies. Another example is that CEb3's chairwoman helps a local government agency to organise a training programme by taking responsibility for arranging the training venue and collecting participants.

In addition to knowledge sharing with others, most of the CEbs constantly participate in community development activities. The levels of involvement or participation vary from attending as a villager to being a key person or working as a team in arranging activities. In community development matters, CEb1 has participated in all projects and activities. Since Nam Kian is a strong community, cooperation in community development or solving the community's problems usually occurs. The key persons in CEb1 are well-known; therefore, they are usually invited to participate in the community's activities. Most workers in CEb1 are village health volunteers which, as a group, plays a key role in the village's development. Apart from development activities, CEb1 also donates some profits to the public, such as a scholarship for students and village fund. These

confirmed that CEb1 has been actively involved in community development. The CEb3 chair is also active in community activities participation and she has always been a leader or a key person in activities related to occupation and livelihood. Regarding other community development activities such as Big Cleaning Day, she will get involved as a villager. However, as a well-known CE in the community, CEb3 sometimes offers some kind of support such as lunch or ice cream for the villagers who join in the community development activities. CEb2 and CEb4 are also willing to help and cooperate in community development activities as requested by the community. For example, CEb4 occasionally supplies sportswear to students and frequently serves Khanom Jeen noodles with curry as lunch for students in schools in the community. Although such support cannot be considered as promoting collaborative learning, it shows that CEb4 is involved and interested in the well-being of the community.

Community representatives made the following comments regarding key factors that support collaborative learning in the community, In Nam Kian village where CEb1 is located, representatives of community members, local suppliers, other CEs and local government agencies agreed that knowledge sharing is a factor that promotes collaborative learning in the community. Information or problem-sharing has created mutual awareness and recognition in the community which will lead to problem-solving or problem prevention together. These processes eventually result in collaborative learning. The representatives also expressed the opinion that knowledge sharing in the community at present is good because of the advantages of area and important places in the community as mentioned above. They also considered the key factors in supporting learning are continuous communication, having role models, studying from

others, and having public consciousness of the community. These factors can be found in Nam Kian community.

The key factors to support learning identified from the interviews in CEb2 are related to farming, because most learning occurred in CEb2 and the community concern organic farming. In this community, there are four key factors. The first one is that people have the same interest in farming because it is a traditional occupation of people in this village. This leads to the second factor which is economic. Farmers want to improve their productivity in order to obtain get more income from farming. Eagerness to know and learn the same thing encourages people to share their problems and ideas with others. This links to the third factor which is information and knowledge sharing; in particular, sharing with intention and willingness. This leads to CoP in the community as explained in 5.4.2.2.

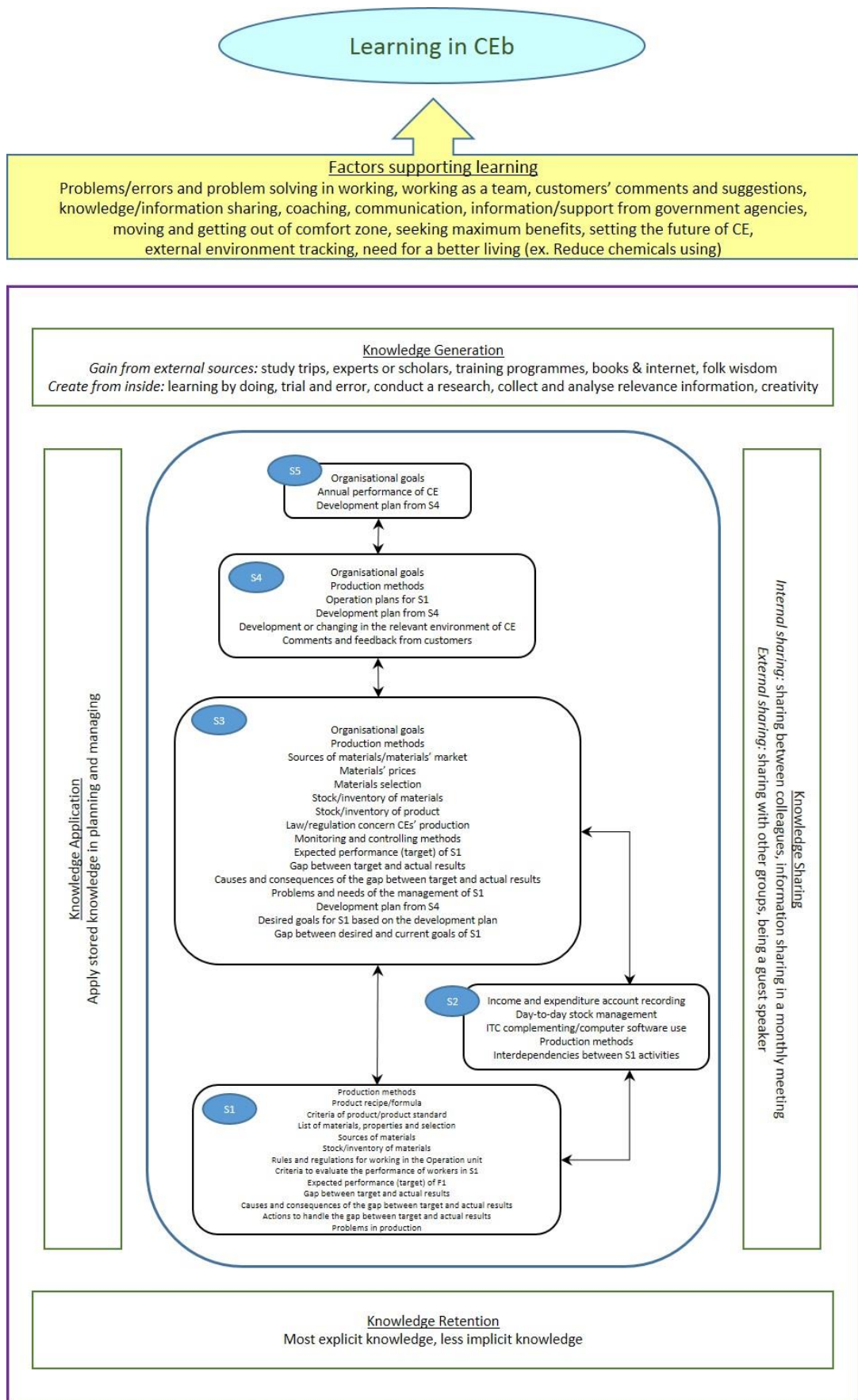
CEb3's chair commented that information sharing, knowledge sharing and communication are important for learning in the community. This is because learning from others' experiences normally saves time more than learning by oneself. Therefore, willingness to share knowledge is another key factor to support learning. If the senders are willing to share, the recipients will gain information or knowledge that is accurate and useful. Working together with others in the community allows learning as well. It is about learning to work with others, and how to get a job done. The need for extra income and a better life is another factor encouraging people to learn new things. The village leader further suggests that if people have good well-being, they will help to develop their community. On the contrary, people will not focus on community development if they still have difficulties in living.

CEb4's chair suggested that knowledge and experience sharing is the key factor supporting collaborative learning. This is because others can learn from CEb4's experience while CEb4 learns from others by talking and exchanging ideas. Networking is another factor supporting collaborative learning. The chairman reasoned that having strong networks allows CEb4 to learn from others and he further noted that CEb4 is a member of the Yommana Network, which is a distinguished and strong network in southern Thailand (Phongphit, 2014). The marketing manager and customers agree that problems and finding solutions lead to collaborative learning. This factor was raised by them because, as mentioned above, customers sometimes need help from the marketing manager to solve problems in noodle production.

5.6 CEb/KM Model

To summarise, the knowledge currently used in the CEbs, the management of such knowledge, and the factors supporting learning in these CEbs, Figure 5.19 has been developed.

Figure 5.19: CEb/KM Model



As well as the CEt/KM model presented in the previous chapter, this CEb/KM model applied the five systems (S1-S5) of the VSM as criteria to investigate knowledge currently used in each function. Therefore, such knowledge was placed in this structure, with the four main functions of knowledge management around the five systems. They are knowledge generation, knowledge sharing, knowledge retention, and knowledge application. The model expects to show that each system needs all four KM functions to manage its required knowledge. This model also presents factors supporting learning in the CEbs.

In addition to a discussion of the CEbs under the four main themes as presented above, some similarities can be found from analysing these CEbs. The following topic presents their key common attributes.

5.7 Common Key Attributes of the CEbs

From studying four best-practice CEs, eight common key attributes have been identified. First, all the CEbs use local resources in their operation or production. These resources are agricultural products that are readily available in the community or neighbourhood. This helps to add value to those resources and generate revenue for people in the community, while the CEb gets raw materials in a reasonable price. Second, creativity and initiative are both common features of the CEbs. Producing unique products enables the CEb to be viable in competition with others. Although a CEb can produce the same type of product as others, the identity or uniqueness of the product will make it desirable and saleable. Continuous learning is the third attribute of the CEb, and this results in unceasing development of the enterprise. This development includes both

organisational development and product development, which may be the variety or the quality of product. The fourth one is transparency and accountability management. All the CEbs have daily/monthly/annual sales reports and income and expenditure accounts which can be audited. This information can be used to their advantage in making decisions and planning as well. The next attribute is management by committee, not a person. This helps to enhance diligence in management and supports the democratic environment in the CE and the community. Creating partnerships with outside agencies is another key condition to becoming a viable CEb. Outside agencies may be government agencies, local educational institutes, other CEs both inside and outside community, and related groups or networks. This collaboration allows the CE to obtain information and knowledge from outside to improve and develop itself. Knowledge and experience sharing among partners contributes to collaborative learning. Willingness to become the learning resources is another feature of the CEbs. These CEs believe that information sharing allows both parties to learn, develop and grow together. This shows that best-practice CEs do not focus only on business income such as profits but also pay attention to learning and collaborative learning, which are the ways to promote human capital and social capital outcomes. This is consistent with a proposition suggested by Welsch and Kuhns (2002) that success or failure of a community-based enterprise should be measured not only in terms of business outcomes such as profits, growth rate and return on investment, but also in terms of human capital and social capital outcomes. The last, common key attribute of CEb is the characteristics of the CE leader. This attribute derives from talking to and observing those leaders of the four CEbs. All of them are enthusiastic, devoted, patient, and proactive; these are some of the features of a good leader.

5.8 Summary

This chapter has discussed the CEbs in terms of four themes, namely general information, VSM analysis, KM analysis, and collaborative learning. Using the VSM categories to see the way the CEbs implement their functions, it has been found that all the CEbs have more explicit and more formal implementation than the CEts. This results in demanding more extensive knowledge from each function of the CEbs. The four main steps in the KM process, knowledge generation, knowledge sharing, knowledge retention, and knowledge application, are explicitly found in these CEbs. Learning occurs continuously in all the CEbs both learning concerns the production and management. Moreover, both types of learning, namely survival learning and generative learning, which are essential for organisations, can be found in most of the CEbs. In addition to learning in their enterprises, all the CEbs also have a role in promoting collaborative learning in their communities. Therefore, a CEb/KM model has been proposed to summarise the knowledge currently used in the CEbs, the management of such knowledge, and factors supporting learning in these CEbs. At the end of the chapter, eight common key attributes of the CEbs were presented, while the next chapter offers a discussion of the findings by comparing CEts and CEbs.

Chapter 6

Data Analysis

Improving Viability of Community Enterprises Using KM:

Lessons from the Findings

6.1 Introduction

This chapter will discuss the findings by comparing the typical CE's (CEts) details presented in Chapter 4 and the best-practice CE's (CEbs) details described in Chapter 5. The contents of this chapter consist of a critical review of the knowledge used for CE's viability considered from a systems perspective in terms of the VSM structure, the management of such knowledge, and learning in CEs and collaborative learning in CE communities. These comparisons allow us to see the main differences between the CEts and CEbs in terms of the management of knowledge and learning in order to explore useful ways to improve the viability of CEs using KM, as is the aim of this study. The discussion of these comparisons is linked to the literature on the VSM, KM, learning and collaborative learning. Therefore, a CE/KM model is proposed from the findings about the kinds of knowledge required in CEs and the ways to manage such knowledge. In addition, factors concerning the VSM function, KM processes, learning and collaborative learning which may contribute to CE's viability are proposed.

6.2 Comparative Analysis and Discussion

The matters to compare and discuss are presented here followed by a structure in line with the questions presented. Therefore, the following sections will provide a comparison and discussion on the CEs studied against the dimensions of KM, learning and collaborative learning.

6.2.1 Knowledge Management in the CEs

The discussion in Chapters 4 and 5 of the ways in which the CEs and CEbs have implemented their functions using the VSM categories allowed us to understand the knowledge currently used in each function of the CEs and CEbs in order for these to be viable (see Sections 4.4.1 and 5.4.1). In this section, the knowledge currently used in each group of CEs will be compared in order to ascertain the types of knowledge used for CEs to be viable. Later, the ways the CEs and CEbs manage their knowledge will be compared in order to identify more effective ways for CEs to perform knowledge management. The findings aim to answer the first research question: 'How can CEs' knowledge be enhanced as a way to improve their viability?'

6.2.1.1 Knowledge Required for the CEs' Viability

Before considering the management of knowledge in CEs, knowledge currently used in each VSM system between the CEs and CEbs studied is compared in Table 6.1. This indicates the types of knowledge currently used for CEs' viability.

Table 6.1: Knowledge Currently Used in System 1 – System 5 of the CEts and CEbs

VSM	Commonalities	Differences	
		CEts	CEbs
S1	<ul style="list-style-type: none"> - Production methods - Product recipe/formula - Lists of materials, their properties - Criteria of product/product standard - Problems in production 	<ul style="list-style-type: none"> - Professional skills needed in production - Customers' needs 	<ul style="list-style-type: none"> - Sources of materials - Materials selection - Stock/inventory of materials - Rules and regulations for working in the Operation unit/production plant - Criteria to evaluate the performance of workers in S1 - Expected performance (target) of S1 - Gap between target and actual results - Causes and consequences of the gap between target and actual results - Actions to handle the gap between target and actual results

VSM	Commonalities	Differences	
		CEts	CEbs
S2	<ul style="list-style-type: none"> - Income and expenditure account recording - Day-to-day stock/inventory management 	-	<ul style="list-style-type: none"> - IT complementing/ computer software using - Production methods - Interdependencies between S1 activities
S3	<ul style="list-style-type: none"> - Production methods - Sources of materials/ materials' market - Materials' price - Materials selection - Production target/ expected performance (target) of S1 - Stock/inventory of materials - Stock/inventory of product 	-	<ul style="list-style-type: none"> - Organisational goals - Monitoring and controlling methods - Gap between target and actual results - Causes and consequences of the gap between target and actual results - Development plan from S4 - Desired goals for S1 based on the development plan - Gap between desired and current goals of S1

VSM	Commonalities	Differences	
		CEts	CEbs
S3 (cont.)	<ul style="list-style-type: none"> - Law/regulation concern CEs' production - Problems and needs of the management of S1 		
S4	<ul style="list-style-type: none"> - Market demands - Customers' needs/ Comments and feedback from customers 	-	<ul style="list-style-type: none"> - Organisational goals - Production methods - Operational plans for S1 - Development plan from S4 - Development or change in the relevant environment of the CE (including market or customer trends)
S5	<ul style="list-style-type: none"> - CE's performance in terms of production and sales 	-	<ul style="list-style-type: none"> - Organisational goals - Development plan from S4

Table 6.1 presents similarities and differences in the knowledge required in CEts and CEbs. In-depth details of the items listed and reasons that each system requires such knowledge can be found in Sections 4.4.1 and 5.4.1.

As S1 is concerned with basic operations (Beer, 1979) or primary (production) activities (Espinosa and Walker, 2011), knowledge related to production is required in S1 of both the CEs and CEbs. The difference is that the CEbs use information about criteria to evaluate the performance of their workers in S1. This is because most of the CEbs have performance assessments both at team and individual levels (as described in Section 5.3). Moreover, the fact that the CEbs have production plans makes their S1-required information helpful to assist them reach their targets. By contrast, CEs do not use these kinds of knowledge because they do not have formal performance assessments or production plans. In addition, staff in S1 of some of the CEbs need to know about stock, sources, and the selection of materials. This is because they are sometimes needed to supply or purchase raw materials for use in the production (as described in Section 5.3). These kinds of knowledge are not needed in S1 at the CEs because their S3 takes responsibility in procurement. This is evidence showing that staff in some CEbs have responsible autonomy – being allowed more discretion and greater variety in their work - more than staff in the CEs.

Since S2 is a service to reduce oscillations in the Operation unit, to cut down the variety of its operational interactions (Beer, 1979), and for dealing with conflicts of interest between each S1 (Espinosa and Walker, 2011), it is quite difficult to recognise S2 in CEs which have only one S1 in the Operation unit. Although some CEs produce several kinds of products, all products are produced by the same people and the same equipment/machines. Therefore, an explicit timetable or a roster - which is a tool to keep the production running smoothly - is very rare in CEs, and especially so in CEs. However, some S2 activities are found in both CEs and CEbs, like paperwork or forms for day-to-day operations. Income and expenditure accounts are a kind of document

found in most CEs. Thus, at least some knowledge in accounting is required in both groups of CEs. Knowledge about day-to-day stock/inventory management is needed for CEs and CEbs as well in order to manage the stock/inventory of materials and products. Since IT or computer programmes are used in managing paperwork or forms for day-to-day operations in most CEbs, knowledge in using hardware and software is required in the CEbs, but not the CEts. Posted rules and regulations in some of the CEbs are another kind of tools to reduce variety and oscillations in the Operation unit. Such rules and regulations are about guidelines in the workplace such as working time, dress, and health and safety. However, these kinds of rules and regulations in most of the CEs, especially the CEts, appear in the tacit form such as being told to a newcomer by existing workers.

A key function of S3 is seeking synergies between S1s in the Operation unit (Beer, 1979), which means knowledge concerning production is required by S3 in both CEts and CEbs. Moreover, due to the job including allocating resources, both of them need to know about the stock of materials and products, including sources, prices, and the selection of materials. Since most CEbs have performance assessments for S1 as the accountability channel, which is one of three channels between S3 and S1 (Espinosa and Walker, 2011), knowledge about the targets and the actual S1 results are required as well. The performance assessment in CEbs occurs not only at the team level (S1) but also at an individual level. At the individual level, both formal and informal assessments can be found in the CEbs. The results are applied to improve the performance of individuals and to link to an individual's rewards. By contrast, most of the CEts do not have a formal performance assessment at either team or individual performance levels. As most of the CEts do not have production plans, as described in Chapter 4, team

performance cannot therefore be measured precisely. Individual performance assessment may happen informally in some CEs. The results can then be used to improve individual performances by talking informally. It is clear that the CEbs have a more formal accountability channel than the CEs. In addition to the kinds of knowledge mentioned above, organisational goals and development plans from S4 are needed in the CEbs in order to set an annual budget, a production plan and a production target for S1.

In S4, it is hard to identify the knowledge required in the CEs because they hardly perform S4 tasks of, as explained in Section 4.3. On the contrary, most of the CEbs have at least one person taking responsibility for monitoring the external environment. Although this person has not been formally appointed to perform the S4 role, he/she is willing to take this responsibility. This is because most of the CEbs realise that monitoring the environment is very important for their development and viability. They will not wait for information from government agencies alone, because such information may not be enough for running an enterprise in the changing world. It may be said that the CEbs are active in obtaining information from outside, while the CEs are passive because they occasionally get information related to their businesses from local government agencies. Continuously tracking the external environment, and the need to develop and remain viable, results in most CEbs setting product development and strategic plans. To set such plans, the S4 of the CEbs needs to know about production methods, including the operational plans for S1, and changes in their environment. Considering the knowledge required for the CEbs in S3 and S4, it was found that several kinds of knowledge are the same. This corresponds to Leonard (2000) suggestion that S3 and S4 should support knowledge sharing between them in order to

ensure the balance of resources allocation between present targets and future plans. Leonard emphasises the importance of a S3/S4 balance by claiming that Stafford Beer pays particular attention to the S3/S4 homeostat and its role in maintaining a condition of stability in an organisation, even though homeostats are implied in all the VSM connections. As the CEs do not focus on S4, this may be a reason why the CEbs are better than the CEts in terms of the stability of the organisation as a whole, which then leads to greater CE viability.

Leonard (2000) further mentions that S4 is directly related to the learning of an organisation, whether it is through simulations, training programmes, or importing expertise. As the CEts do not focus on S4's role, this might make learning and innovation in the CEts highly unlikely to occur. In fact, most of the CEts produce their traditional products with no or very little development. On the contrary, learning and innovation can be found regularly in most of the CEbs, such as the development of new products or improvements in production processes. These make it clear that taking responsibility to explore and respond to changes in their environment has an effect on the viability of the CEs.

To set policies, guidelines, or the same directions for the whole organisation, which is a task for S5 (Espinosa and Walker, 2011), both the CEts and CEbs need information about the CEs' performance including production and sales. However, for the CEbs, S5 also sets organisational goals and development plans from S4 to monitor the balance between S3 and S4, which is the main role of S5 (Beer, 1979). While this role is hardly found in the CEts, the latter rarely focuses on S4.

In summary, comparing the knowledge currently used in the CEs and CEbs, it has been found that most types of knowledge required in the CEs are a subset of knowledge required in the CEbs. This may be because the CEbs' tasks are normally more complex than those at the CEs. According to Ashby (1956), complexity can be measured by variety. Considering the CEs and CEbs studied, it can be said that the CEbs have more challenges dealing with variety than the CEs, even though both groups have only one S1 in the Operation unit as mentioned above. In most of the CEs, S1 normally produces one product in a small volume while S1 in most of the CEbs produces several products or produces one product in large volumes. The difference in production volume is associated with the number of people working in the Operation unit. The number of workers can be considered as an estimation which provides flexibility in handling variety in the operation. Since S1 at the CEbs has more variety than at the CEs, S2-S5 in the CEbs tend to also have more variety than S2-S5 in the CEs. Thus, each function in the CEbs needs more kinds of knowledge than in the CEs, as presented in Table 6.1.

Table 6.2 brings together the knowledge used in each function of the CEs and CEbs, presenting a picture of the overall kinds of knowledge required generally in order to improve the CEs' viability. In addition to the knowledge required for the CEs' viability revealed in this study, we find that performing the functions of S4 can affect the viability of CEs for two reasons. Firstly, it contributes to maintaining a condition of stability for CEs. Secondly, it influences the learning and innovation in the CEs.

Table 6.2: Knowledge Required for CEs' Viability

VSM	Kinds of Knowledge
S1	<ul style="list-style-type: none"> - Production methods - Product recipe/formula - Professional skills needed in production - Lists of materials and their properties - Materials' selection - Sources of materials - Stock/inventory of materials - Criteria of product/product standard - Rules and regulations for working in the Operation unit/production plant - Customers' needs - Problems in production - Criteria to evaluate the performance of workers in S1 - Expected performance (target) of S1 - Gap between target and actual results - Causes and consequences of the gap between target and actual results - Actions to manage the gap between target and actual results
S2	<ul style="list-style-type: none"> - Income and expenditure account recording - Day-to-day stock/inventory management - IT complementing/computer software using - Production methods - Interdependencies between S1 activities
S3	<ul style="list-style-type: none"> - Organisational goals

VSM	Kinds of Knowledge
S3 (cont.)	<ul style="list-style-type: none"> - Production methods - Monitoring and controlling methods - Expected performance (target) of S1 - Gap between target and actual results - Causes and consequences of the gap between target and actual results - Problems in S1 - Development plan from S4 - Desired goals for S1 based on the development plan - Gap between desired and current goals of S1 - Sources of materials/materials' market - Materials' price - Materials' selection - Stock/inventory of materials - Stock/inventory of products - Laws/regulations concerning CE's production
S4	<ul style="list-style-type: none"> - Organisational goals - Production methods - Operational plans for S1 - Development or changing in the relevant environment of CE (including market or customer trends) - Comments and feedback from customers - Development plan from S4
S5	<ul style="list-style-type: none"> - Organisational goals

VSM	Kinds of Knowledge
S5 (cont.)	- CE's performance in terms of production and sales - Development plan from S4

Next, findings about the knowledge required for the CE's viability will be compared with the knowledge required for the organisations' viability. This aims to examine that the kinds of knowledge required in small organisations with specific characteristics, such as CEs, and those required in general organisations are similar or different.

6.2.1.2 Knowledge Required for CE's Viability vs Knowledge Required for Organisations' Viability

In a previous work, Achterbergh and Vriens (2002) presented the domains of knowledge that organisations should have to maintain their viability. Table 6.3 compares the findings of that work with the present study (knowledge required for the CE's viability). This is because Achterbergh & Vriens' study refers to the knowledge required in organisations in general, without specifying the size and type of the organisation. Therefore, the comparison in Table 6.3 is intended to find the similarities and differences between the knowledge required by general organisations and the knowledge requirements specific to CEs.

Table 6.3: Comparison of Knowledge Required for Organisations' Viability

Source: Achterbergh and Vriens (2002) and CEs' Viability (this study's findings)

VSM	Knowledge requirements for organisations' viability (according to Achterbergh and Vriens)	Knowledge requirements for CEs' viability (this study's findings)
S1	<ul style="list-style-type: none"> - Goals set by, modus operandi and performance of the primary activities in F1 	<ul style="list-style-type: none"> - Production methods - Product recipe/formula - Professional skills needed in production
	<ul style="list-style-type: none"> - Organisational goals 	Evidence not found
	<ul style="list-style-type: none"> - Expected performance of the primary activities (goals for the primary activities) 	<ul style="list-style-type: none"> - Expected performance (target) of S1
	<ul style="list-style-type: none"> - Monitoring and control practices by F3 	<ul style="list-style-type: none"> - Criteria to evaluate the performance of workers in S1
	<ul style="list-style-type: none"> - Goal and performance misalignments 	<ul style="list-style-type: none"> - Gap between target and actual results
	<ul style="list-style-type: none"> - Causes and consequences of goal and performance misalignment 	<ul style="list-style-type: none"> - Causes and consequences of the gap between target and actual results
	<ul style="list-style-type: none"> - Actions to counter goal and performance misalignment by F1 	<ul style="list-style-type: none"> - Actions to manage the gap between target and actual results

VSM	Knowledge requirements for organisations' viability (according to Achterbergh and Vriens)	Knowledge requirements for CEs' viability (this study's findings)
S1 (cont.)	- Heuristics to implement counteractions	Evidence not found
	- Anti-oscillatory measures	Evidence not found
	- Problems and needs of the management of F1 activities	- Problems in production
	Not addressed/not explicit	- Lists of materials, their properties and selection
	Not addressed/not explicit	- Sources of materials
	Not addressed/not explicit	- Stock/inventory of materials
	Not addressed/not explicit	- Criteria of product/product standard
	Not addressed/not explicit	- Rules and regulations for working in the Operation unit/production plant
	Not addressed/not explicit	- Customers' needs
S2	- Interdependencies between F1 activities	- Interdependencies between S1 activities
	- Actual oscillations	Evidence not found
	- Actual performance loss due to oscillations	Evidence not found

VSM	Knowledge requirements for organisations' viability (according to Achterbergh and Vriens)	Knowledge requirements for CEs' viability (this study's findings)
S2 (cont.)	- Norm for admitted performance loss due to oscillations (goals for F2 activities)	Evidence not found
	- Gap between norm for admitted and actual performance loss	Evidence not found
	- Causes of oscillations	Evidence not found
	- Anti-oscillatory measures	Evidence not found
	- Experiences with anti-oscillatory measures	Evidence not found
	Not addressed/not explicit	- Income and expenditure account recording
	Not addressed/not explicit	- Day-to-day stock/inventory management
	Not addressed/not explicit	- IT complementing/computer software using
	Not addressed/not explicit	- Production methods
S3	For controlling F1 activities <i>Control of F1 by means of direct commands and audits</i>	

VSM	Knowledge requirements for organisations' viability (according to Achterbergh and Vriens)	Knowledge requirements for CEs' viability (this study's findings)
S3 (cont.)	- Organisational goals	- Organisational goals
	- Expected performance of the primary activities (goals for F1 activities)	- Expected performance (target) of S1
	- Goals set by, performance and modus operandi of F1 activities	- Production methods
	- Problems and needs of the management of F1 activities	- Problems in S1
	- Monitoring and control practices	- Monitoring and controlling methods
	Not addressed/not explicit	- Gap between target and actual results
	Not addressed/not explicit	- Causes and consequences of the gap between target and actual results
	For controlling F1 activities <i>Control of F1 by means of control of F2</i>	
	- Norm for admitted performance loss due to oscillations (goals for F2 activities)	Evidence not found

VSM	Knowledge requirements for organisations' viability (according to Achterbergh and Vriens)	Knowledge requirements for CEs' viability (this study's findings)
S3 (cont.)	- Gap between norm for admitted and actual performance loss due to oscillations	Evidence not found
	For reviewing F4 proposals	
	- Organisational goals	- Organisational goals
	- Proposals for innovation made by F4	- Development plan from S4
	- Desired goals for F1 based on proposals for innovation	- Desired goals for S1 based on the development plan
	- Expected performance of the primary activities (goals for F1 activities)	- Expected performance (target) of S1
	- Gap between desired and current goals for F1	- Gap between desired and current goals of S1
	- Required capacity for reorganisation of F1 activities	Evidence not found
	- Modus operandi of F1 activities	- Production methods
	- Actual capacity for reorganisation of F1 activities	Evidence not found
	- Gap between required and actual capacity for reorganisation	Evidence not found

VSM	Knowledge requirements for organisations' viability (according to Achterbergh and Vriens)	Knowledge requirements for CEs' viability (this study's findings)
S3	- Review of proposals for innovation	Evidence not found
(cont.)	- Finalised plans for adaptation of organisational goals (a joint F3 and F4 product)	Evidence not found
	- Regulatory measures to counter the imbalance between F3 and F4 (see F5)	Evidence not found
		For resources allocation
	Not addressed/not explicit	- Sources of materials/materials' market
	Not addressed/not explicit	- Materials' price
	Not addressed/not explicit	- Materials' selection
	Not addressed/not explicit	- Stock/inventory of materials
	Not addressed/not explicit	- Stock/inventory of products
	Not addressed/not explicit	- Law/regulations concern CEs' production
S4	- Organisational goals	- Organisational goals
	- Goals set by, performance and modus operandi of F1 activities	- Operational plans for S1 - Production methods

VSM	Knowledge requirements for organisations' viability (according to Achterbergh and Vriens)	Knowledge requirements for CEs' viability (this study's findings)
S4 (cont.)	- Developments in the relevant environment of the organisation	- Development or changing in the relevant environment of CE (including market or customer trends) - Comments and feedback from customers
	- Reviews by F3 of proposals for innovation	Evidence not found
	- Regulatory measures to counter the imbalance between F3 and F4 (see F5)	Evidence not found
	- Finalised plans for adaptation of organisational goals (a joint F3 and F4 product)	- Development plan from S4
S5	For balancing purposes	
	- Norms for balance between F3 and F4	Evidence not found
	- Proposals by F4 and their reviews by F3 (relative contribution of F3 and F4 to the discussion on adaptation)	Evidence not found

VSM	Knowledge requirements for organisations' viability (according to Achterbergh and Vriens)	Knowledge requirements for CEs' viability (this study's findings)
S5 (cont.)	- Actual (im)balance between F3 and F4	Evidence not found
	- Experiences with regulatory measures to counter the imbalance between F3 and F4	Evidence not found
	- Regulatory measures to counter the imbalance between F3 and F4	Evidence not found
	For consolidation purposes	
	- Finalised plans for adaptation of organisational goals (a joint F3 and F4 product)	- Development plan from S4
	- Organisational goals	- Organisational goals
	Not addressed/not explicit	- CE's performance in terms of production and sales

Note: Achterbergh and Vriens (2002) consider each system of the VSM as a function in an organisation. Therefore, they use Function 1 – Function 5 (F1-F5) instead of System 1 – System 5 (S1-S5).

Table 6.3 reveals that all kinds of knowledge required in S1 for the CEs, but not mentioned by Achterbergh and Vriens (2002), are details related to production. Not only materials matters but also laws/rules/regulations and customers' needs are required. This is because the production of the CEs is needed to implement the CEs' purpose (Espinosa and Walker, 2011). Moreover, as the CEs are very small organisations they allow people working in S1 to know these details. Another reason that these kinds of knowledge are not addressed, or not made explicit by Achterbergh and Vriens (2002), may be because they intend to propose the broader view rather than consider the issue in depth. Since most of the CEs have only one S1, knowledge about anti-oscillatory measures, as mentioned by Achterbergh and Vriens, is not mentioned in the CEs.

As mentioned above, it is quite hard to recognise S2 in the CEs, which is a service to reduce oscillations in the Operation unit (Beer, 1979). Therefore, evidence of knowledge concerned with oscillations addressed by Achterbergh and Vriens is not generally seen in the CEs. It is not surprising that the CEs hardly recognise S2 in their enterprises. This is consistent with Beer's statement (1979, p.176) that S2 "usually goes unrecognised" even if it is necessary for any viable system. However, this study found that CEs need knowledge related to their day-to-day operations, such as income and expenditure account recording and using computer software.

Since the CEs rarely recognise the role of S2, the knowledge required for S3 to control S1 by means of controlling S2, as mentioned by Achterbergh and Vriens (2002), is hardly found in the CEs. In addition, the knowledge for reviewing S4 proposals in the CEs is not focused as much as in general organisations, because the S3 and S4 roles in most of the CEs are done by the same person/people. However, S3 in the CEs needs more details in

terms of the knowledge required for controlling S1 and allocating resources. This may be because, in small organisations such as CEs, S3 plays a more important role in supporting and monitoring S1 than in other organisations.

According to Achterbergh and Vriens (2002), the fact that the S3 and S4 jobs in most CEs are done by the same person/people means CEs rarely pay attention to knowledge for balancing the S3 and S4 roles, as addressed in the knowledge for S5. However, as S5 of the CEs focuses on setting the direction of the CEs, information about the CEs' performance in terms of production and sales are required.

It can be summarised that some kinds of knowledge required for the CEs' viability are the same as the knowledge required for other organisations' viability. However, there are some differences as mentioned above. This may be because of the differences in terms of size and nature between the CEs and other organisations. In addition, Achterbergh and Vriens (2002) may present wider conceptual matters for general organisations while this research focuses on the details of the CEs. Therefore, they should allow for variations and exceptions in their study. It may be recommended that any application of the knowledge required for organisations' viability suggested by Achterbergh and Vriens (2002) should take into consideration the differences and specific characteristics of each organisation. Regarding the kinds of knowledge required for the CEs' viability, they will be a part of CE/KM model (presented in Section 6.3) for improving viability of the CEs, which a main objective of this study.

After establishing the *types of knowledge* required in System 1 – System 5 of the VSM for the CEs, a comparison of the *knowledge management* between the CEs and CEbs will be presented in the next section.

6.2.1.3 The Management of Knowledge Required for the CEs' Viability

Considering the four functions of knowledge management as discussed in Section 2.3.2 (which are knowledge generation, knowledge sharing, knowledge retention, and knowledge application), the similarities and differences of KM in the CEs and CEbs are presented in Table 6.4 (summarising findings from Chapters 4 and 5).

Table 6.4: KM Comparison between CEs and CEbs

KM	CEs	CEbs
Knowledge Generation	- Obtain most knowledge from outside	- Obtain knowledge from outside and generate knowledge by itself
	- Focus on the beginning stage of CE formation	- Continuously generating knowledge
Knowledge Sharing	- Knowledge sharing within CEs happens occasionally - Knowledge sharing with outsiders hardly ever happens	- Knowledge sharing normally happens both inside and outside CEbs
Knowledge Retention	- Tacit knowledge	- Explicit knowledge
	- Manual data collection	- IT supporting in data collection

KM	CEts	CEbs
Knowledge Application	- Apply tacit knowledge in the production and management	- Apply tacit and explicit knowledge in the production and management
	- Explicit Knowledge application hardly happens	- Explicit knowledge application normally happens

The similarity of KM in the CEts and CEbs is that they do not formally employ KM in CE management. However, differences can be found in each function of KM. Details of KM in the CEts and CEbs can be found in Sections 4.4.2 and 5.4.2. The following is a discussion on the main differences between these two groups.

6.2.1.3.1 Knowledge Generation

Most CEts obtain most knowledge from outside and use such knowledge as a basis to improve their products and management. There are only a small number of CEts which generate knowledge internally using 'learning by doing' or 'trial and error'. This is consistent with Lim and Klobas (2000) who observe that, in a small organisation, the external environment seems to be an important source of knowledge and information because a small organisation has fewer people and this leads to less capacity to generate new knowledge internally. Moreover, knowledge generation of most of the CEts usually occurs in the starting period of the CE. When the business is stable, knowledge generation dwindles.

However, our findings show that, although the CEbs are also small organisations, they are different from most smaller organisations mentioned by Lim and Klobas (2000).

Most of them obtain knowledge both externally and internally. The findings from the CEbs support the premise that individual learning and experimentation in an organisation can be developed into new knowledge (McShane and Glinow, 2010), even though most small organisations normally have less potential to generate knowledge internally and have to rely much more on external sources (Lim and Klobas, 2000). However, Lim and Klobas (2000) further mention that, if small organisations are aware of their internal process and convert knowledge into a form that can be used and shared with others in the organisation, they may benefit from doing this activity. This can be considered as conversion from tacit knowledge to explicit knowledge, which is one of the four modes of knowledge conversion (SECI model) contributing to knowledge creation suggested by Nonaka and Takeuchi (1995). This will be discussed further below.

Furthermore, knowledge generation does not only happen in the beginning of the CEb's formation but also occurs continuously. It may be said that the CEts obtain most knowledge from outside at the initial stage of formation, while the CEbs continuously obtain knowledge both from learning from outside and generating knowledge internally. Nonaka and Takeuchi (1995) argue that the way an organisation absorbs information from the outside in, to solve problems or adapt to a changing environment cannot be considered as an innovation of the organisation. Conversely, an innovation happens when the organisation creates new knowledge and information, from inside out, in order to solve problems and re-create the organisation's environment. Considering their argument, it may be said that there are hardly any innovations found in the CEts, while innovation can be found occasionally in the CEbs. This may be a reason that the CEbs have developed steadily. Moreover, Nonaka and Takeuchi (1995) claim that mobilisation and conversion of tacit knowledge are key to knowledge creation. However,

the conversion or sharing of tacit knowledge is a limited form of knowledge creation, whilst it is both important and necessary that shared knowledge becomes explicit. They believe that organisational knowledge creation is a continual and dynamic interaction between explicit and tacit knowledge. From this assumption, they introduce the SECI model (as described in Chapter 2). Using the SECI model to consider the CEs and CEbs reveals that the conversion from tacit to explicit knowledge (E-Externalisation), and from explicit to explicit knowledge (C-Combination), is hardly found in the CEs. By contrast, all four modes of knowledge conversion can be found in the CEbs. This can support organisational knowledge creation/generation in the CEbs. Nonaka and Takeuchi (1995) further argue that the process of organisational knowledge creation must be located at the centre of organisational learning. Regarding this assumption, it may be said that organisational learning occurs in the CEbs more than the CEs because the CEbs have continuous knowledge creation/generation, which may be a factor contributing to their viability. Therefore, we can assume that CEs that would like to be viable need to have continuous knowledge creation/generation because it relates to organisational learning.

6.2.1.3.2 Knowledge Sharing

A consideration of internal knowledge sharing reveals that this happens regularly in the CEbs both formally (such as in monthly meetings) and informally (e.g. by working together). In the CEs, sharing occurs occasionally and almost all of the sharing is informal because of the small number of people involved. In fact, whether the sharing will be formal or informal depends on the readiness and convenience of each CE. The important thing is that knowledge/information sharing should occur regularly in CEs, because knowledge sharing can contribute to knowledge creation (Bartol and Srivastava,

2002; Ipe, 2003), individual and organisational learning (Andrews and Delahaye, 2000; Nidumolu et al., 2001), team performance (Cummings, 2004), performance achievement (Bartol and Srivastava, 2002), production costs reduction (Arthur and Huntley, 2005) and effectiveness of organisations (Argote et al., 2000). Knowledge sharing also leads to creativity and innovative ideas in an organisation (Lin, 2007; Armbrecht et al., 2001). Ipe (2003) further mentions that knowledge sharing between individuals is necessary for the dissemination and management of knowledge at all levels within organisations. Conversely, research reveals that a lack of knowledge sharing can be a key obstacle for the effective management of knowledge in an organisation (Davenport and Prusak, 1998; Hendriks, 1999). These advantages of knowledge sharing may be factors supporting the viability of the CEbs, because they normally share knowledge and information within the enterprises more than the CEts.

Regarding external sharing, the CEbs also regularly share their knowledge and experience with outsiders, while the CEts rarely share their knowledge with others. Sharing knowledge with outsiders, such as other CEs or study trip groups, allows CEbs and such groups to exchange their knowledge and experience, which encourages them to learn from each other (Lorenzoni and Lipparini, 1999). This is also a starting point and an essential part of collaborative learning (Selnes and Sallis, 2003). Furthermore, contacting various external groups allows the CEbs to establish broader connections which may assist each other in some way at some future point. According to Liao et al. (2003), social capital or external links allow knowledge transfer, and the ability to manage this network may be a major factor in any SME's success. Macpherson and Holt (2007) agree that networks can facilitate knowledge transfer and the growth of a small firm. In addition to collaborative learning and broader connections, the various groups

that come to visit CEbs also help increase sales, as visitors normally buy products from these CEbs.

It is suggested that CEs that want to maintain their viability should have regular knowledge sharing both within CEs and with outsiders. This is because internal sharing contributes to the increase of performance, learning, and innovation, while external sharing contributes to collaborative learning, broader connection/network, and increasing sales. All these advantages can support the CEs' viability. As knowledge sharing and networking are two-way relationships, knowledge sharing can not only create networks, but networks can also support knowledge sharing. Therefore, the CEs can increase their opportunities to share knowledge by creating a network/connection. Guidelines to support network creation will be discussed further in Section 7.4.2.

6.2.1.3.3 Knowledge Retention

Most knowledge at the CEts is in the form of tacit knowledge, while explicit knowledge retention is hardly found. Knowledge retention in the CEbs is quite different from knowledge retention in the CEts. Most of the CEbs transfer important knowledge such as product formulae/recipes from tacit into explicit form. Explicit knowledge is communicable because it can be written down, encoded, explained, or understood Nonaka (1994). That means it can be shared. This feature is useful for knowledge sharing, with the advantages mentioned above. Tacit knowledge, in contrast, can be difficult to write down, formulise (Nonaka, 1991), transfer, and imitate (Ambrosini and Bowman, 2001). This could be a barrier to knowledge sharing. According to Nonaka (1991) and Spender (1993), however, tacit knowledge plays a vital role in the development of a sustainable competitive advantage and they support Sobol and Lei

(1994) in confirming that this is one of the most crucial resources in organisations. This is because tacit knowledge is personal knowledge and is difficult to transfer or imitate. From these arguments, it is clear that both tacit and explicit knowledge have advantages. As mentioned in Section 2.3, both tacit and explicit knowledge are considered in this study because they are both important in terms of being an attribute to enhance the capacity and competitiveness of the CEs. They are also mutually dependent, and reinforce each other's qualities of (Nonaka, 1994).

Apart from the different forms of knowledge retained in each group of CEs, the ways to keep knowledge/information still differ. The CEs generally use IT or computer software for recording all the information related to their management. Using IT allows the CEs to record and manage their knowledge or information properly in terms of easiness, convenience, and accuracy. Gold et al. (2001) confirm that effective storage and retrieval methods allow people to access information quickly and easily. By contrast, most of the CEs record only some important matters such as money issues and such records are done manually. Regarding knowledge or information retention in small organisations, Lim and Klobas (2000) argue that, although small organisations do not need and cannot afford a complex system to keep information when compared with large organisations, they still need to record or document events to be certain that the knowledge/information/experience they have gained will remain in the organisation as long as desired. Each small organisation may have different method to store knowledge such as the owner's memory, paper-based documentation, or a computer system. Considering the CEs, they should maintain their knowledge/information/experiences in a format that they can afford and handle. If they cannot apply IT, manual recording or paper-based documentation is better than nothing.

6.2.1.3.4 Knowledge Application

Tacit knowledge is regularly applied in the production process and management of the CEs, while explicit knowledge application rarely happens. One reason is that, as mentioned above, explicit knowledge retention is seldom found in the CEs. Moreover, working by applying knowledge embedded in people is more convenient for very small organisations like the CEs. Therefore, explicit knowledge is rarely used in their management. In the CEbs, both tacit and explicit knowledge are commonly applied in both the production process and management. According to Bhatt (2001, p.72), knowledge application is "...making knowledge more active and relevant for the firm in creating values". To create value in an organisation, organisational knowledge needs to be applied in products, processes and services. Regarding the advantages of knowledge application, Dröge et al. (2003) and Sarin and McDermott (2003) suggest that organisational learning may be encouraged by supporting employees to apply existing knowledge in creating new things such as new products. Sarin and McDermott (2003) and Song et al. (2005) contend that knowledge application is a key success factor in developing new products, while the study by Mills and Smith (2011) shows that knowledge application is directly linked to organisational performance. These references make it clear that knowledge application contributes to the creation, organisational learning, and organisational performance of the organisational values. Therefore, CEs should not only maintain their knowledge/information/experiences as suggested above, but also should apply such knowledge/information/experience in their production and management in order to maintain their viability.

6.2.1.4 KM in CEs: Summary Lessons from the Findings

In this section, the knowledge required in CEs in order to remain viable was discussed. Comparing the ways the CEs and CEbs manage their knowledge, it may be summarised that neither the CEs nor the CEbs formally employ KM in operating their enterprises. However, knowledge has been obtained and placed in the context of their day-to-day working. Therefore, KM is engaged in operating the required knowledge in S1-S5. KM in the CEs is more tacit, while KM in the CEbs is more explicit and structured, especially to support S2-S5. The kinds of knowledge required for CEs to be viable are summarized in Table 6.2 (Knowledge required for CEs' viability). To manage such knowledge in order to be viable, CEs need to have continuous knowledge creation/generation because this relates to organisational learning which contributes to the CEs' viability. It will make the CEs stand out from both other CEs and competitors. Moreover, CEs should keep sharing knowledge both within CEs and with outsiders, as internal sharing can support an increase in performance, learning, and innovation, while external sharing contributes to collaborative learning, broader connections, and increasing sales. All these advantages contribute to the CEs' viability. To manage the required knowledge efficiently, CEs should maintain their knowledge/information in a format that is affordable and practicable. Last, but not least, CEs should apply such knowledge/information to production and management. If CEs can manage their knowledge as suggested, they would increase their ability to maintain their viability.

After examining the knowledge required for CEs' viability and the ways to manage such knowledge, learning and collaborative learning in CEs will be discussed in the following section.

6.2.2 Learning and Collaborative Learning in CEs

In this section, learning and collaborative learning in CEs are compared, key findings are highlighted, and theoretical learnings are discussed. Learning in the CEs and CEbs is compared and presented in Table 6.6 followed by a comparison of collaborative learning between the CEs and CEbs in Table 6.7. In this comparison, three points concerning collaborative learning are highlighted which are: interaction with others in the community, knowledge sharing, and participation in the community's activities. The findings aim to answer the second research question, which is: 'How can knowledge be shared in communities as a way of improving their collaborative learning and their viability?'

6.2.2.1 Learning in CEs

Following the earlier, detailed findings on learning in the CEs and CEbs presented in Sections 4.5.1 and 5.5.1 respectively, the key learning issues of each group are summarised in Table 6.5.

Table 6.5: Learning Comparison between CEs and CEbs

	CEs	CEbs
Nature of learning in CEs	<ul style="list-style-type: none"> - Focus on learning concerns the production - Most learning happened at the time of CE's founding 	<ul style="list-style-type: none"> - Focus on learning concerns both the production and management - Learning has occurred continuously since CE's founding
Causes of learning	<p>Learning occurs when it needs to:</p> <ul style="list-style-type: none"> - solve problems - improve the production process - increase the performance - respond to customers' requirements 	<p>Learning happens when it needs to:</p> <ul style="list-style-type: none"> - solve problems - develop their products - improve the production process - respond to customers' requirements - set CEs' future
Types of learning	<ul style="list-style-type: none"> - Single-loop learning, instrumental learning, survival learning, adaptive learning, maintenance learning 	<ul style="list-style-type: none"> - Single-loop learning, instrumental learning, survival learning, adaptive learning, maintenance learning - Generative learning

Table 6.5 illustrates that learning in the CEbs occurs regularly both in the production and management aspects, while the CEts focus on learning in the production. Therefore, most of the learning in the CEts happened at the time of their founding. With regard to causes of learning, most are similar in both the CEts and CEbs. However, one cause found in the CEbs that is obviously different from the CEts is the attempt to set the CEs' future, such as creating a new brand to sell the same products with higher quality and higher prices in order to expand the customer base. This allows the CEbs to develop another type of learning, which is hardly found in the CEts. That is 'generative learning' which can contribute to the capacity of the CEs in creating their future (Senge and Fulmer, 1993). According to Senge and Fulmer (1993, p.22-23), generative learning is "...learning that enhances the individual's or organization's capacity to create its future". The necessity of generative learning is discussed below.

Both the CEts and CEbs exhibit single-loop learning, instrumental learning, survival learning, adaptive learning, and maintenance learning, which are suitable for organisations in order to perform routine tasks (Argyris, 1993). According to Senge (1997), although survival learning or adaptive learning is necessary for organisations, it may be not enough to guarantee survival. If organisations would like to avoid failure by being able to identify and respond to forthcoming threats, generative learning should be joined with survival learning or adaptive learning – which is what this work found in the CEbs. Senge (1990) further suggests that an organisation which would like to be a learning organisation must have the capacity for both adaptive and generative learning in order to create competitive advantage.

According to Nonaka and Takeuchi (1995), the creation of knowledge involves interaction between two kinds of learning which are single-loop learning and double-loop learning. Therefore, the creation of knowledge can be found in the CEbs more than the CEts because they employ both single-loop and generative learning. The latter is classified in the same group as double-loop learning, as summarised in Table 2.4, Section 2.5.1. This can be used to confirm the potential to create/generate knowledge in the CEbs as mentioned in Section 6.2.1.3. Considering the differences between learning in the CEts and CEbs, there are two clear differences that we can find in the CEbs. These are continuously learning and generative learning, which may be the reason that CEbs are more viable than the CEts. The findings then suggest that CEs that want to be viable should have continuous learning which would be both adaptive and generative.

6.2.2.2 Collaborative Learning between CEs and Their Communities

There are three main points of difference in the comparison of community involvement between the CEts and CEbs. The first is the interaction of CEs with 'others in the community', which in this case, means local food/raw material providers, community members, other CEs and local government agencies, which are all directly correlated with the CEs as described in the conceptual framework presented in Chapter 2. The second point is knowledge/information sharing with 'others in the community' as a way to improve their collaborative learning and their viability as a community. The last point includes the participation in community development activities and others. Table 6.6 summarises this work's findings in CEts and CEbs for each of those dimensions, which are subsequently discussed in more detail.

Table 6.6: Collaborative Learning Comparison between CEts and CEbs

		CEts	CEbs
Interaction of CEts with others in the community	Local food/raw material providers	Purchase raw materials	Purchase raw materials
	Community members	Customers	Customers and share holders
	Other CEts	Superficial	Comprehensive and continuous
	Local government agencies	Obtain support	Obtain support and give cooperation
Knowledge/information sharing with others		Rarely share knowledge or information with others in the community	Normally share knowledge and information with others, both inside and outside the community
Participation in the community's activities		Passive participants	Active participants

6.2.2.2.1 Interaction with Others

Regarding the interaction with other groups in the community, both the CEts and CEbs purchase some, or all, of their raw materials from local food/raw material providers and

sell their products to community members. However, there is a difference in purchasing between the CEs and CEbs. The purchase of raw materials makes a very limited contribution to the well-being of people in the village because the CEs normally buy only a small amount of raw materials. Purchasing by the CEbs, by contrast, may create income for the local food/raw material providers because the volume of purchases is large. Community members are not only customers for the CEbs, but also members and shareholders of CEs themselves. Since most CEbs would like villagers to become involved, CEbs then sell the shares to community members. This allows the CEbs to obtain funding and create a sense of ownership from community members while the latter gets benefits from annual dividends. In addition, being shareholders encourages villagers to purchase products from the CEs because they know that profits will be returned to themselves. This results in sales increases for the CEs. Being shareholders also gives villagers the right to participate in decision making about the management of the CEs. This corresponds to Pendleton et al. (1998), who claim that to be a shareholder and to have a chance to participate in decision-making can lead to a sense of ownership. However, it is rare to find this type of fund raising in the CEs. Therefore, inviting community members to be CE members may be one way to support the CEs' viability.

The interaction of most of the CEs with other CEs is superficial. They know each other and may occasionally meet each other in a village meeting arranged by a community leader, or in a CE meeting arranged by local government agencies. Sometimes, the CEs may have a dependency relationship with the CEbs such as placing their products in the CEb's booth when joining them at a trade show or exhibition. By contrast, the CEbs' interaction with other CEs in a community is more comprehensive and continuous than with the CEs. It is commonly found that the relationship between the CEbs and other

CEs is usually in the form of giving assistance and support, such as sharing information or providing advice. The CEbs occasionally build partnerships with other CEs such as buying rice crackers from another CE to use as raw material in producing a cereal-topped rice cracker.

With regard to the interaction with local government agencies, both the CEs and CEbs normally receive support such as information, training, and marketing channels from local government agencies. However, the CEbs are sometimes asked to collaborate by local government agencies, such as being asked to join an exhibition. This means that the CEs normally get support from local government agencies, while the CEbs both get support from, and give cooperation to, the local government agencies. FCEs that have the potential to develop, such as the CEbs, may get support from government agencies at the national level, as illustrated in Chapter 5. Therefore, having a good relationship with government agencies can create more opportunities for CEs to remain viable.

Considering the ways CEs interact with their stakeholders within the communities, it can be said that the interaction of the CEbs with others is stronger than the CEs' attempts. As CEs are small organisations with limited resources, interacting or connecting with others can help CEs in running their businesses. For small organisations, which are new in business, getting knowledge- resource- support from outside can increase their survival rates (Chrisman and McMullan, 2004). Support can be gained from various sources such as supportive customers (Blundel and Hingley, 2001), government (Bell et al., 1992), peer networks (Florén, 2003), and cooperating constellations of organisations (Shepherd, 1991). According to Meeus et al. (2001), Yli - Renko et al. (2001) and Liao et al. (2003), small organisations such as SMEs can develop their resources and

entrepreneurial skills by developing external links. Interacting with others can be considered a way to develop external links for CEs. Macpherson and Holt (2007) confirm that networks are important for small organisations in terms of knowledge channels and supporting growth. They further suggest that networks need to be extended beyond local context if small organisations need to experience benefits in the long term. The findings of this study provide evidence that help to confirm the literature and demonstrates that CEs that would like to be viable need to have strong, or dense, connections with others.

6.2.2.2 Knowledge/Information Sharing with Others

Regarding knowledge/information sharing with others in the community as a way to improve their collaborative learning and their viability as a community, it has been found that the CEs studied rarely share their knowledge to others, while the CEbs regularly share their knowledge and experience with outsiders both inside and outside the communities as described previously in Section 6.2.1.3. If the CEs contact other CEs or local government agencies about CE issues, it normally happens in the form of asking for help or support. By contrast, the CEbs commonly share their knowledge with others, because the CEbs have gained knowledge and experience in running enterprises from their inception until they become outstanding CEs. Others, therefore, would like to learn from the CEbs. Knowledge or information sharing by the CEbs contributes to improving the collaborative learning in the community. This sharing allows others to obtain knowledge or information without wasting time in trial and error by themselves. In turn, CEs may also obtain knowledge or information from others. For example, one CEb shares knowledge on organic farming with other farmer groups. Questions, issues or suggestions from these farmer groups allow this CE to gather more experience in

farming. According to Lorenzoni and Lipparini (1999), knowledge sharing allows both sides to learn from each other, which can lead to collaborative learning (Selnes and Sallis, 2003). In addition, sharing with others is a way to create a network or connection both at a local and wider level. The advantages of having networks or connections were mentioned above. Thus, knowledge sharing with others contributes to further networking and collaborative learning which are beneficial to CEs, communities and society.

6.2.2.2.3 Participation in the Community's Activities

The last point to consider is participation in the community's activities. Both the CEs and CEbs participate in the activities of the community; however, there are some differences in the details. Most of the CEs will participate in community activities when they are invited, or asked by the community leader. Their participation will be like the participation of villagers, which is to follow the instructions or guidelines set by the working team on each activity. For example, if there is a 'Big Cleaning Day' in the community, members of the CEt will help to clear the weeds. By contrast, most CEbs will take part in, or take some responsibility for, organising an activity in the community. For example, the CEb will not only help to clear the weeds on the 'Big Cleaning Day', but also provide food or ice cream for villagers who attend the activity. Some of the CEbs occasionally play a role in a working team organising the community development activities, such as being a leader in the campaign to eliminate mosquito larvae. It may be said that most of the CEs are passive participants, while most of the CEbs are active participants. Being active participants in the community's activities allows the CEbs to become involved in collaborative learning within the community. One reason that a community leader, or a working team which organises a community activity, normally

seeks the cooperation or support from the CEbs is they are able to provide support in terms of money (more so than the CEts). Moreover, most chairs or leaders of the CEbs are people who have public consciousness and devote themselves to common interest causes, so they are eager and willing to get involved in community activities. This can be considered an example of the 'servant leadership' concept, where the leader shows a social responsibility in their concern about the community.

The servant leadership concept was originated by Greenleaf (1970) who considered that servant leaders are leaders who priorities the concerns of followers rather than themselves, normally using less institutional power to control, helping followers to develop their full personal capacities, and trying to enhance the organisation, community, and society. This work's findings show that, judging from the way most CEb leaders manage and behave, they may be considered 'servant leaders'. This is because these leaders normally do not focus on themselves but devote themselves to the CEs and the community. In performing their jobs as CEs' chairs or managers, they try to share control and influence rather than dominate, direct or control. They also try to develop followers who are CE members working in the business both in work-related matters (such as working skills) and personal life matters and well-being. In addition, they are concerned with, and participate in, community developments such as generating revenue for the community and getting involved in local activities. The concern about community is consistent with the concept of a CE founded and operated by community members in order to create benefits and well-being amongst its members and the wider community.

Furthermore, the servant leadership concept is consistent with the concept of the VSM in mentioning autonomy. In addition to considering the CEB's chair/manager as a servant leader who tries to promote autonomy in CEs by trying to share control and influence, as mentioned above, S3 of the VSM can also be considered as a servant leader. That is, S3 is the meta-system management of the VSM, always working to benefit operational teams (S1) and satisfy their requests and need for development. Regarding the VSM, the autonomy and viability of each system can lead to the viability of the whole organisation. In a similar way, Greenleaf (1970) explains that, in terms of the servant leadership concept, leaders should share their power and enable followers to grow and become autonomous rather than using their power to dominate others. Therefore, servant leadership is a characteristic that may help to support implementing VSM functions in the CEs. Northouse (2013) suggests that servant leadership can be applied not only in all levels of management, but also in all types of organisations. Importantly, individuals and organisations can learn and develop a servant leadership culture. This could be an opportunity for CEs which would like to build a culture of servant leadership. Since servant leadership stresses building strong long-term relationship with followers, Liden et al. (2008) suggest that organisations that would like to generate a culture of servant leadership should concentrate on selecting managers who are interested in building long-term relationships with employees. In addition, organisations should select managers with high integrity and strong ethics because Liden et al.'s study argues that 'the behaving ethically dimension' of servant leadership is positively related to the job performance of followers. Spreitzer and Quinn (2000) suggest that ethics training and training in employee empowerment may be useful in developing servant leaders. Northouse (2013) further explains that training in servant leadership is normally concerned with self-assessment exercises, educational sessions, and goal setting.

6.2.2.3 Learning in CEs and Collaborative Learning – Summary Lessons from the Findings

Comparing learning between the CEs and CEbs has allowed us to recognise that continuous learning is indispensable for CEs that want to be viable. Not only adaptive learning, but also generative learning are vital for the viability of CEs. Moreover, the findings from this section reveal several factors that can contribute to CEs' viability. These are: having a strong or dense connections with stakeholders in the community; having a good relationship with government agencies; and creating networks and collaborative learning by knowledge sharing. Although leadership was not the focus of this study, it was found that the type of leader is a key factor affecting CEs' viability.

In addition to promoting the viability of CEs, collaborative learning also contributes to community viability. At the community level, CEs can help improve collaborative learning by sharing knowledge/information/experience with others in communities. Collaborative learning can be generated at a wider level, such as society, if CEs share knowledge with people outside the communities. Being active participants in the community's activities is another way of letting CEs become involved in collaborative learning within the community.

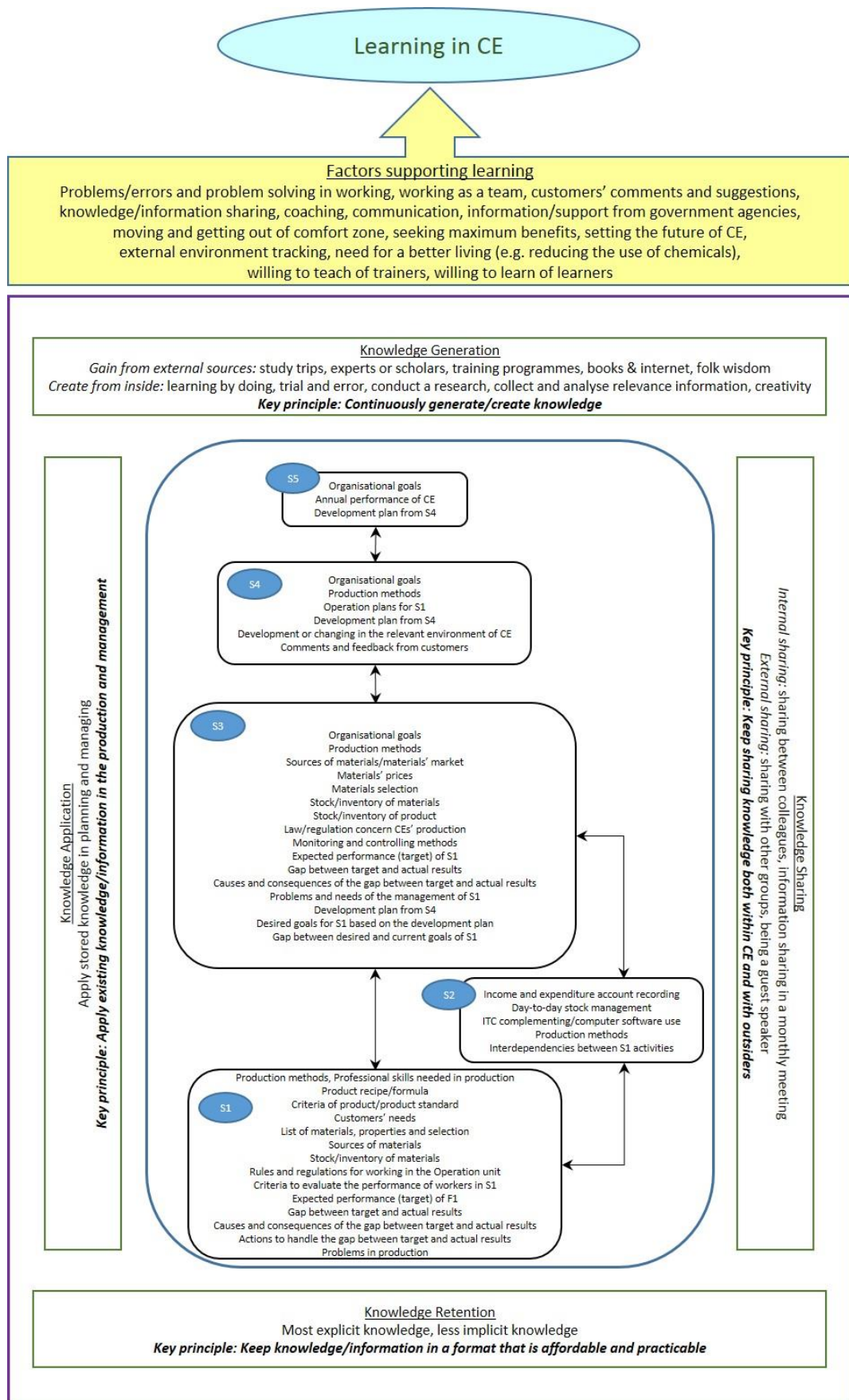
From the comparative discussion of the CEs and CEbs on KM, learning and collaborative learning including community involvement, this study has identified the knowledge required for CEs' viability, the ways to manage such knowledge in order to remain viable, factors affecting CEs' viability, and the ways CEs help to improve collaborative learning in communities. In the next section, these findings will be employed to develop a CE/KM

model in order to answer the third research question which is ‘What kind of KM model can be effective for improving the viability of CEs in the context of developing countries?’

6.3 Conceptual Development

As mentioned in Chapter 1, one of the research objectives is to propose a KM model which can contribute to improving the viability of CEs. From the findings of this study, a CE/KM model to conclude the knowledge required for CEs’ viability and the way to manage such knowledge is developed, see Figure 6.1.

Figure 6.1: Proposed CE/KM Model



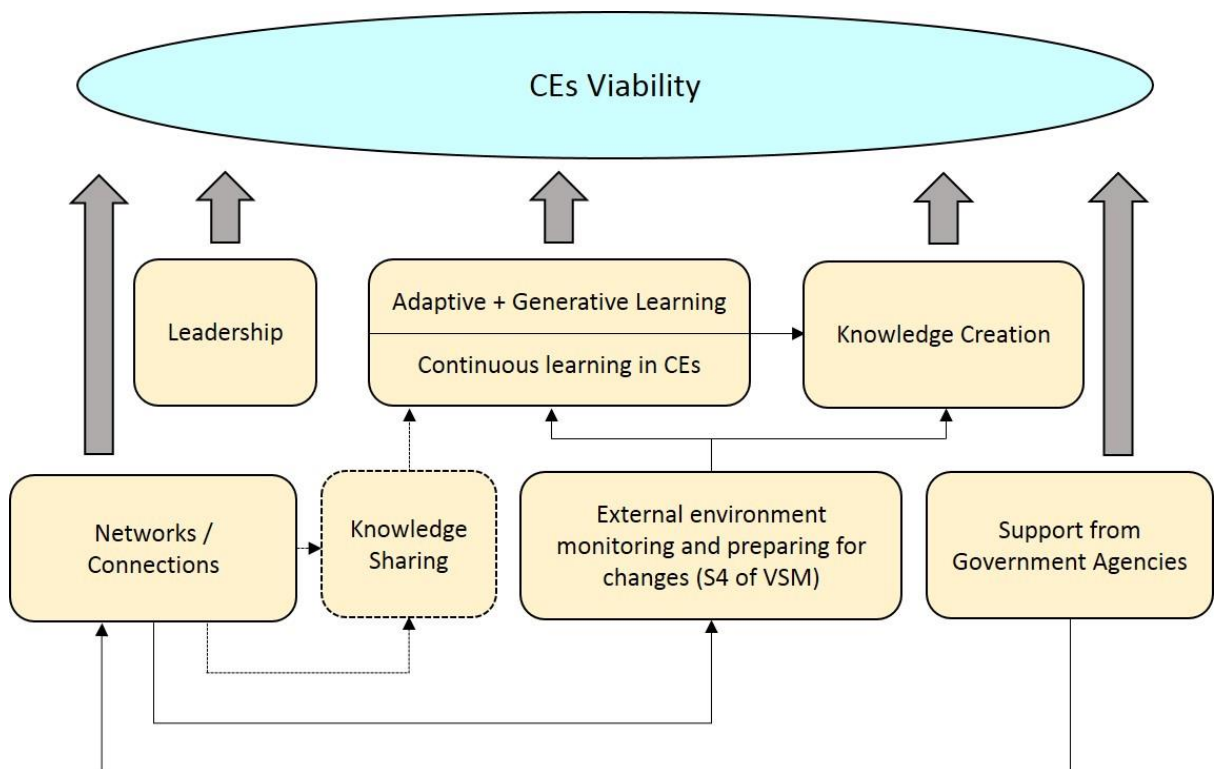
The explanation of this model is as follows.

This CE/KM model applied the five systems (S1-S5) of the VSM as a structure in identifying the knowledge required for each function. Then, the knowledge required for CEs' overall viability was placed in this structure, with the four main functions of knowledge management around the five systems. These are knowledge generation, knowledge sharing, knowledge retention, and knowledge application. The model intends to illustrate that each system needs all four KM functions to manage its required knowledge. In knowledge generation, sources of knowledge can be classified into two groups: gaining knowledge from external sources, and creating it from inside. Although knowledge from external sources is important for the operation and management of CEs, it is undeniable that such knowledge is not sufficient for CEs to be viable. This is because external knowledge is the knowledge that anyone can access. If CEs have the same knowledge as others, they cannot make a difference or be unique and distinctive in their business, which may affect their competitiveness and their viability. Therefore, CEs need to generate their own knowledge by applying knowledge from external sources. Knowledge created from inside allows CEs to be distinctive and competitive. The key principle of knowledge generation for CEs that would like to be viable is continuously generating/creating knowledge. Knowledge sharing can be classified into two groups which are internal sharing and external sharing. For CEs to maintain their viability, they should share their knowledge/information/experience both within CEs and with outsiders. Internal sharing can help CEs to improve their performance and organisational learning, while external sharing contributes to creating networks and collaborative learning with others. The key point for knowledge retention is that CEs should keep their knowledge/information in a format that is affordable and practicable in order to be accessed if needed. Knowledge application, which is the last function, is essential as well. It has been found that some CEs keep their information without using

or applying it in working or making decision in CEs. This means these CEs lack sufficient useful information to support their decision-making, which may result in mistakes in the decisions. CEs should therefore apply existing knowledge in both production and management. This model also presents factors supporting learning in CEs, which are derived from the factors mentioned by the CEs and the CEbs.

In addition to the CE/KM model above, this research has found a series of additional factors that can contribute to CEs' viability, as presented in Figure 6.2.

Figure 6.2: Factors Contributing to CEs' Viability



The factors contributing to CEs' viability derive from the findings of this study. These factors include leadership, networks/connections, external environment monitoring and preparing for changes (S4 of the VSM), continuous learning in CEs through both adaptive and generative learning, continuous knowledge creation, and support from government agencies.

Considering the first key factor, leadership, it may be suggested that CE leaders should have characteristics as found in Section 5.7, which are being enthusiastic, proactive, patient, and devoted. As CEs are not general businesses focusing on profit as their main goal, most CE leaders are people who are devoted to the common good. This coincides with the concept of servant leadership mentioned previously. Therefore, the characteristics of servant leaders and ways to develop this kind of leadership mentioned in Section 6.2.2.2.3 can be applied by CEs' leaders.

According to Chrisman and McMullan (2004), active management is needed to develop social capital/external links or connections. Proactive CE leaders, who create partnerships with outsiders, have wider networks/connections. Lipparini and Sobrero (1994) also support the idea that leaders who demonstrate strong relational competence can lead organisations to be innovative and competitive. Thus, the ability to create networks is another characteristic that CEs' leaders should have in order to maintain or improve CEs' viability. This is because CEs are small organisations with limited resources in finance, manpower, knowledge and skills in running a business (Amelingmeyer and Amelingmeyer, 2005 as cited in Durst and Wilhelm, 2012).

Having networks/connections allows CEs to have a wider perspective and increased opportunities to be viable. Brüderl et al. (1992) support the argument that, for small businesses, a successful outcome of external relationships is survival. Street and Cameron (2007) confirm the importance of networks by citing the management research report commissioned by the commercial services division of a major North American Bank which identified that accessibility to formal and informal business networks and markets is a crucial source of sustainable small business success. One way that networks/connections can support CEs' viability is to expand opportunities for sharing knowledge/experience with others. This sharing leads to learning within organisations (Lorenzoni and Lipparini, 1999) and collaborative learning between them (Selnes and Sallis, 2003).

Networks/connections also support CEs in doing the job of System 4 of the VSM. As discussed previously, performing S4 jobs leads to learning in the organisation (Leonard, 2000), which is a key factor contributing to CEs' viability. This study found that two types of learning, adaptive and generative learning, are necessary for viability (Senge, 1990). Learning in organisations also relates to knowledge creation (Nonaka and Takeuchi, 1995) which is a key factor found in this study to contribute to CEs' viability. In addition to networking, another way of helping CEs to have continuous knowledge creation is applying the SECI model, which is the process of continuously creating new knowledge by interactions between explicit and tacit knowledge, as suggested by Nonaka and Takeuchi (1995) and described in Section 2.9. The last factor, support from government agencies, can help CEs create networks/connections because there is a government agency taking direct responsibility for the CEs. In addition, a number of government agencies at both local and national levels formulate some parts of their policies to

support CEs. Therefore, these agencies can arrange meetings and activities for CEs to meet and cooperate. Government agencies not only support the creation of networks, but also help CEs to develop their viability in several ways such as providing professional and management training programmes, and creating marketing opportunities/distribution channels. Therefore, keeping contact with, and attending activities arranged by, government agencies will benefit CEs' viability.

6.4 Summary

This chapter has discussed the key findings from comparing the CEts and CEbs. The comparison includes the knowledge required in CEs, the management of such knowledge, learning in CEs and collaborative learning in communities. The discussion of key findings is linked to key theoretical concepts to identify the answers to the research questions of this study. Then, a CE/KM model has been proposed, which may contribute to improve the viability of CEs. In addition to identifying the knowledge required to remain viable for each function in CEs, and the ways to manage such knowledge, the researcher has found six additional factors that contribute to CEs' viability. The next chapter, the conclusion, presents a summary of the findings relating to the research questions, theoretical contributions, practical implications, research limitations, and future research potential.

Chapter 7

Conclusion

7.1 Introduction

This research has investigated an under-researched area of CEs by applying the VSM to complement KM in exploring useful ways to improve CEs' viability. In Thailand, there are thousands of CEs and they have been increasing in number over the past ten years. This may be due to the serious economic crisis in 1997, a government policy called 'One Tambon One Product (OTOP)' launched in 2001, and the Community Enterprise Act of 2005. However, only some of these CEs have succeeded and survived to this day. An important cause of CEs' failure lies in problems in the ways CEs think and learn (Konthaiban, 2007). This potential weakness in thinking and learning leads to other problems, such as financial, over-supply and environmental problems (RISE-AT, 2003; GSCI, 2005; Hoawteerakul, 2010). Since the viability of CEs is affected by shortcomings in knowledge, thinking and learning, knowledge management (KM) was brought into consideration. This is because KM involves the management of knowledge (McAdam and McCreedy, 2000), relates with learning (Hislop, 2005) and has an effect on organisational viability (Yolles, 2000). Details of KM can be found in Section 2.3. The Viable Systems Model (VSM) was employed as a framework to study the management of knowledge in CEs because of its systems approach that identifies all the crucial and necessary factors for organisational viability (Leonard, 2000), and has also been

demonstrated as an appropriate method to explore KM needs in business (Yolles, 2000).

Details of the VSM can be found in Section 2.10.

The aim of this study is to explore useful ways to improve the viability of CEs using KM.

Informed by a review of the literature in Sections 2.4, 2.6, 2.9, and 2.11, the following research questions framed the focus of this study:

1. How can CEs' knowledge be enhanced in a way that improves their viability?
 - 1.1 What kinds of knowledge do CEs need to remain viable?
 - 1.2 How can such knowledge be generated, shared, retained, and applied in CEs?
2. How can knowledge be shared in communities as a way of improving both their collaborative learning and viability?
3. What kind of KM model can be effective for improving the viability of CEs in the context of developing countries?
4. What new contributions could be gained from applying a VSM framework to KM (particularly in small organisations like CEs)?

To achieve the research aim, a qualitative approach was adopted through a case study strategy. Semi-structured interviews, participant observation and focus groups were the chosen methods for data collection from the four best-practice CEs and four average CEs in Thailand.

As prior studies on CE viability are still scarce, and little research has employed a systems approaches to complement KM in studying organisational viability, this study can fill a gap in the literature and provide useful findings for both academics and practitioners. In this final chapter, a summary of the key findings concerning each research question is presented. Theoretical contributions to knowledge and practical implications of the

research are discussed. Finally, limitations are explored and future research directions are recommended.

7.2 Summary of Research Findings

A summary of the findings relating to the four research questions are presented in the next subsections.

7.2.1 How Can CEs' Knowledge Be Enhanced in a Way that Improves Their Viability?

Regarding the first research question, there were two sub-questions to answer.

7.2.1.1 What Kinds of Knowledge Do CEs Need to Remain Viable?

The answers to this question were explored in Section 6.2.1.1. The findings permitted the identification of several kinds of knowledge that are required to implement the five systems of the VSM. Having the necessary knowledge allows each system to work properly and leads to viability within itself. This can eventually contribute to the overall viability of CEs. Apart from the lists presented of the knowledge required, by comparing the functions and knowledge currently used in each function of the CEs and CEbs, this research identified a further key difference that may affect CE viability. This was focusing on monitoring the external environment and preparing for changes. These are the jobs of System 4 (S4) in the VSM, which is directly related to the learning of an organisation. The discussion on how lacking S4 may be related to the lack of viability can be found in Section 6.2.1.1.

7.2.1.2 How can such knowledge be generated, shared, retained, and applied in CEs?

The answers to this question were discussed in Section 6.2.1.3. In brief, CEs that would like to be viable should have continuous knowledge creation/generation, keep sharing knowledge both within the CE and with outsiders, keep their knowledge/information in a format that is affordable and practicable, and apply such knowledge/information to production and management.

7.2.2 How can knowledge be shared in communities as a way of improving their collaborative learning and their viability?

The answers to this question were explored in Section 6.2.2.2. In brief, CEs contribute to collaborative learning in their communities by sharing knowledge/information/experience with others. This collaborative learning can also be generated at a broader contextual level, such as a province or region, when CEs share knowledge with people outside their own communities. Moreover, another channel allowing CEs to take part in collaborative learning is to participate actively in a community's activities.

7.2.3 What Kind of KM Model Can Be Effective for Improving the Viability of CEs in the Context of Developing Countries?

The model presented in Section 6.3 (see Figure 6.1), suggested guidelines for managing CEs' knowledge to improve their viability. This model is derived from the kinds of knowledge that CEs need to remain viable (the answer to Section 7.2.1.1) and the ways

to generate, share, retain, and to apply such knowledge in CEs (the answer to Section 7.2.1.2).

7.2.4 What New Contributions Could Be Gained from Applying a VSM Framework to KM (Particularly in Small Organisations Like CEs)?

This study can be considered as the first attempt to apply a VSM framework to KM in order to study small organisations such as CEs. The explicit contribution is the list of knowledge required in each function of the VSM structure for CEs to be viable (see Figure 6.1). This contributes to the expansion of the body of knowledge in the VSM and KM fields. More details can be found in Section 7.3.

The findings of this study are summarised in this section and the theoretical contributions are discussed in the next.

7.3 Theoretical Contributions to Knowledge

As mentioned in Section 2.3, numerous researchers have studied KM in large organisations while small organisations are often overlooked (Durst and Edvardsson, 2012). Although there are some studies focusing on KM in small organisations like SMEs, such as works by Beijerse (2000), McAdam and Reid (2001), Desouza and Awazu (2006), Nunes et al. (2006) and Hutchinson and Quintas (2008), it is clear that KM research in SMEs that considers the use of systems approaches is relatively rare. According to Durst and Edvardsson (2012), so far that there are only three main areas of studying KM in SMEs; these are KM implementation, KM Perception, and Knowledge Transfer.

Regarding small organisations like CEs, academic studies concerning KM in CEs seems to be less common than the study of KM in SMEs. This study found only a small number of them. Some focus on only one process of KM (Tinnaluck, 2005) while others investigate only the production process in a CE (Kar, 2012). These studies cannot be considered as a systemic approach. Even in Thailand, where studying KM in CEs has received much attention, most studies focus on the characteristics of KM, problems in the KM process, or factors affecting KM. None of the research has employed a systems approach or KM to improve CE viability.

The evidence informs us that the application of systems approaches to complement KM, when studying small organisations, is relatively rare. Other studies, employing KM or organisational viability in small organisations such as CEs, are also difficult to find and using KM to study viability of small organisations as CEs in a holistic way is virtually non-existent. Therefore, the findings and approach of this study can be considered novel. The theoretical contributions to knowledge provided by this study can be considered in three main ways. Firstly, the gap in using KM to directly study the viability of small organisations as CEs is filled. Secondly, knowledge in complementing KM existing frameworks to combine with the VSM is extended. Finally, using VSM criteria to improve organisational viability is extended to unique organisations such as CEs.

To be more specific, considering the proposed CE/KM Model (Figure 6.1), it can be said that the knowledge required in each function of the VSM structure can contribute to existing knowledge in CE and VSM areas. This is because only a few studies have employed a VSM framework to investigate the knowledge required for general organisations to be viable (Leonard, 2000; Achterbergh & Vriens, 2002). This researcher

has been unable to identify previous studies specifically about the types of knowledge required in CEs. In Figure 6.1, the types of knowledge required in each system of VSM structure are presented in detail. In brief, it can be said that System 1 requires knowledge of production methods, materials, product standards, targets and actual results, in order to run the primary activities of CEs. To enable System 1 to work smoothly, System 2 requires knowledge about income and expenditure, account recording, stock management, and IT. System 3 requires knowledge about System 1's performance, monitoring and controlling methods, and problems in System 1 to make sure that System 1 can work properly. System 3 also needs to know about development plans from System 4 in order to prepare System 1 for changes. Regarding System 4, operational plans for System 1 and changes in the relevant environment of CEs are required to ensure that CEs can survive in a changeable environment. The last system, organisational goals and CEs' performance, are required to position CEs closure, identity and ethos. Details of knowledge required for CEs' viability can be found in Section 6.2.1.1. In addition to knowledge mentioned above, please note that those skills and capabilities useful for performing each system, should not be ignored as well. Examples of such skills and capabilities can be found in Section 4.3.7 and 5.3.7.

Regarding the ways to manage such knowledge, the four main functions of knowledge management including knowledge generation, knowledge sharing, knowledge retention, and knowledge application are presented in Figure 6.1. The key principle of knowledge generation is continuous knowledge generation/creation. The key principle of knowledge sharing is keeping sharing knowledge both within CE and with outsiders. Keeping knowledge/information in a format that is affordable and practicable is the key principle of knowledge retention. In knowledge application, applying existing

knowledge/information in both the production and management is the key principle. Details of these four functions in managing knowledge required for the CEs' viability can be found in Section 6.2.1.3. The findings about the way to manage knowledge in this research may be common for large organisations. However, these findings may not be known or have been recognised in most average CEs or CEs in general. Educating CEs about the way to manage their knowledge may help them to develop their KM capabilities better. If they found that KM is not difficult and can be done in a simple way, they may apply it in their CEs. It can be said that dissemination of these findings to CEs in general may help them to learn more effective ways to improve their viability. The next section discusses the practical implications of this.

This study also includes knowledge sharing between CEs and communities in order to improve their collaborative learning and viability. The findings not only confirm the suggestions of previous studies (Knight, 2002; Selnes and Sallis, 2003) that sharing knowledge can lead to collaborative learning, but also suggest that active participation in communities' activities is another factor that supports collaborative learning in communities.

Apart from the knowledge required in each function, the ways to manage such knowledge, and a series of additional factors were found to contribute to CE viability. Such factors include leadership, networks/connections, external environment monitoring and preparing for changes (S4 of VSM), continuous learning in CEs involving both adaptive and generative learning, continuous knowledge creation and support from government agencies as presented in Figure 6.2. CEs' leaders have a vital role in CEs' operation, therefore leadership has been found to be a factor contributing to CE

viability. Networks/connections enable CEs, which are small organisations with limited resources, to expand opportunities to knowledge/experience sharing with others. Networks/connections also support CEs in doing the job of S4 which leads to learning in organisations. Continuous learning in CEs, both adaptive and generative, is another factor affecting the viability of CEs. Moreover, learning relates to knowledge creation which is a factor contributing to CE viability. Support from government agencies not only provides professional and management training programmes, but also encourages networking between CEs and others. Details of each factor can be found in Section 6.3.

In the light of the above findings, this study not only fills several gaps in the academic literature on KM, the VSM and CE viability, but can also benefit the practice of CEs looking to improve their viability. Practical implications are presented in the next section.

7.4 Practical Implications of the Research

As mentioned when introducing this thesis, CEs can promote economic and social development, support a community's learning opportunities (Community Business Scotland, 1991, cited in Pearce, 1993, 2005), increase the quality of community life, and strengthen community development (Welsch and Kuhns, 2002). They also help to preserve local wisdom (Valaisathien, 1996) and encourage the incorporation of a community's members in solving their own problems. Therefore, the contribution of this study goes beyond economic impact, but can also provide an impact on social and cultural matters. The findings, which include ways to improve the viability of CEs using KM, can contribute useful management information to CEs and government agencies

involved in the development of CEs. The more CEs are viable, the more communities are strengthened.

A number of recommendations can be made to highlight the practical implications of the study. These are presented next, divided into two groups: recommendations for government agencies involved in the development of CEs, and recommendations for CEs that would like to maintain or improve their viability.

7.4.1 Recommendations for Government Agencies

As mentioned in this study, government agencies normally play vital roles in supporting CEs in several ways, such as arranging training programmes, developing brands, and expanding product distribution channels. However, their support would be more effective if they considered the factors contributing to CE viability suggested in Section 6.3. Two factors to which government agencies could give support are leadership development and networks/connections. In relation to leadership, government agencies can support servant leadership development by arranging training courses for CE leaders who want to improve themselves and their CEs.

The main contents of this leadership programme could consist of two parts, the first related to servant leadership characteristics, such as prioritising the concerns of followers, supporting followers to develop their capacities, sharing the leader's power, using less organisational power to control, and enhancing the well-being of the community (Greenleaf, 1970). The second part would involve the ways to develop such a leader model in CEs, such as the selection of leaders (Liden et al., 2008), ethics training, and employee empowerment training (Spreitzer and Quinn, 2000). It is true that a

leadership training programme cannot create such a kind of leader immediately if the participants do not bring those principles into practice. However, such a development programme might help CE leaders to know and recognise the importance of leadership, especially servant leadership. Since most CEs have founded by local people with little formal education, providing information to them is the basis for future development.

Furthermore, the findings indicate that another aspect that may make a considerable impact to CE viability is support in creating networks/connections. As we can see from Figure 6.2, networks/connections can lead to knowledge sharing and performing S4 jobs, which contribute to learning and knowledge creation in CEs. All of these are key factors for CE viability. It is true that government agencies occasionally arrange meetings for CEs to meet each other, and this is a way for CEs to create connections among themselves. However, such kinds of meetings cannot help CEs to create strong networks. In addition, having networks with a mixture of organisations such as private sector and educational institutions, might have positive effects for members across the whole network rather than having just one kind of member, namely CEs. In creating networks, government agencies may play a role as facilitators or in providing the initial, facilitative leadership. This is because facilitative leadership is necessary for bringing participants or stakeholders together and getting them to engage with each other (Pine et al., 1998; Reilly, 2001). Other suggestions in initiating networks include 'incentives for participants' and 'shared mission and goals', which are critical factors that should be considered (Ansell and Gash, 2008; Robertson, 2011). Participants or stakeholders will prefer to join the networks if they receive some incentive/benefit. In this sense, incentive/benefit does not mean only money, it may be knowledge or organisational development. Therefore, government agencies should clearly identify and promote the

advantages of joining a network. Shared missions and goals are other fundamental factors in integration. Participants with common interests, missions and goals will help strengthen the network.

In addition to the recommendations above, government agencies should apply the kinds of knowledge required in each function of the VSM and the way to manage such knowledge, as presented in Figure 6.1, is to develop training courses. The content of such a course should include examples and demonstrations in managing knowledge in order to help CE members to understand quickly. Then, training will be arranged for new CEs or CEs that would like to improve their management skills and viability. Most importantly, the benefits of knowledge generation/creation, knowledge sharing, knowledge retention, and knowledge application must be emphasised because they will be the motivation for CE members to implement any changes. As suggested by Hofer and Charan (1984), one of the reasons that small organisations do not apply KM is because they do not have sufficient time to identify and recognise its benefits. Therefore, helping CEs conceive the benefits of implementing KM allows them to overcome this difficulty. Small organisations are normally concerned about lack of time, finance and expertise in applying KM (Wong and Aspinwall, 2004). However, government agencies should highlight that following the four processes of KM does not significantly affect the supply of manpower, money or time, when compared to the benefits obtained from implementing these processes.

Diagnosing the VSM structure in CEs allowed the researcher to find that most CEs, especially the CEs, focus on S1 but do not have proper meta-systemic (S2-S5) management roles and mechanisms. In particular, S4, which is directly related to

learning about organisations (Leonard, 2000) and knowledge creation, is hardly found in the CEs. Both learning and knowledge creation are key factors contributing to CE viability, as presented in Figure 6.2. Although S2-S5 can be found in some CEs, performing tasks with these systems can be done more efficiently if CEs acquire accurate information and useful advice in implementing such functions. Therefore, a training course to train CEs to improve their meta-systemic management roles and mechanism is recommended. Moreover, it would be advantageous in the long term if government agencies could develop a department, or assign officers, to take responsibility in providing technical and administrative support in meta-systemic roles to CEs. This is because attending a training programme for a few days may not be enough for CEs to learn and improve their S2-S5.

In summary, government agencies should support CEs in networking and arrange training programmes in order to help CEs to improve their viability. Three main training programmes recommended from the findings of this study are the leadership development programme, the KM development programme, and the meta-system development programme. These programmes may be included in a training package called the CE viability package.

However, providing information about leadership, the types of knowledge required, ways to manage them and guidelines to improve meta-system roles are only the first foundations for CEs to be viable. These will be useful only if CEs bring them to implementation, so the next section will focus on recommendations for CE leaders.

7.4.2 Recommendations for CEs

When CEs receive knowledge/information from government agencies, it is their responsibility to apply this knowledge/information to improve/maintain their viability. Regarding the knowledge required in each function, and the ways to manage such knowledge as presented in Figure 6.1, these would be simple enough for CEs to understand and implement if government agencies communicate such information with simplified language, and provide examples and demonstrations as suggested above, even if they can take time to practice and develop. With regard to the key factors contributing to CEs viability as presented in Figure 6.2, some suggestions can be provided for CEs concerning networks/connections, knowledge creation and leadership. In creating networks/connections, attending activities or programmes arranged by government agencies is a way to make wider connections. However, CEs have to play a role in both giving and taking in order to maintain relationships within the group. As mentioned above, each participant should gain benefits from joining networks. If someone feels like they are being taken advantage of, without return benefits, they may leave the group. This may cause instability in the networks/connections. One way to demonstrate involvement in the group is by sharing knowledge and experience. Even if they are very small CEs, they may still have some interesting background to share with others. Information and knowledge sharing is a way to build trust in the group (Arino and De La Torre, 1998). According to Ring and Van de Ven (1994) and Huxham and Vangen (2005), trust building is required for successful collaboration. It may be said that having networks/connections is vital for CE viability because it leads to other factors that contribute to CE viability as mentioned in Section 6.3.

Concerning knowledge creation, apart from joining networks, CEs themselves may create knowledge by applying the SECI model suggested by Nonaka and Takeuchi (1995). That is, CEs should: try to convert tacit to tacit knowledge such as sharing knowledge/experience with colleagues; convert tacit to explicit knowledge such as recording problems and solutions occurring in CEs; convert explicit to explicit knowledge such as comparing product recipes with other recipes in order to improve CEs recipes; and convert explicit to tacit knowledge such as studying new things from external sources like the Internet or books and practicing skills until they are mastered.

Regarding leadership development, in addition to attending leadership programmes arranged by government agencies as suggested above, CE leaders can develop themselves to become servant leaders: for example, by trying to use less power to control, empowering other CEs' members by asking for their opinions before making decisions, and helping CE members to develop their capacities by assigning various kinds of task. These characteristics of servant leadership can also lead to autonomous operational units in CEs. This means S1 in CEs can be self-organised and self-controlled units. This is a condition to improve their viability as Beer (1981, 1985) suggests that S1 should have autonomy, otherwise the whole organisation will be at risk. To become a servant leader, CEs leaders should also actively participate in community activities. These not only help CE leaders to develop their leadership skills, but also help them to develop connections both inside and outside the CE. Connections with outsiders are considered a networks/connections factor that contributes to CE viability.

With regard to meta-system development, apart from participating in and learning from meta-system development programmes arranged by government agencies, CEs can

develop their S4 role by themselves. As presented in Figure 6.2, networks/connections is a way that can support the function of S4 as detailed in Section 6.3. Therefore, as discussed above, networking not only supports knowledge sharing and knowledge creation in CEs, but also supports external environment monitoring and preparation for changes, which is an S4 function.

After analysis of the theoretical contributions and practical implications of this study, research limitations and recommendations for future research are discussed in the following section.

7.5 Research Limitations and Future Research Directions

This research has limitations, as do all research studies. These limitations should be recognised and directions for future research put forward.

As this study adopted a qualitative approach to gain an in-depth understanding of the topic, it inevitably suffers some of the limitations associated with qualitative studies in general, related to issues of validity and reliability. This is "...because qualitative research occurs in the natural setting and it is extremely difficult to replicate studies" (Wiersma, 2000, p. 211). Hence, the first limitation is generalisability. As data was collected from only four CEs and four CEBs because of the limited time and resources available, this means only one CE and one CEB in each region of Thailand were studied. Although this was an intentional choice, it could also be considered a limitation because a case study cannot be a sample of a population (Bryman and Bell, 2003). However, this argument should not reduce the potential value of a case study strategy. Regarding sampling, Patton (1987) argues that the logic of purposeful sampling as part of a

qualitative approach is different from the logic of probabilistic sampling in statistics, as discussed in Section 3.6. In addition, a case study strategy covers “...complex multivariate conditions and not just isolated variables...” (Yin, 2003, p.xi). The proximity of the case study to real-life situations and “...its multiple wealth of details are important for the development of a nuanced view of reality” (Flyvbjerg, 2006, p.223). These are the reasons that the case study strategy was adopted to gather in-depth information of the real-life situations in this study, even though this approach has been criticised for its generalisability. To mitigate this criticism, however, this study applied a multiple case study rather than a single case study strategy. One issue which should be considered is that the generalisability of this study may not be extendable to CEs beyond Thailand because of the differences in culture and some specific characteristics of the people involved.

The second limitation of this study is that it developed a CE/KM model (see Figure 6.1) from studying the four best-practice CEs and four average CEs without testing against other CEs. Since the purpose of this study is exploratory, rather than theory-testing, the scope of the study is limited when exploring ways to improve CE viability using KM. Hence, it is restricted to observing that this model is effective in improving CEs viability.

The above limitations of this study should not undermine the value and importance of the findings provided, though such limitations suggest a number of issues for future research. First, replicating this study with different CEs and CEBs would be required in order to contribute towards the generalisability of the findings and future research could investigate CE viability in different countries. Second, future research could

employ the proposed CE/KM model (Figure 6.1) to test other, average CEs to see whether this model can improve CE viability.

Additionally, the findings indicate that this research has opened opportunities for future research, in particular in the context of leadership and networks. As illustrated in Figure 6.2, leadership and networks are factors contributing to CE viability. Thus, future research might highlight developing strong networks between CEs and stakeholders. It may also be interesting to examine the exact role of CE leaders in facilitating networks. As this study also identified the idea of the servant leader, future studies are also recommended to investigate servant leadership development in the context of CEs, and the roles and effects of servant leadership on CE viability. Particularly, the role of servant leadership in a developing autonomous operational unit (S1) which is self-organised and self-controlled is strongly recommended because this has not been tested before in a context of CEs.

As mentioned in Section 7.4.2, knowledge/information sharing not only leads to connections, but also supports trust-building which is a basic 'glue' for successful collaboration. While several studies focus on trust and KM (Politis, 2003; Ford, 2004; Mooradian et al., 2006; Renzl, 2008), it is difficult to find works which directly emphasise trust and viability in small organisations. Therefore, trust in CEs and their viability is another topic that offers the potential for future research in order to expand knowledge about CE viability.

7.6 Summary

The primary aim of this research was to explore useful ways to improve the viability of CEs using KM. The extensive literature review of CE viability conducted at the beginning of this study identified that applying a systems approaches to complement KM when studying CE viability is relatively rare. Hence, the VSM criteria were applied to complement KM in studying CE viability in Thailand. The findings reveal the types of knowledge required in each function of the VSM, and the ways to manage such knowledge in order to be viable. The CE/KM model produced, summarised these findings diagrammatically (Figure 6.1). Furthermore, a series of additional factors contributing to CE viability was proposed (Figure 6.2). The findings of this study make a significant contribution to the body of knowledge surrounding CE viability, the VSM and KM theory. Such findings also make a significant practical contribution by offering recommendations for government agencies and CEs. It is hoped that these findings will be one way of contributing to improving and supporting CE viability.

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Appendix A

Table A1: Questions for Data Collection

Step in Methodological Framework	Information required	Informants	Method	Questions
Step 1: Diagnose VSM structure in CE	1. The VSM structure in a community enterprise	Leader of a community enterprise	Semi-structured interview	<u>S1</u> - Please describe the process of production (e.g. what stages it involves, who is responsible at each stage, how long does it take) - What are the people and institutions that you relate with at each stage of the production process?

Step in Methodological Framework	Information required	Informants	Method	Questions
Step 1: Diagnose VSM structure in CE (cont.)				<u>S2</u> - Is there any conflict of interest or competition for resources between those responsible for each process? At what levels? - How do you solve these tensions? Who is responsible for this? Who is responsible for this?

Step in Methodological Framework	Information required	Informants	Method	Questions
Step 1: Diagnose VSM structure in CE (cont.)				<p><u>S3</u></p> <ul style="list-style-type: none"> - Who is responsible for allocating resources of people and money to each production process? How do decisions about allocation happen? - Do you work with production targets? If so, how do you react if an operational unit cannot meet a production target? Is there any way to prevent or solve this problem? - Do you have any strategy to improve the performance of operational units?

Step in Methodological Framework	Information required	Informants	Method	Questions
Step 1: Diagnose VSM structure in CE (cont.)				<p>(e.g. centralised buying, people or technology transferring, material sharing)</p> <p><u>S3*</u></p> <p>- Do you use any informal monitoring mechanism? (e.g. walk the walk)</p> <p><u>S4</u></p> <p>- Do you have production or development plans? What sort of planning do you do? Who is responsible for it?</p>

Step in Methodological Framework	Information required	Informants	Method	Questions
Step 1: Diagnose VSM structure in CE (cont.)				<ul style="list-style-type: none"> - What do you need to know when making future plans? - Do you investigate the commercial environment of competitive products in order to do benchmarking? - Is future planning done in a continuous basis? How often you do it?

Step in Methodological Framework	Information required	Informants	Method	Questions
Step 1: Diagnose VSM structure in CE (cont.)				<u>S5</u> - Who is responsible for policy matters or for defining the rules which determine the way of doing things in the community enterprise? - Do you have organisational values or ethos? What is it? How does it come?
Step 2: Investigate knowledge required in CE	2. The kinds of knowledge that community	Leader and staff of the community enterprise - Manager = 1 - Assistant manager = 1	Semi-structured interview	- What are the most important things or knowledge that you should know in order to successfully operate your community

Step in Methodological Framework	Information required	Informants	Method	Questions
Step 2: Investigate knowledge required in CE (cont.)	enterprises need for remaining viable	<ul style="list-style-type: none"> - Staff in S1 unit = 2 - Staff in S2-S4 unit = 1/unit (if any) (4-7 persons / a community)		enterprise? How do you get this knowledge? Why is it important?
Step 3: Identify KM process in CE	3. The way to generate, to share, to retain and to apply such knowledge in community enterprises	Leader and staff of the community enterprise <ul style="list-style-type: none"> - Manager = 1 - Assistant manager = 1 - Staff in S1 unit = 2 - Staff in S2-S4 unit = 1/unit (if any) 	Semi-structured interview	<ul style="list-style-type: none"> - How have you learned all the above types of knowledge? - Does each individual in your community enterprise share knowledge with other individuals? What aspects? How? - Do you keep/store knowledge or what you learn from doing your business? How?

Step in Methodological Framework	Information required	Informants	Method	Questions
Step 3: Identify KM process in CE (cont.)		(4-7 persons / a community enterprise)		<ul style="list-style-type: none"> - Have you ever used knowledge which is stored or shared by other individuals? - Does the process of keeping and sharing knowledge affect the performance of the community enterprise? How?
Step 4: Study knowledge sharing between CE and the community	4. The way to share knowledge in communities in order to improving their collaborative	<ul style="list-style-type: none"> - Leader of the community = 1 - Leader of the community enterprise = 1 		<ul style="list-style-type: none"> - Do you share knowledge between the community enterprise and others in the community? What aspects? How? - Have you ever integrated with others to solve community's problems? Please give examples.

Step in Methodological Framework	Information required	Informants	Method	Questions
Step 4: Study knowledge sharing between CE and the community (cont.)	learning and their viability	<ul style="list-style-type: none"> - Representatives of other community enterprises = 1/each - Representatives of local providers = 1 - Representatives of community members = 1 - Local government officer = 1 		<ul style="list-style-type: none"> - Is it useful to the community and the community enterprise? How? - Do you think this knowledge sharing is a factor that promotes collaborative learning in the community? How? - Do you think the knowledge sharing in your community at present is good or not? If not, how to improve it?

Step in Methodological Framework	Information required	Informants	Method	Questions
Step 5: Diagnose main learning requirements of CE and the community	5. The main learning requirements of the community and community enterprises	<ul style="list-style-type: none"> - Leader of the community = 1 - Leader of the community enterprise = 1 - Representatives of other community enterprises = 1/each - Representatives of local providers = 1/each - People in the community = 1 (At least 6 persons)	Focus Group	<ul style="list-style-type: none"> - What do you think are the key factors to support learning in the community and the community enterprise? - How well do you assess your community and the community enterprise regarding these key factors? - What else do you think you can do in order to enhance learning?

Appendix B

Table B1: List of Participants

No. of Participant	Position	Gender	Age	Community
Participant 1	CEb1 manager	Female	47	Nam Kian
Participant 2	CEb1 assistant manager	Female	34	Nam Kian
Participant 3	CEb1 production staff 1	Female	54	Nam Kian
Participant 4	CEb1 production staff 2	Female	57	Nam Kian
Participant 5	CEb1 production staff 3	Female	55	Nam Kian
Participant 6	CEb1 production staff 4	Female	34	Nam Kian
Participant 7	CEb1 accountant	Female	35	Nam Kian
Participant 8	CEb1 salesperson	Female	34	Nam Kian
Participant 9	Community leader 1_ village headman	Male	47	Nam Kian
Participant 10	Community leader 2_ Sub-district Headman	Male	65	Nam Kian
Participant 11	Saving group chairman (another CE)	Male	66	Nam Kian
Participant 12	Herb provider 1	Male	72	Nam Kian
Participant 13	Herb provider 2	Male	75	Nam Kian
Participant 14	Villager 1	Female	77	Nam Kian

No. of Participant	Position	Gender	Age	Community
Participant 15	Villager 2	Female	48	Nam Kian
Participant 16	Nan Provincial Agricultural Extension Office, Head of Strategy and Information Division	Female	55	Nam Kian/Tha Noa
Participant 17	Agricultural extension officer_Phu Phiang	Female	54	Nam Kian/Tha Noa
Participant 18	CEt1 chairwoman	Female	59	Tha Nao
Participant 19	CEt1 member 1	Female	73	Tha Nao
Participant 20	CEt1 member 2	Female	76	Tha Nao
Participant 21	CEb2 chairman	Male	54	Du
Participant 22	CEb2 committee	Male	35	Du
Participant 23	CEb2 production staff	Female	62	Du
Participant 24	CEb2 administrative staff	Female	28	Du
Participant 25	Dessert group chairwoman (another CE)	Female	50	Du
Participant 26	Farmer	Male	52	Du
Participant 27	Villager	Male	62	Du
Participant 28	Agricultural extension officer_Rasi Salai	Male	49	Du/Mueang Khong
Participant 29	CEt2 chairwoman	Female	56	Mueang Khong
Participant 30	CEt2 member	Male	33	Mueang Khong

No. of Participant	Position	Gender	Age	Community
Participant 31	CEb3 chairwoman	Female	57	Lad Bua Khao
Participant 32	CEb3 production staff 1	Female	56	Lad Bua Khao
Participant 33	CEb3 production staff 2	Female	58	Lad Bua Khao
Participant 34	Community leader_ village headman	Male	47	Lad Bua Khao
Participant 35	Banana farmer	Male	50	Lad Bua Khao
Participant 36	Villager	Female	61	Lad Bua Khao
Participant 37	Crafts CE chairwoman (another CE)	Female	53	Lad Bua Khao
Participant 38	Chief of Ban Pong District agricultural extension office	Male	55	Lad Bua Khao
Participant 39	Agricultural extension officer_Ban Pong	Female	38	Lad Bua Khao
Participant 40	CEt3 chairwoman	Female	50	Lad Bua Khao
Participant 41	CEt3 production staff	Female	74	Lad Bua Khao
Participant 42	CEb4 managing director	Male	68	Karoh
Participant 43	CEb4 manager	Male	52	Karoh
Participant 44	CEb4 production manager	Male	53	Karoh
Participant 45	CEb4 marketing manager	Male	38	Karoh
Participant 46	CEb4 administrative staff	Female	30	Karoh

No. of Participant	Position	Gender	Age	Community
Participant 47	CEb4 consultant	Male	76	Karoh
Participant 48	Rice mill owner 1	Male	45	Karoh
Participant 49	Rice mill owner 2	Male	50	Karoh
Participant 50	Khanom Jeen seller 1	Female	49	Karoh
Participant 51	Khanom Jeen seller 2	Female	40	Karoh
Participant 52	CEt4 chairman	Male	50	Nopphitam
Participant 53	CEt4 production staff	Male	23	Nopphitam
Participant 54	Another wooden furniture CE chairman	Male	51	Nopphitam
Participant 55	Villager 1	Female	49	Nopphitam
Participant 56	Villager 2	Male	84	Nopphitam
Participant 56	Agricultural extension officer_Nopphitam	Male	47	Nopphitam

Appendix C

Table C1: Literature on Knowledge Management in Community Enterprises

Authors	Year	Research Purposes/Objectives	Methods	Main Findings
Phaungjan & Yakaew	2005	To collect local wisdom on wood carving	Interview, direct observation, group discussion, relevant documentation	Details on wood carving process
Makhavun	2006	To study KM and problems in KM process at community business in Roiet province	Semi-structured interview	Details on KM process and problems in KM process
Chumthong	2008	To study KM process and factors affecting capacity in KM process of the households which work in local handicraft	Formal and informal interview, focus group discussion, observation and participative observation	Details on work process, KM process and factors affecting capacity in KM process
Saokliaw	2009	To investigate KM of silverware handicraft group	Structured interview	Details on silverware handicraft process and knowledge application in this group
Bannasri	2010	To study characteristics of KM and the problems encountered, then propose	Existing documents, in-depth interview, focus group discussion	Details on work process, KM process, problems in KM process

Authors	Year	Research Purposes/Objectives	Methods	Main Findings
		guidelines to improve KM in the wickerwork group		and suggestions for improving KM process
Klunnara	2010	To analyse the community context and KM of local wisdom and to present KM form for sustainable development in ceramic production	Interview and observation	Details on work KM process and KM model for sustainability
Karithep	2010	To study the need of ceramic learning management by using KM process and develop the ceramic KM process	Questionnaire	The development of ceramic learning management by using KM process harmonised the context and the level of local need
Mahaphrom	2010	To explore KM process in regard to the development of community fund and community enterprises in Rayong province	In-depth interview and focus group discussion	Details on KM process and factors promoting KM in this community
Ponmasri	2010	To investigate background and general information of KM and the problems encountered, then propose guideline to	Interview and focus group discussion	General information about the group, KM and its problems and

Authors	Year	Research Purposes/Objectives	Methods	Main Findings
		improve KM in the reed mat weaving group		suggestions for improving KM process
Timakum	2010	To investigate the pattern and process of Pha Yok Lamphun weaving by using KM method and to develop KM system	Interview and questionnaire (online)	Details on the weaving process The developed system has been evaluated as very effective.
Janpenmongkol	2011	To study characteristics of KM and the problems encountered, then propose guidelines for applying KM to conserve and develop local wisdom in organically-dyed cloth weaving	Existing documents, in-depth interview, participatory and non-participatory observation, focus group discussion	Details on work process, KM process and problems in KM process
Moolwat	2011	To study factors affecting KM in local weaving group and propose KM model for other local knowledge groups	Delphi technique	KM of local weaving groups should consist of knowledge identification, knowledge acquisition, knowledge creation,

Authors	Year	Research Purposes/Objectives	Methods	Main Findings
				knowledge storage, knowledge application and knowledge sharing