Chapter 3

Research Methodology

3.1 Sources of Data

3.1.1 Documents

In this research, the relevant documents were used mainly in the identification and preliminary analysis of the research problem. This was conducted during the initial stage of the research, more specifically during the literature and critical reviews. The documents used in this thesis include journal publications, conference proceedings, and/or information available on the internet. Furthermore, the topic domains cover the general description of teak, the supply chain of teak industry in Thailand, the concept of the creative economy, and the knowledge management and engineering methodology.

3.1.2 Population

There were two groups of stakeholders involved in the supply chain analysis of the Thai teak furniture. As this study' population, only two existing knowledge workers in the factory (representing the manufacturing process) from the first category were selected, five carvers were selected as the population for the interview in this thesis. Since the purpose of this study was to capture their experiences, the criteria for the main selection of the population were as follows:

- Group1 in this research selected the Starmark industry as the case study, in which was selected 2 knowledge workers in the factory with at least 20 years of experiences in the manufacturing process of the teak furniture from 30 knowledge worker.
- Group2 was consisted of 5 Carvers with at least 10 years of experiences in wood crafting from 2 Carvers in Bangkok and 3 Carvers in Chiang Mai.

Please note here that, the Starmark manufacturing company which was located in Samutsakorn province, Thailand was selected for the interview group 1. This was due to the fact that this company had been operating in the furniture industry in Thailand more than 30 years. Moreover, the loose furniture was the focus of this research since currently it was undervalued.

It could be seen that with the selection of the population for the interview as mentioned earlier there was contrast in their focuses. The knowledge workers in the factory (interview group 1) focus on using machinery in the production process to gain a high volume of goods in a short time. Their focus was on the functionality, not so much on aesthetic aspect. The carvers (interview group 2), on the other hand, focus on the skills and craftsmanship. They were not capable of producing massive volume and required more time for production. Their focus was not on functionality, but rather the aesthetics. This thesis then proposes a method to increase the value of the teak furniture by combining these contrast knowledge together as well as adding new information. With the changes in the knowledge, it was expected that the production process of the teak furniture becomes better. This in turn results in increased value of the teak furniture products.

The details of the first group of population with experiences in the manufacturing process of teak furniture were given in Table 3.1.

Table 3.1 Details of the experts in teak chair manufacturing

Expert's name	**Gender**	**Age**	**Experiences**	**Province**
Mr. Nitiruj Engkhajirasit	male	49	30 years	Samutsakon
Mr.Natee Srijanchom	male	50	23 years	Samutsakon

The first group was teak wood furniture manufacturers from Starmark Manufacturing Company. Two experts with experiences in the furniture manufacturing no less than 20 years for the knowledge engineering to develop the knowledge pack and 15 operational personnel in furniture manufacturing for the knowledge engineering to develop the knowledge pack.

The details of the second group of population with experiences in craftsmanship were given in Table 3.2.

Table 3.2 Details of the experts in teak Carving

Expert's name	Sex	Age	Experiences	Province
Mr.Anant Poonmuang	male	59	40 years	Chiang Mai
Mrs. Mayura Wantha	female	47	10 years	Chiang Mai
Mr. Kriengsak Junlek	male	51	35 years	Chiang Mai
Mr. Kritchakorn Saetae	male	52	20 years	Bangkok
Mr. Anuj Kanitsut	male	49	16 years	Bangkok

The second group composes of 5 carvers with at least 10 years of experiences in craftsmanship. As shown in Table 3.2, 2 experts were based in Bangkok and 3 experts were based in Chiang Mai. Two experts with carving experiences come from Bangkok and three experts with carving experiences come from Chiang Mai province.

In this section, the sources of data including relevant documents and population for the interview were explained. The next section then provides detailed explanation of the knowledge management model proposed in this thesis.

3.1.3 Instruments

The capturing knowledge, which focuses on the thought processes, includes the key process such problem abstraction, conceptualization, reasoning and learning from the tacit groups' experience. These could be used in the data analysis and interpretation. (see appendix A)

3.1.4 Data Collection

The data were collected through a series of expert interview. The expert interview could be divided into four stages.

(1) Scoping Meeting: The main objective was the problem abstraction which described Task Knowledge. It was necessary for critical task or subtask under decision making.

(2) Knowledge Capture Meeting: The main objective was the conceptualization of reasoning and relatedness which could be divided into two level which were Ontology (Specification of Conceptualization) and Domain Concept. For knowledge capture meeting, the tools were used to simulate the expert behavior.

(2.1) Input/Process/Output Template: There were three type of knowledge which were before working, during working and after working.

(2.2) CommonKADS Knowledge Template: There were 10 – 11 types of expert behavior simulations. This could be classified mainly into Analytic and Synthetic.

(3) Case Study Meeting: The main objective was the reasoning of problem solving which was included the adequacy and completeness of knowledge.

(4) Knowledge validation meeting the main objective was the interviewing which was included the completeness of the knowledge engineering and learning.

The data were collected from the expert in both quality of knowledge engineering standard process, which was conducted for groups skill and successful teaching technique.

(1) Knowledge Capture

This was the individual expert interviewing technique with the same questions. This was focus in technique, method problems and problem solving.

(2) Knowledge Analysis

From the expert interview, the scripts were decoded and categorized. Then bring back to the professional expert to examine the correctness and completeness for knowledge synthesis.

(3) Knowledge Synthesis

The scripts of knowledge synthesis were coding for Tacit Knowledge. Then they were made into VDO and Mind mapping.

(4) Knowledge Validation

After getting the set of knowledge VDO and Mind mapping were ready, they were brought to the expert for knowledge test and usage.

3.1.5 Data Analysis

(1) The information act Researchers conducted the data obtained from studies and documents.

Data from the field by splitting the purpose of research. The following manipulations.

(2) The data collected from the various documents. The study provided detailed the category system the aim of the research was defined.

Knowledge analysis

- Recording and Transcription from Interview or Protocol Analysis
- Use Annotation to create Ontology and Knowledge Mapping Knowledge Modeling for knowledge analysis and knowledge synthesis. Task Knowledge was the goal and sub goal that lead to obtain Task completion.
- Inference Knowledge was the knowledge in the reasoning process that leads to obtain sub goal such as requirement, output, solving problem and others.
- Domain Knowledge was the knowledge in the reasoning process that was the conceptual knowledge or conceptualization, especially for solving problem or making being successful.

3.2 Chapter Summary

This was Chapter 4 of the thesis, where the results and case study that presents the results obtained. The next chapter was Chapter 5, where the conclusion provides the summary of the research.