

**KNOWLEDGE MANAGEMENT IN ORGANIC FARMING  
ADOPTION THROUGH THAI SAMPRAN MODEL**

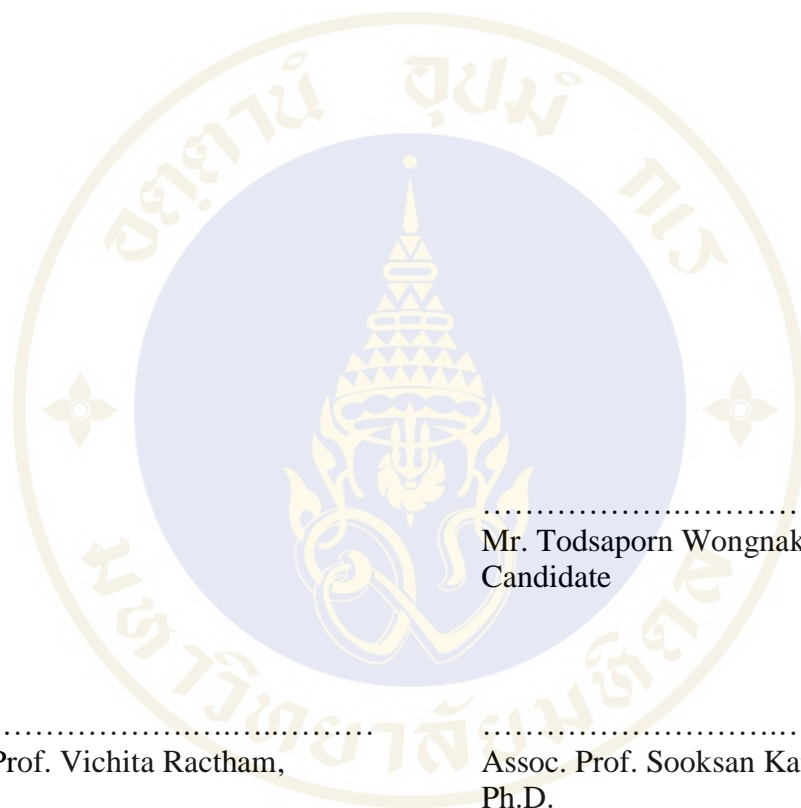


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Thematic paper  
entitled  
**KNOWLEDGE MANAGEMENT IN ORGANIC FARMING  
ADOPTION THROUGH THAI SAMPRAN MODEL**

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## **KNOWLEDGE MANAGEMENT IN ORGANIC FARMING ADOPTION THROUGH THAI SAMPRAN MODEL**

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### **ABSTRACT**

Organic agriculture is the one that include in a national agenda item since year 2005. (Chinvarasopak, 2015) Their conversion rate and adoption are very critical toward decreasing of chemical consumption in Thailand. This paper is to describe a framework designed the fact knowledge in term of explicit and tacit knowledge to influence the changing behavior of farmers in growing organic agriculture products across group of them in different types of products which are vegetable, fruit, mixed vegetable and fruit and dairy & rice that reflect the result how they can develop their growing techniques to become success in organic farming through Sookjai Farmer's market by Sampran Model, Sampran Riverside that engaging with local farmers in order to promoted organic agriculture.

**KEY WORDS:** Conventional Farming to Organic Farming/ Organic Value/  
Knowledge Management/ Knowledge Sharing/ Decision-Making

40 pages

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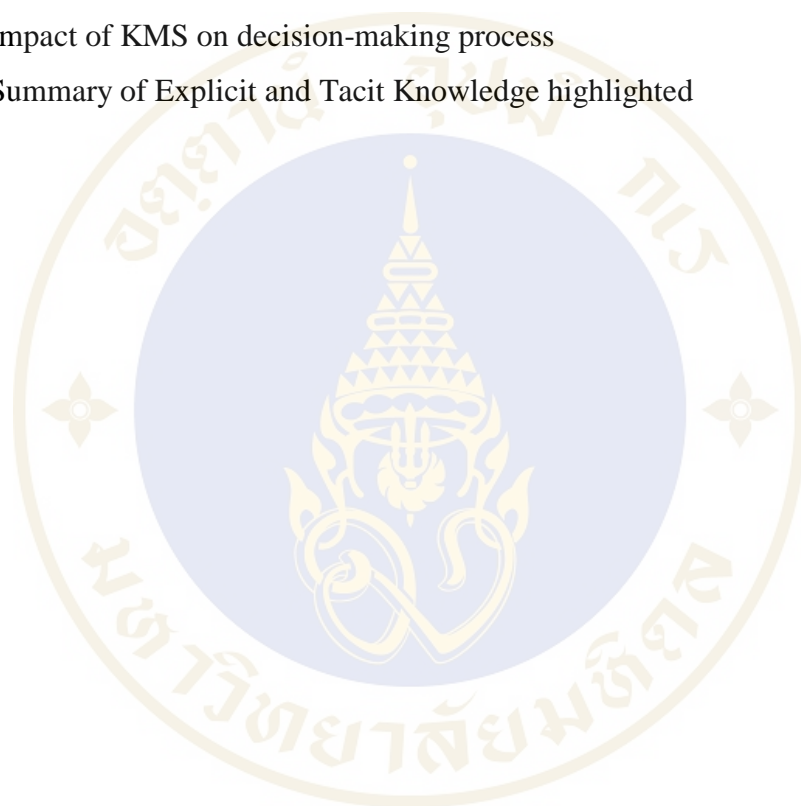
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## **CHAPTER I**

### **INTRODUCTION**

According to the Research Institute of Organic Agriculture (FiBL), mentioned about the world's demand on organically grown foods that could not be ignored because of the number of \$80 billion in year 2014 especially in Europe and U.S. are the biggest markets. The number of sales of organic food grew at a 7% annual rate during year 2010 through 2014 and the Thai government which is the Ministry of Agriculture and Cooperatives would like to move Thailand to become the organics leader in Southeast Asia that increase both of organic farming land area and organics revenues by 20 percent annually for the next five years (Bangkok Post, 2017).

Previously, fertilizers and pesticides were widely used in cutting-edge food production in the agricultural sector, both in large farm systems and on smallholder farms. The conventional farmers use chemical-agricultural production processes without considering the consequences and those actions have led to serious toxic waste contamination problems (Chakrabarty et al., 2014). The conventional farming behavior uses agricultural chemicals that can convert to an accumulation of more than 2 million tons of toxins per year in the ecosystem (Pesticide Action Network [PAN], 2009), as well as create the affecting environmental and anthropoid health. In addition, this has created a consciousness of the seriousness of the land use problem (Valencia, 2013). The toxins from conventional farming will affect the health of consumers and farmers on food contaminated (Costa et al., 2014). So, the land use policy aimed at reducing pesticides and fertilizers in farming (Owens et al., 2010) is urgently needed to encourage organic farmer behavior (OFB) because of organic farming is environmentally friendly and advantageous to the well-being of living creatures.

Organic agriculture is a production system that sustains the health of agro-ecosystems and people. Organic operation can contribute to a sustainable food

production system, improve employment opportunities, especially for women, improve household food security, enhance biodiversity and contribute to agricultural development. That why many countries promote organic agriculture to avoid facing larger problems with unsafe food supplies, health problems, unsustainable agri-rural development and environmental degradation, among others (Partap, 2010).

The decreasing in number of chemical fertilizers that import to Thailand since year 2013 to 2017 (see Table 1.1) that not effect to the consumption rate on domestic chemical fertilizer (Organic Design, 2018).

**Table 1.1: Number of Importation on Chemical Fertilizers (Year 2013 to 2017)**

Year	2013		2017	
	In Tons	In THB	In Tons	In THB
Importation of chemical fertilizers	5.6 million	72.5 million	4.5 million	44 million

The domestic demand for fertilizer in Thai market runs between 5-6 million tons per year during year 2010 to 2014 on average at 7.4% growth per annual (Tunpalboon, 2017). Similarly, the imported of chemical fertilizers have increased from 3.8 million tons to 5.7 million tons from year 2008 to 2012 after the part of the second national strategic plan for organic agriculture development (2013-2016) had been implemented the number of chemical fertilizers of importation slightly decreased (Chinavarasopak, 2015). However, the number of the organic area has increased only 0.1 percent annually since year 2006 and 0.2 percent in year 2011 of the total agriculture area under tillage (219,391.7 of 131.3 million rai)<sup>1</sup>.

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<sup>1</sup> 1 Rai = 0.4 acres or 0.16 hectares

## **CHAPTER II**

### **LITERATURE REVIEW**

#### **2.1 Conventional Farming to Organic Farming**

Conventional farming behavior uses chemical-agricultural production processes without considering the consequences and those actions have led to serious toxic waste contamination problems that effect to the society (Chakrabarty et al., 2014).

The unit cost of production is lower in organic farming in the cases of cotton and sugarcane (compared to chemical farming), whereas it is higher for paddy and wheat (Charyulu et al., 2010). The studied in Andhra Pradesh on cotton cultivation and conclude that the profitability of organic cotton was significantly higher than chemical cotton once sales in the market. Also, the organic farmers were aware and close to the mainstream whereas conventional farmers are still lacking younger and educated then their non-organic counterparts and a significant proportion have entered agriculture as an entirely new career (Raj et al., 2004). The policy that implementation should be concentrated at the district level to bring it closer to the people (Lwayo et al., 2003). The organic farmers achieved higher score on sustainable agriculture compared to conventional farmers (Comer et al., 2008). Then, the results also show that farmers' affiliation with different groups does affect their perception about organic agriculture. According to the research found that despite reduction in crop productivity, net profit of organic farming was recorded high due to the availability of premium price for the certified organic produce and reduction in the cost of cultivation (Ramesh et al., 2010).

In Thailand, as a national agenda item (2005-2007), organic agriculture policy consisted of four goals including to transform from conventional farming to organic farming, involving 4.25 million farmers in the organic conversion system, to decrease the use of agriculture chemicals by 50 percent within four years, to increase the organic farming area to 85 million rai, and to increase the growing organic market (Klaidang, 2006).

The cabinet approved the first national strategic plan for organic agriculture development 2008-2011 in January 22, 2008 in order to provide a framework for relevant agencies to implement an organic agriculture policy to achieve its goals of enhancing the quality of life of people, both producers of farmers and consumers, by changing to environmentally friendly farming of achieving food safety and food security, and increasing the number of organic farmers and an organic area with full supply chain management (National Economic and Social Development Board, 2008) identified by (Chinavarasopak, 2015). The variables of each factor can influence and support farmers' idea to switch from conventional farming to organic farming. In addition, these variables help explain in detail about the relation of each factor that motivates the switching (Krishnan, 2017).

## **2.2 Organic Values**

The studies have compared the attitudes of organic with conventional producers with the aim to identify motives for conversion as an explanatory variable of the willingness to convert. The results show many shared attitudes, such as on the financial prospects of farming, as well as some differences, such as in attitudes to the environment and to the future potential of organic farming (Fairweather, 1999; Maurer, 1997; McCann et al., 1997). The five clusters of producers, ranging from committed conventional to committed organic, but highlight the heterogeneity in farmers' attitudes, preferences and goals across groups (Darnhofer et al., 2005). Other studies similarly suggest considerable variation among both organic and non-organic producers.

There is some indication in the literature that motives for conversion in earlier studies differ from those in later ones (Padel, 2001). The comparison of the responses of three very similar large-scale surveys of organic farmers in Denmark, which were conducted at different times, and find a shift from more idealistic to utilitarian motives; a higher proportion of respondents mentioned economics and the environment as important in the later surveys (Michelsen et al., 2003). The later converters also voiced less criticism of conventional agriculture, but saw organic farming as a professional challenge.

The differences in values between the pioneers of organic farming and later entrants in Norway, based on semi-structured interviews with 11 organic producers (Lund et al., 2002). The pioneers expressed a more eco-centric view, emphasizing a holistic perspective and interpreting questions in larger frameworks, whereas economic reasons appeared more important for later entrants. Other studies have attempted to classify organic producers based on their values. The organic farmers in Norway as Anthroposophist (influenced by bio-dynamic agriculture and Rudolf Steiner with strong commitment to his ideas); Ecosophists (motivated by green ideas, the environmental and back to the land movement) and Reformists ('normal' farmers with a pragmatic approach to organic agriculture) and sees this latter group as similar to the early majority in the adoption model. She also comments on the lower proportion of producers with a farming background in the first two clusters, compared with the third group (Vartdal, 1993). Similarly, the clusters of 'pragmatic' and 'committed' organic farmers, in seeking to understand decision-making in relation to organic conversion in Austria (Darnhofer et al., 2005).

Differences between earlier and later adopters of an innovation are not a unique feature of the organic sector, but form the basis of the adoption/diffusion model of innovations in agriculture (Rogers et al., 1971). According to the adoption model, differences between early and later adopters can be expected not only in attitudes and goals - with later adopters likely to be more profit oriented - but also in farm size and in professional background. The diffusion process of organic agriculture is in many ways similar to a typical diffusion process as described in the model (Padel, 2001). The model has considerable shortcomings, one of them being that a much wider range of farm-specific and external factors are mentioned in the literature as influencing the conversion process (see Table 2.1). The conversion process to organic farming also appears rather complex, which would limit the applicability of this model.

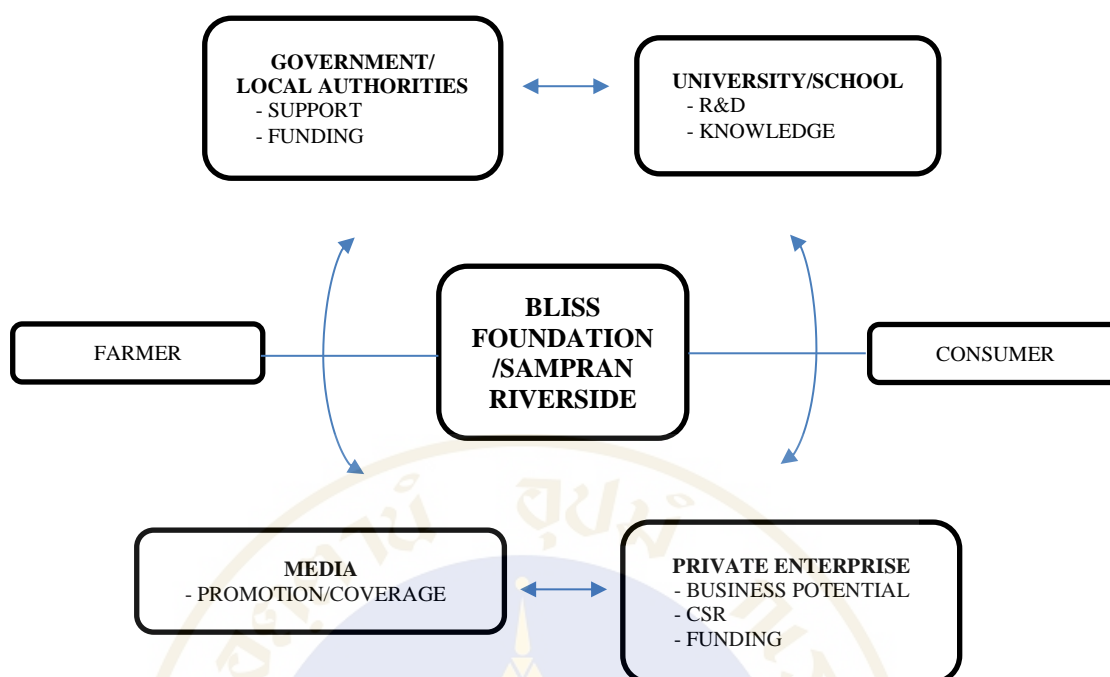


**Table 2.1: Factors influencing the decision to convert to organic farming (Padel, 2002)**

<i>Personal</i>	<i>Farm-specific</i>	<i>External</i>
<i>Personal characteristic</i>	Yield potential and variability	<i>Relative profitability</i>
Background	Farm size	Organic support payments
Age	Farm type and enterprises	Organic market outlets
Social network	Capital resources	Organic premiums
Sex	Labour resources	Input and output prices
Goals, objectives, values	Risk	Subsidies
Lifestyle and health		
<i>Organic farming knowledge</i>		<i>Institutional factors</i>
Technical		Availability of information
Profitability		Research
Market development		Advisory support
		Loans
<i>Personal attitudes</i>		<i>Social factors</i>
Toward the environment		Acceptability in the farming community
Toward inputs and technology		
Toward business		
Toward challenge and change		

### 2.2.1 Sampran Model

Sampran Model is to connect the farmers to the consumer directly via organic value chain based on fair trade which mean the acceptance on the price that consumers willing to purchase via channels include Sampran Riverside, Sookjai Weekend Farmer's Market, Sookjai Market Roadshow and the Sookjai Organic Website according to the vision as to restore balance of the local food system by finding new market channels, bulk and retail, for farmers who convert from conventional to organic agriculture (see Figure 2.1).



**Figure 2.1: Sustainable Business Model based on fair trade (Sampran Model, n.d.)**

### 2.3 Knowledge Management

Despite the importance of knowledge as an asset, few organizations truly understand how to manage knowledge to achieve their goals (Yu, 2005). Knowledge is the most important resource for individuals, businesses, governments, nations and society. Many people believe that knowledge management can be a vital sharing room through knowledge discussion and exchange ideas in various aspects, and eventually knowledge will be enhanced by this process. (Drucker, 1988). Further, it has been put toward that this branch of learning will yield rich rewards as it moves into a new paradigm of work (Jashapara, 2004).

The extant literature provides many definitions of knowledge management by considering the following examples, differences may be observed regarding perceptions of scope and emphasis on knowledge management draws from existing resources that your organization may already have in place – good information systems management, and human resource management practices (Davenport et al., 1998). The any processes or practice of creating, acquiring, capturing, sharing, and using knowledge, wherever it resides, to enhance learning and performance in organizations

(Swan et al., 1999). All methods, instruments, and tools that in a holistic approach contribute to the promotion of core knowledge processes (Mertins et al., 2000). Moreover, knowledge management is the identification, storage, protection of knowledge for future operational and strategic benefit of the organization; this may be implicit or explicit (Perrott, 2006).

More specifically, with the development of the field of 'knowledge management' there has been a massive outpouring of articles and books dealing with these issues from a prescriptive standpoint (Pan et al., 1998), their relatively weak empirical base notwithstanding, many of these contributions confidently define organizational knowledge as a kind of economic asset or commodity, or as a purely cognitive phenomenon.

In order to successfully implement knowledge management, enterprises need to nurture the particular culture associate with creating, sharing, and utilizing critical knowledge (Ford et al., 2003). If an organization lacks the appropriate culture, knowledge-sharing processes become difficult and incomplete (Simonin, 1999). As employees input knowledge, their organization learns and reforms its practices on an on-going basis. As enterprises nurture a knowledge sharing culture, the potential for knowledge management success is increased (Zhou et al., 2003). Simply put, it is essential that nurturing takes place because an organizational culture influences the forms and diffusion of knowledge. However, changing any organizational culture is not an easy task but without some change, it is impossible for knowledge management to be developed and implemented completely.

## **2.4 Knowledge Sharing**

The human knowledge can be divided into two types: explicit and tacit knowledge (Nonaka et al., 1995). Explicit knowledge is systematic and easily communicated in the form of hard data or codified procedures. It can be articulated in formal language including grammatical statements. This kind of knowledge can thus be transmitted across individuals formally and easily: for example, technological knowledge.



Tactic knowledge by contrast, is not available as a text and may conveniently be regarded as residing in the heads of those working on a particular transformation process, or as embodied in a particular organizational context. It involves intangible factors embedded in personal beliefs, experiences and values. To distinguish tacit knowledge from explicit knowledge claims that tacit knowledge is the knowledge of single individuals, whereas the company as a whole share explicit knowledge. Tacit and explicit knowledge are also forming of internal knowledge.

The types of knowledge that are shared and transferred at Buckman Laboratories encompass customer knowledge, competitive intelligence, process knowledge and product knowledge, which can all be conveniently categorized under factual and behavioral corporate knowledge. Factual corporate knowledge consists of technological and market know-how, which is an accumulation of structured information and is transferable in formalized process (Richter et al., 1995).

The success framework of sustainable business model on fair trade passed a lot of developments and improvements via knowledge management and knowledge sharing that transfer among the sectors who involve on the processes in order to become completely as Sampran Model. Every parts of this model link directly in term of transfer and exchange their information along with the acceptance to each other which mean everyone agree to follow and this model driven them to the same direction to serve the mutual benefits and create the good environment of sharing communities.

## **2.5 Decision-Making**

The consideration of the work as the basis of the decision-making theory. The decision-making process is not always rational, and the decision makers often possess incomplete and imperfect information (Simon, 1977). This approach is completed with the “garbage can model” described by (Cohen et al., 1972) which defines as alternative order in term of which processes might be understood. Participants dump various kinds of problems and solutions as they are generated. Even if we do not understand the decision-making process as linear (programmed) or as rational. The approach with a classical model built on three phases that derived from their empirical analysis (Mintzberg et al., 1976) from their empirical analysis. Identification recognizes

the need for decision and develops an understanding of the decision issues. Development leads to the development of one or more solutions or to the elaboration of an opportunity. Selection evaluates the alternatives and chooses a solution for commitment to action. The decision should be considered as the strategic choice in which managers have to be involved.

According to the method KM strategies (how firms implement and apply KM: motivations practices, measures and key success factors); knowledge transformation over the decision-making process; and categories of impacts in strategy process terms (Nicolas, 2004). Trends in knowledge management strategies following the results of research, the first stage of this research points out that there are three knowledge management strategies (Hansen et al., 1999). These strategies are summarized with their general traits as followed:

### **2.5.1 Technological KMS**

This strategy also named codification strategy (Hansen et al., 1999) or technocratic school is designed for the structure and for the cartography of organizational knowledge. The supports of this KMS are technology, systems and databases. It focuses on information or explicit knowledge. Individuals have to explicit their knowledge in order to transfer in via the database.

### **2.5.2 Personalization KMS**

Also named the spatial school (Earl, 2001), is designed for the emergence of knowledge. With this strategy, knowledge is closely tied to the person who developed it (Hansen et al., 1999). Firms focus on dialogue and face-to-face technique for knowledge sharing. The purpose of this KMS is to facilitate learning through shared experience.

### **2.5.3 Socialization KMS**

This strategy combines both technological and personalization KMS. Knowledge communities, that is to say, group of people inhabiting the same knowledge space and interacting with each other through relationships, represent socialization. Socialization KMS is designed to exchange and to pool knowledge.

The first of these was the philosophical phase in which academics focused on the entity of “knowledge” and gave this concept a strategic dimension. The second phase was the technological phase where the information technology dimension took the lead in the management of knowledge. The third was the networked phase where academics stressed the need to link individuals with trust and dialogue. The latest is the strategic-learning phase. This phase aligns the learning priorities with business strategies and expressed that knowledge management should have an impact on decision-making.

## **2.6 Knowledge and Decision-Making process**

The distinction between tacit and explicit types of knowledge is widely accepted among knowledge management researchers. These types of knowledge are involved through the decision-making process in all the phase but with different intensity. Even if we do not consider this decision-making process as linear, this schematize it with three distinct phases. Through the preliminary phase, explicit knowledge is the most important one. Organizations with competitive intelligence process collects and gathers information or explicit knowledge in order to analyze its actual situation.

### **2.6.1 The intelligence phase**

The intelligence phase represents the phase of problem definition. Individuals involved in the decision-making process have to find reflective elements and to manage ignorance. Through this phase, explicit knowledge helps to argue the definition and to nurture the problem, but tacit knowledge is essentially mobilized to understand the interactions between the elements that define the complex situation (Simon, 1987). In fact, this process is driven by beliefs and aims to develop sense making (Weick, 1995). The firm defines the problem with a collective cognitive capability to understand the issue and with its ability to construct a group identity. Historical knowledge is frequently used in this phase to like the actual situation with a previous. But emotion is one of the key tacit knowledge, which is involved in this process (Spender, 2003). It defines the perceptions and actions of the group or the

person. Consequently, people dialogue with others and share their experiences and their emotional intelligence (Goleman et al., 2002) to develop the issue. By the way, they need to access explicit knowledge in order to better circumscribe the situation, but this type of knowledge is not the most representative one. Its role appears at the end of the process when firms have to diagnose the issue (Mintzberg et al., 1976).

All along this phase, knowledge moves from individual to collective and from collective to individual. At the beginning, managers have a deep idea regarding to the issue. They try to divide a problem in different portion or components. They believe that they can solve the problem in solving each component. Through this phase component knowledge is mainly involved. When they finish to understand and to analyze each element, they focus on the link between components. Then, they mobilize architectural knowledge in order to understand how each component is integrated. At this stage emotion is the most representative architectural knowledge. Emotion is the knowledge which emphasizes information with feelings and makes them more interesting than other for the rest of the group. This process helps to develop unrelated knowledge networks (Hansen, 2002) in ways to understand the problem as a whole.

### **2.6.2 The conception phase**

The conception phase is a process driven by action where individuals involved in the decision-making process share knowledge without preference regarding to its nature. They design new solutions or search routines in the organizational memory. Tacit and explicit knowledge are mobilized with the same interest and the same frequency. At this stage, complexity comes from the nature of ontology (Snowden, 2000). If the ontology is ordered, causes-and-effects relationships are known. But if the ontology is complex or chaotic, the high level of uncertainty causing by no discernable interactions between a high number of agents is the source of a complex solution development and implies a high level of tacit and explicit knowledge. Sometimes, complexity implies an improvised concept, which means a spontaneous collection of tacit knowledge (Weick, 1995).

Through this phase of conception, managers develop a complex situation in providing multiple solutions for the problems. When they look for new solutions they create complexity in developing different distinct states of the system (Cramer, 1993).

Each solution represents a different state and managers are not able to deal with the volume of information that is necessary to understand the consequence of each solution (Simon, 1993). The stability becomes the development of a related knowledge network that helps to provide a social collective knowledge. This knowledge is nurtured by tacit knowledge, intuition and emotion. When related knowledge network is established, individuals are able to internalize the cognitive logic and to translate it with their own mental maps. Knowledge is then transferred from a group to an individual who try to integrate the architectural knowledge as component knowledge. That means the individual is able to learn and then to abstract and to absorb it (Boisot, 1998).

### **2.6.3 The selection phase**

The selection phase evaluates the alternatives and chooses a solution for commitment to action. This is the phase where the power of uncertainty is the highest. People have to pickaxe into the body of knowledge they have developed all along the problem resolution process. The choice is sometimes linked with explicit knowledge and information but usually people cannot express the deep reasons of their choices. This choice is related with metis (Baumard, 1999), a conjectural and tacit knowledge, but most commonly speaking, emotion. Emotion gives people the power to choose a solution in relation with a specific event (the context) and should be considered as the basis of intuition. This emotion is also an explication of improvisation. At this stage of the decision-making process, it gives sense to some specific information or explicit knowledge that are not necessary related with the dominant logic (Prahalad et al., 1986).

In practice, we observed that people need to argue their choice with explicit knowledge in order to share efficiently what they think and in which solution they believe. But, before explicating this knowledge, individuals are influenced by their feelings and emotions. In consequence, they mobilize a high level of tacit knowledge at this transition between conception and selection. Choice is made by a group with conflicting goals and interests, within each participant exercising judgment. Sometimes they contest the choice and have to explain their intuition with their feelings, with tacit knowledge and, with emotion (Spender, 2003). Most of the time, the next step consists in another argumentation of the choice. But it may occur that the internal conflict is so



intensive that it conducts to another issue. It is also the case of strategic decisions that oblige the firm to be faced with another business issue.

This phase is driven by argumentation (explicit knowledge) but gives also an important part to the improvisation. Improvisation gives a sense to some feelings but is sometimes a consequence of the system failure. That means improvisation should be the consequence of the lack of constructive answers and can be considered as the “last solution but not least solution”. This solution takes its marks within related knowledge networks and is possible only if trust exists in the group of managers. To maximize emotion and intuition as the basis for uncertainty resolution, innovative firms use stress and complexity to solve complexity. This practice is closed to the “order by chaos” therapy and is nurtured by the emotion focus.

**Table 2.2: Impact of KMS on decision-making process (Nicolas, 2004)**

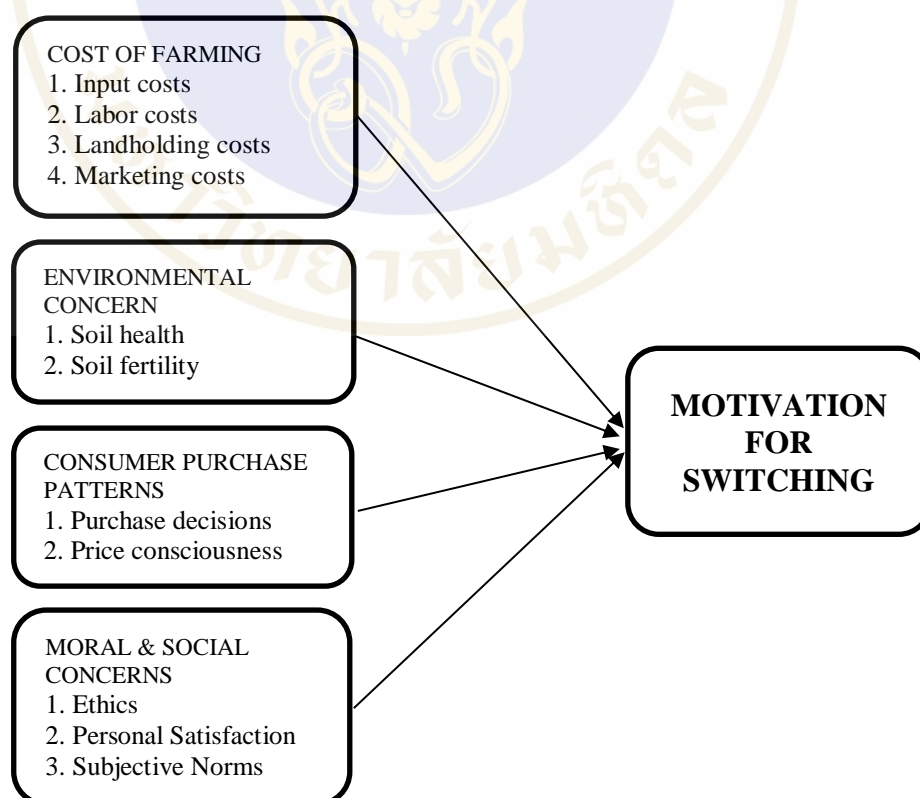
<i>Technological</i>	
<b>Strategy</b>	<b>Face with uncertainty</b>
<ul style="list-style-type: none"> <li>- Structure the organizational Knowledge base</li> <li>- Accumulate knowledge in order to legitimate the strategic choice and support the action</li> <li>- Gain of time</li> <li>- <i>Impact on the selection phase</i></li> </ul>	<ul style="list-style-type: none"> <li>- Influence the bounded rationality</li> </ul>
<i>Socialization</i>	
<b>Strategy</b>	<b>Face with uncertainty</b>
<ul style="list-style-type: none"> <li>- Develop a collective intelligence</li> <li>- Develop innovation</li> <li>- Create generative divergences</li> <li>- <i>Impact on the phase of conception</i></li> </ul>	<ul style="list-style-type: none"> <li>- Build a sense of trust and mutual obligation</li> </ul>
<i>Personalization</i>	
<b>Strategy</b>	<b>Face with uncertainty</b>
<ul style="list-style-type: none"> <li>- Create emergent strategies</li> <li>- Develop shared cognition</li> <li>- Construct a collective intuition</li> <li>- <i>Impact on the intelligent phase</i></li> </ul>	<ul style="list-style-type: none"> <li>- Influence the emotional part of the decision-making process</li> </ul>

Through this research observed that knowledge management has evolved during the last many years and it becomes more of its plenitude. The explored

knowledge transformations and fluctuations over the phases of the decision-making process, and could demonstrated that KM has a real role on the decision-making process but its impact differs with the KMS implemented. Each KMS had specific impacts and roles over the decision-making process that synthesize (see Table 2.2). If a firm tries to emphasize one of these specific points of the decision-making process, it can choose to right KMS (Nicolas, 2004).

## 2.7 The Conceptual Model, Motivation for Switching

Several factors influence the farmers to switch from conventional farming to organic farming. People believe that switching to organic farming and related crop protection techniques will give them a better status in the society. They wanted to be known as someone who has immense care for land and soil. Farmers are influenced by social concerns and moral concerns than the monetary benefits. (Rigby et al.,2001; Carlsson et al.,2007).



**Figure 2.2: Conceptual Model (Krishnan, 2017)**

The list of variables on each factor that influence with the idea and supportive which helped explain in detailed how relation of factor can lead to a motivation for switching to organic farming (see Figure 2.2).

**Cost of Farming:** (Grunert et al., 1995) defines an environmentally concerned consumer as the one who knows the production, distribution, use and disposal of products leads to external costs and who evaluates such external costs negatively, trying to minimize them through his/her own behavior.

**Environmental Concern:** Soil health and soil fertility are two major motivating factors for farmers which makes them switch to organic farming and sustainable agricultural practices. Agriculture, depending on uncontrolled use of fertilizers and other chemicals are causing serious effects on public and environment (Pimentel et al., 2005).

**Consumer Purchase Patterns:** Marketing of organically produced fruits and vegetables also got influenced by these changing purchase patterns of consumers. Research has supported the attitude intention relationships showing that environmental attitudes do have an impact on consumers green purchase intentions. (Squires et al., 2001) also confirms this finding that consumers who hold self-confessed green attitudes purchase more organic products than those without green attitudes.

**Moral & Social Concerns:** Moral concerns are those which are within an individual which includes ethics and personal satisfaction whereas social concerns are those which influence the individual's behavior because of similar people in the reference group; may be farmers of the same cluster or region. More than monetary benefits farmers take up this one as an environmental good. Increasing number of papers are focusing on the moral and social concerns of people when adopting a certain practice.



## 2.8 A New Framework: Farmers' Knowledge Considerations

### Farmers' Knowledge Considerations Framework

The propose of this framework is about how farmers' knowledge consideration along the conceptual model to organic farming adoption (see Figure 2.3). Lack of knowledge and information is reported by many researches as a barrier to the adoption of organic agriculture. Knowledge and information barriers relate specifically to market. The farmers in many developing countries lack technical information about farming practices, production and marketing methods, such as choosing products to grow, identifying different markets and distribution channels, competition strategies and market access (Bello, 2008).

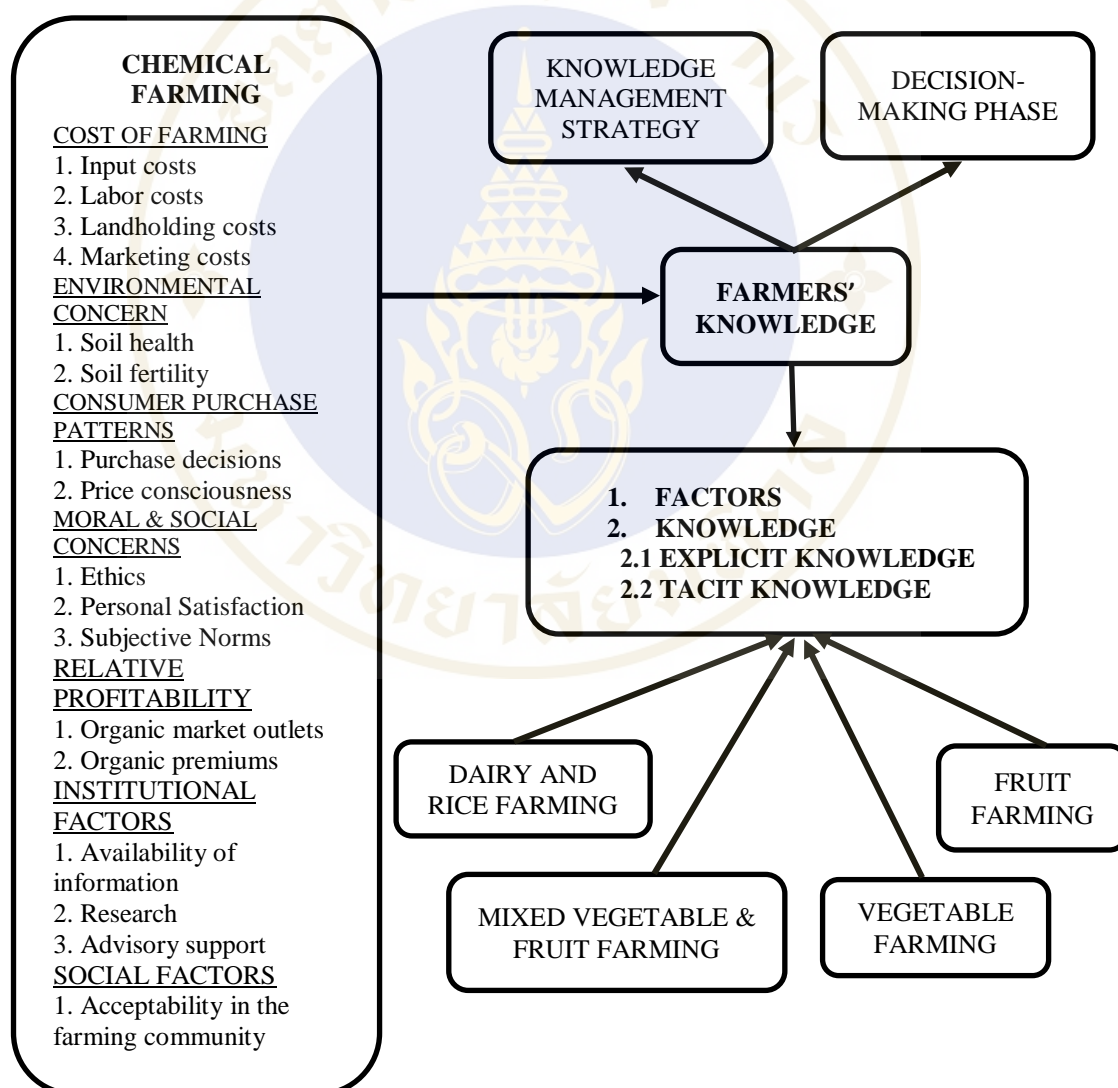


Figure 2.3: Farmers' Knowledge Considerations Framework

Cost of Farming – Part 1: During this part, organic farmer will focus on input costs, labor costs, landholding costs, and marketing costs from their experienced that always keep increasing during last 10 years. The main method of learning technique the organic farmer will be using in this part is learning by observing and monitoring the fluctuation on cost structure.

Environmental Concern – Part 2: During this part, organic farmer will use the tacit knowledge from their experience to see the outcome on soil health and soil fertility of their land when they grow the chemical agricultural products for several years. The chemical will accumulate deep down from the surface of the land and effect to the next growing agricultural products.

Consumer Purchase Patterns – Part 3: During this part, organic farmer will have to learn and adapt to the purchase decisions and price consciousness of the customers by combine all explicit information extracted and try capture and improvement of the quality on the organic agricultural products. Information gathered could be from many different sources among their group that they involved, price level that set by the market which the customers can accept and willing to purchase on organic agricultural products.

Moral & Social Concerns – Part 4: During this part, organic farmer will concern about ethics, personal satisfaction, subjective norms along with the familiarize all the knowledge that they have compiled on the organic farming processes. They will then internalize the knowledge and be able to work with high productivity and efficiency through experience and embodying to share among the groups and to the society.

Relative Profitability – Part 5: During this part, organic farmer will focus on channels that they would like to serve their products into the markets which are the same category of the product. And also, the benefit that provide along when they enter into the markets especially higher price that they can set up or price level within the market in order to gain more profits.

Institutional Factors – Part 6: During this part, organic farmer will explore their knowledge and information among the groups that they participated which represent the availability of information, research and advisory support. They

can share their ideas and learn from passed experience from other members with the right solution to solve those kinds of problems.

Social Factors – Part 7: During this part, organic farmer will need to get the approval from the institutions who have the authority to certified the farm and processes of farming in order to join the group which mean the acceptability in the farming community and prove that those farmers operate the right way in term of under the following conditions to get the organic agricultural products.



## **CHAPTER III**

### **RESEARCH METHODOLOGY**

#### **3.1 Primary Data Collection Method**

Sampran Model is an encouragement key to farmers by enable them to convert to organic agriculture by provide the team of qualified officers regularly visit groups of them to attend to all their needs during the changing period. The role models are representing the group of successful organic farmers for the new farmers who are interested in organic farming which encouraged to join the groups. Once they form groups of organic farmers who are self-reliant and could undertake the complete business model themselves.

This model is in line with his majesty the king's Sufficiency Economy Philosophy as reflect the public private partnership (PPP) is a sustainable business model based on fair trade by collaboration with local universities, government agencies and local authorities is key success to the development of Sampran Model with the following partner: Kasetsart University for cooperatives knowledge, organic agriculture technology, post-harvest techniques, logistics, processing and other research projects; with the Department of Internal Trade (Ministry of Commerce) for organic village projects; with the Land Development Department (Ministry of Agriculture and Cooperatives) on the Participatory Guarantee System (PGS); with the Thai Convention & Exhibition Bureau (TCEB) on 'Farm to Functions' project where hotels and conventional centers buy organic rice directly from groups of farmers and with the Tourism Authority of Thailand (TAT) to promote sustainable tourism through organic value chain.

This paper employs a qualitative method across the group of farmers based on their experience to described their thinking and knowledge that cannot be understand without in-depth detailed studied in Sookjai Farmer's Market as the scope of study.

The size of the samples on fifteen face-to-face semi-structured interviews with farmers who grow their agriculture products by themselves were conducted. This sample could reflect the perceptions of organic farmers in the organic agriculture. However, this paper could reflect the fact knowledge that influence the changing behavior on growing organic agriculture products as well.

### **3.1.1 The Criteria for Selecting the interviewers**

1. Determination of adoption from chemical farming to organic farming
  - a. The purpose of this research, the criteria that will be applied were based on the framework (Figure 2.3) as they are straight forward and related to local culture and Thai organic agricultural.
2. Need organic farmer who farming at least three years
3. Organic farmer must be the landholder
4. Organic farmer need to experience on chemical farming at least three years
  - a. The research will focus mainly on the organic farmer who had direct experienced on conventional farming before turning into organic farming and the impact that they received from previous processes with the alternatives to overcome those situations.

## **3.2 Interview Method**

The total of fifteen farmers have been interviewed. The organic farmers were classified into 4 groups based on type of organic products which are vegetable farming, fruit farming, mixed vegetable and fruit farming and dairy and rice farming. It is also worth noting that the different farmers in different types of organic product were being interviewed varied across different groups from other parts in term of areas that far from Bangkok for example Ratchaburi province to Nakhonpathom which nearby Bangkok, the capital city of Thailand. In scenario where there is more than one organic farmer, only one organic farmer is interviewed by random. All the interviewed data were stored and transcribed.

## **CHAPTER IV**

### **RESULT AND DATA ANALYSIS**

The analysis of fifteen semi-structured interviewed showed that organic farmers are well aware of the importance of adoption and knowledge to become successful organic farming by a total of 47% vegetable products from seven farmers, 27% fruit products from four farmers, 13% dairy and rice products from two farmers and 13% mixed vegetable and fruit products from two farmer. They are all in difference 11 groups that participated in which monitoring by participatory guarantee system (PGS) as a tool to develop and prepare them to be audited to become IFOAM certified organic farmers, the IFOAM standard is an internationally applicable organic standard that can be used directly for certification (IFOAM, n.d.). During the interview session, all of the explicit and tacit knowledge were highlighted by at least one interviewee. This section will now look to summarize, using both deductive and inductive methods and group the content with was given by each interviewee grouping by their explicit and tacit knowledge.

#### **4.1 Vegetable Farming**

This group of farmers mainly focus on disadvantages and some benefits from growing their agricultural products by conventional farming for long period of time before changing to organic farming that damaged to the soil of their land. One evidence was found during the interview that they are not present the shortcut way of changing from chemical farming to organic farming to be fast as they want. Everything is happened from learning by doing. Similar evidences were found among the interviewees about keep learning from the obstacles that appear during the processes of growing the agricultural products. Among the cases, six interviewees have highlighted the impact of chemical fertilizers in the same direction. Notable quote:



*“The using of chemical fertilizer on the process of growing the agricultural products that effect the reduce of ventilation of the soil. Their vegetable cannot absorb the nutrition under the surface then, they need to increase the quantity of the chemical fertilizers in order to grow them up on time for selling them on the seasonal to get the high price and more margins (Vegetable farmers #2).”*

In additional to early adoption, another factor that have been highlighted as important from interviewed is the criteria level of readiness of the farmers themselves. Sookjai Farmer’s market in Sampran, Nakhonpathom province well-known as the organic agricultural market which mean the channel to the final customers for the organic farmers but they also require the preparation of the farmers to meet the requirements such as stand by the land about 1 year for testing and make sure that all of the activities inside the farm are without the components from chemical. The first impact from adapting is the impact on shortage of the agricultural products to supply to the markets and also cannot constraint to the same level. Next, the appearance of the organic agricultural products looks very different from the using of chemicals in term of product image that not attract to the consumers vice versa the conventional farming can perform well in these processes which mean that can control the quantity, picking on time and also when the weight and size smaller they can increase these kinds of function to the agricultural products. On the other hand, in organic agriculture farming they need to use the high volume of organic fertilizers in order to achieve those kinds of function and benefit. Consumer demand and willingness to pay price premiums for sustainable produce are essential, as it provides opportunity for organic farmers to supplement their incomes (Lappe et al., 2011). The same theme ware also found in the interviews:

*“I sold Chinese kale via the middleman and got only 18 baht per kilograms for many years once I was in chemical farming. And after I joined in Sookjai Farmer’s market I can sold Chinese kale at 100 baht per kilograms or sold to hotel chains at 60 baht per kilograms (Vegetable farmers #4).”*

The customer’s reliable depend on the reputation of the market with the perception of quality on the appearance of the products that need to clear and fresh to draw attractiveness based on their experience on doing organic farming. The price is very persuaded to the farmers to continue and improve their productivity on their farm.

The recommendations are information collections and work hard. The farmers need to know the market that demand the organic products with the good price for them because low quantities when compare to doing the chemical farming. Technology is also recommended to support in order to improve the productivity and regularly. It can persuade the new farmers to do farming. The supportive from government sector is another form of attractiveness for the farmers who do chemical farming to turn into organic farming such as support their expenses and agricultural subsidies. The farmers requiring subsidies tend to manage large and diversified farms and are more concerned about organic inspection, quality and adequacy of technical advice than are conventional farmers (Lohr et al., 2000).

The trend of health concern is booming from many sectors such as hotels, restaurants and private schools which all of them are their main customers. The highlighted of benefits from doing organic farming. Notable quote:

*“The organic farming provides the several benefits as good health to the farmers, good for consumers, good for environment, good atmosphere and good mental health. We also grow up the trees to increase the forest and return to the earth (Vegetable farmers #5).”*

The major cost was chemical fertilizer that if the farmers could reduce the cost of chemical fertilizer, the cost of growing crops would be reduced and they would get more income from their farms (Chinavarasopak, 2015). One interviewee has highlighted the impact of the increasing of chemical fertilizers in the same direction:

*“The cost of chemical fertilizer always keeps increasing included the labor costs and equipment that effect to raise the household debt, so this is the turning point of adoption from chemical to organic farming because of the costs of chemical is zero and not create more household debt (Vegetable farmers #7).”*

It can be summarized that there are four main factors which are soil health, shortage of organic products to supply, attractiveness of high price, distribution channel and increase of chemicals being discussed in the group of vegetable farming. The three benefits are being exposure for the after stage of adoption from the vegetable farmers



and high level of preparation for changing into fully organic. The ideas were aligned directly with the literature found.

## 4.2 Fruit Farming

This group of farmers mainly focus on the impacts during processes of conventional farming on growing their agricultural product. One farmer from interview session come up with the body impact from accumulated the chemical used on her farm for long time:

*“The used of chemicals on my farm created high blood pressure symptom and effect to my working hours a day by after spay the chemical fertilizers in morning, I cannot do anything in the afternoon due to the side effect from them. But when I switch to organic farming, my all-day working is come back (Fruit farmers #1).”*

The limitation of working hour directly impacts to farmers from both direct and indirect consuming chemicals to their body. One finding in this group of farmer is the reject of organic fertilizer of fruit trees once the farmers try to avoid using chemicals on their farm that one of the obstacles by they need to use one year of adoption on their fruit trees to accept the organic fertilizers with regularly monitoring on them of this big change on their farm as some studies have shown that organic farmers have greater workload compared with conventional farms (Karimi, 2011). The social factor which acceptability in farming community also highlighted from this group of farmers as one interviewee quote:

*“The beginning of food processing come from high volume of output of the organic agricultural products in the group, this is the opportunity that I can seek out to transformation those raw materials but the thing that make me confidence because of our products with guaranteed from each farmer in the group (Fruit farmers #2).”*

The distribution channel mentioned as certified in fully organic agricultural products which lead consumers to accept the quality of the products that reflect to their perception. Since the beginning on growing fruit processes by clean up their farm by

man power without chemicals, set up the poor to rest the water from other sources before giving them to fruit trees for seven days which some plants that provide abilities to absorb the contaminations. This information transferred and acknowledged directly to the consumers and effect to the price sensitivity.

*“We can get the good price on organic fruit products. However, the consumers also know well on our processes of growing them and they have the limited ceiling price on each type of fruit that they can accept and speak out if the price is too high (Fruit farmers #4).”*

It can be summarized that there are three main factors which are body impact, limitation of working hours and obstacle of rejection being discussed in the group of fruit farming. One finding of three benefits are not similar to those of literature on the transformation of products which was not introduce at all despite being one of the main factors in literature.

The increase of the U.S. shale oil production has an impact on the global oil price as mentioned. However, the reduction of the feed price contributes to the decrease in product price as well which means, refinery companies will gain less in gross refining margin (“GRM”) from their products (processed oil) automatically if there is stable demand for petroleum products but excess supply from refinery companies. It is due to the fact that overall refining margins are mainly driven by the prices of global crude as well as its products.

### **4.3 Mixed Vegetable and Fruit Farming**

This group of farmers mainly focus on quality of the products on organic farming that very differ from conventional farming that they perform before changing and impact that effect to the society within their village and also impact to the environment. These two interviewees mentioned about the valued added of the organic agricultural products. One of them highlighted the issue of good quality of raw materials:

*“If we have the good raw materials, we can create many kinds of foods or finished products in term of food processing with the available channels as “Sookjai Farmer’s organic market” because of the consumers who was educated and agree to accept the price of the organic products (Mixed vegetable and fruit farmers #1).”*

From the above statement reflect to the core value of organic farming in two dimensions which are the core value of the products that the organic farmers have to follow the rules of the market based on PGS standard included the moral with thinking about others. The second one is the concept of learning by doing that the farmers have to maintain of balancing on their farm and sharing with others farmers among the groups in order to overcome situations that always coming up without only looking only at profits from operation in term of gain higher margins. All of these are processes of accumulated their knowledge transfer and discuss within the group. It will return to them in term of improvement of quality of life and good health on both farmers and consumers who consume organic products.

All of my life operated chemical farming, one factor that reflect is the cost farming always keep increasing with the external pollutions that leak out from farm to the society and create the bad effect to the environment. For instant, the insects will come out to interrupt our neighbors in the evening when we use the chemicals in the morning. At the present the revolution of the chemicals is more harmful that we can observe from the mouse ran out to died outside from their mouse’s nest:

*“Even if the warms improve their skins to be stronger to protect those kinds of chemicals that lead us to increase the quantity of chemicals to prevent our plants and fruits from them. So, the high volume of chemicals uses the high of quantities of them that consumer will consume on vegetable and fruit products (Mixed vegetable and fruit farmers #2).”*

The key processes on doing organic farmers are costing on adaptation that depend on each seasonal in order to gain more benefits and the achievement of the minimum satisfaction to taking care of their families and households.

It can be summarized that there are two main factors which are costing on doing chemical farming and the impact which mean bad benefits to the environment and

society being discuss in group of mixed vegetable and fruit farming. The three factors are boing clearly exposure of the benefits of the adoption from conventional to organic farming by one of the good raw material is one part to create the good consumer products were not aligned with the literature found.

#### 4.4 Dairy and Rice Farming

This group of farmers mainly focus on the productivity of the results from their animals and farms that they have invested. These kinds of experience impact to their behavior in term of obstacles that they cannot achieve the target that been set for example, the quantity of the dairy milks and rice would be getting smaller in term of quantity that it should be when compare to previous year. Furthermore, the life of sheep also getting effect from the vaccine that they use with them by shorter and weaker when they consume those vaccines and related drugs to protect them from the deceases:

*“When compare sheep those taken and not taken vaccine shown out by the quality of sheep’s life in term of loss by 40% happen during the conventional farming and almost 0% from herb treatments as organic farming. Also, the side effects on internal organs from vaccines use with residue inside them (Diary and rice farmers #1).”*

The increasing on costs of medicine when compare to the outcome that not conform to each other for example, some sheep do not get better after took the vaccine that lead to increase the amount on them and become weaker. This thing also effects to the environment of excretion from animal in term of create the smell pollution within farm and society. Some contrasting things from adoption that farmers have to accept are the quantity of milk from animal decrease from 3 kgs to 2 kgs after reject to accelerate by vaccine but the taste of milk would be more sweetened from conventional farming with enjoyment of living of animals. The benefits from conversion to organic farming are reflect as life extension of animals, deceasing on costs of medicine and the standard improvement within their farms:

*“The conversion to organic farming for rice farming would be the improvement on our standard to our farms by we have to rest our land as breaking period almost one year before start farming again, this kind of thing create the uniqueness to our taste and appearance to be specific and differentiate growing rice from difference parts of Thailand (Diary and rice farmers #2).”*

It can be summarized that there are three main factors which are increasing on costs of medicine, shorter life period of animals and bad effects to the environment in term of smell pollution being discuss in group of dairy and rice farming. The three factors are being clearly exposure of the benefits from the adoption which are minimizing the costs of medicine, increasing long life living to the animals and the standard of the farms are improving.

#### 4.5 Summary of the Data

It is clearly evident that there is a significant relationship between of KMS impact on decision-making process that link with explicit and tacit knowledge as the summary highlighted on explicit and tacit knowledge in Table 4.1 from the key findings of each group.

**Table 4.1: Summary of Explicit and Tacit Knowledge highlighted**

Type of organic farmers	Phase of Decision-Making	Explicit Knowledge	Tacit Knowledge
Vegetable farming	Conception Phase	<ul style="list-style-type: none"> <li>- On going process require regular schedule activities</li> <li>- Require hard working</li> <li>- Increase costs of farming</li> </ul>	<ul style="list-style-type: none"> <li>- The competency to know the quality of soil and observation on adaption of their products</li> </ul>
<b><u>KMS:</u></b>	Personalization KMS		
Fruit farming	Conception Phase	<ul style="list-style-type: none"> <li>- Require more manpower on farming</li> </ul>	<ul style="list-style-type: none"> <li>- The competency to find the right plants that provide the</li> </ul>



**Table 4.1: Summary of Explicit and Tacit Knowledge highlighted (cont.)**

		- Adaptation on farm to protect their products	right solution on each problem
<b><u>KMS:</u></b>	Personalization KMS		
Mixed vegetable and fruit farming	Intelligence Phase	<ul style="list-style-type: none"> <li>- Have to follow the rules of Sampran Model</li> <li>- Included moral and social concern</li> <li>- Thinking about other people</li> <li>- Maintain the balancing of the environment</li> </ul>	<ul style="list-style-type: none"> <li>- The competency to adapt based on seasonal in Thailand on their farm</li> <li>- Faster adoption on the processing</li> </ul>
<b><u>KMS:</u></b>	Socialization KMS		
Dairy and Rice farming	Intelligence Phase	<ul style="list-style-type: none"> <li>- The acceptance of lower quantity received on organic farming</li> <li>- Requirement of breaking period before changing to organic farming</li> </ul>	<ul style="list-style-type: none"> <li>- The competency to know the improvement on their products such as taste and identify the different on appearance on the right breed</li> </ul>
<b><u>KMS:</u></b>	Socialization KMS		

It can be summarized that all of the farmers in any groups have the knowledge of impacts on conventional farming as their explicit knowledge such as damage from chemicals used, bad effects to the environment on society, high volume of contamination of chemicals on agricultural products, the increasing on cost of chemical farming that need to bear and long-term health impacts from accumulated contamination of chemicals in human body.



## **CHAPTER V**

### **RECOMMENDATION AND CONCLUSION**

#### **5.1 Conclusion**

##### **5.1.1 Theoretical Implication**

This study has extended the exploration of knowledge management in explicit and tacit knowledge of farmers by studying it reflects from their past experienced on conventional farming. This study also highlights key important factors of explicit and tacit knowledge from each group of farmers: vegetable farming, fruit farming, mixed vegetable and fruit farming and dairy and rice farming. From this study, we gain more perception of the explicit and tacit knowledge on their organic farming. The recency to theoretical exploration is that there has never been study that endeavors to investigate on explicit and tacit knowledge, especially in terms of the impact from conventional farming to organic farming adoption through Thai Sampran Model. The result of this study indicates the difference in impact on each group of farming toward organic farming adoption. And also observed is the significant interaction between the decision-making process and knowledge management strategy on organic farming adoption.

##### **5.1.2 Practical Implication**

The result from this study reveals several practical applications benefit of future study. First, it would be valuable to further examine how is effects from conventional farming and how knowledge management reflect from organic farming adoption. This study found out that any types of farming which are vegetable, fruit, mixed vegetable and fruit and dairy and rice provide the similar results in term of impacts from conventional farming and the reflection from their experience on the knowledge can lead the time spent for a new organic farmer once acquire that knowledge

can be faster and more productive in term of easier to communicate in order to utilize from knowledge.

Second, it would be benefits to consumer who turn to consume organic agricultural products by more understandable on the processes of growing on organic farming that the appearance of the organic products looks differ from conventional farming and also lead the price to be higher in order to illustrate the perception in consumer point of view.

Third, it would be benefits that return to environment and society in term of maintain the balance of creature.

At the main of this research is the exploration of explicit and tacit knowledge from conversion period on conventional to organic farming and study the decision-making process on the changing period to provide the information to the society. The key is in investigating the knowledge management in a way that makes farmers to adapt from conventional to organic farming and which kinds of knowledge on both explicit and tacit knowledge that they identify from their direct experience more than three years on conventional before turning to organic farming.

## **5.2 Recommendations**

Knowledge management is important to organic farming adoption through Thai Sampran Model. The different group of farming in Sookjai Farmer's market different explicit and tacit knowledge. It will be benefit to the new organic farmer if this knowledge can be utilized. However, the tacit knowledge in this field come from the accumulate of experience on doing conventional farming and period of adoption to organic farming that difficult to communicate and demonstrate. This study on reflect of explicit and tacit knowledge needs to be parallelized to doing either conventional or organic farming in order to be perceived and utilized by new organic farmer. In previous studies, studying the factors that influence from conventional to organic adoption has never been in the focus of researchers' interest. The result of this study explains the significant relationship between knowledge management strategy and decision-making process. The result of this study also illustrates the significant interaction between

knowledge management (explicit and tacit knowledge) on each group of farmer and organic farming adoption.

Although this study provides recency in knowledge management study and interesting results on organic farming adoption in Sookjai Farmer's market through Thai Sampran Model, some limitations must be acknowledged. The sample in this study is specific organic farmers. It is not randomly selected. The generalization of the findings can be limited. However, since these groups of organic farmers are undertaking on business world, this study can reflect the sample in both academic and business world. In future research, it is highly recommended to conduct the study with a different model of organic farming and different organic market in other areas.



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## Appendix A: Interview Guide and Questions

Name:	Major crop:
Farm:	Minor crops:
Birth year:	Fully organic/ conventional/ organic +
Year when started organic farming:	conventional

1. How long that you start farming and which type of farming at the beginning?
2. What are the reasons to manage farm and select those kinds of crops?
3. What type of chemicals that you use and how long that you use on farm?
4. What are the reasons to use those kinds of chemicals and why?
5. What are the impacts to use them and how do you observe?
6. What do you think about the main reasons to turn organic?
7. What is the knowledge that you need to know before turn to organic instead of chemical farming?
8. What issues do you face in your practices (biophysical, markets, legislation, economic, community pressure, etc.)?
9. What are the key factors that lead to success in doing organic farming?
10. What kind of things that you need to improve to manage farm in the near future?
11. What are the suggestions to other organic/conventional farmers who turning to become fully organic?