

## Chapter 3

### Methodology

#### 3.1 In General

The methodology used in this research is the Common KADs methodology on modeling approach which has been recognized in many research projects and is based on the concept of knowledge engineering (KE). It has been utilized to develop a knowledge model of the purchase decision-making process. The methodology of the research is proposed as follows:

- Scope of research
- Sample and population size
- Data collection
- Data analysis
- Study area
- Issues of validity and reliability
- Research time
- Research design and method

#### 3.2 Details of Methodology

##### 3.2.1 Scope of Research

As discussed in Chapter 2, the condominium international sales' statistic data analysis and the Chinese buyers' property purchase interesting index have suddenly increased which show that the Chiang Mai condominium industry encounters both opportunities and problems over the condominium oversupply situation.

According to Grabowski (2012), cited from (Solomon, 2007), purchase decision-making process is an important model for everyone who makes a marketing decision. Therefore, the marketers should understand the consumer's behavior or the whole decision-making process rather than only knowing about the purchase decision. Chinese condominium buyers' purchase decision-making process should be captured

and specified in advance with regard to what they need, how they make a decision and why they go about with it. Condominium industry developers and sale managers are the knowledge users whereas the Chinese buyers and potential buyers are the knowledge suppliers. At present, Chiang Mai local developers and sales managers still use the traditional marketing strategies and activities to attract Chinese buyers. However, because of the lack of tools and media to capture the Chinese buyers' knowledge, the developers and sales managers marketing activities cannot meet the requirements of potential Chinese buyers. Hence, besides the acquisition of the critical knowledge as a direct method to solve this problem, knowledge map also enables developers and sellers to gain knowledge about the Chinese condominium buyers' purchase decision-making process in Chiang Mai.

### **3.2.2 Sample and Population Size**

The population of this study was the Chinese who had bought a condominium property and those who want to purchase a condominium in Chiang Mai. There have been 246 people who have bought a condominium property in Chiang Mai as of August 2016. The condominium projects that were bought by the Chinese are concentrated. The 146 units in 8 condominium projects that are Chinese-owned make up the 59.3% of the total condominium units. This paper presents the property size that is the most popular among Chinese buyers in those 8 condominium projects in Table 3.1.

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Table 3.1 The Most Popular Condominium Size for Chinese Buyers Based on the Land Office Transaction Data From 2557-2559.8

Condominium Program	Total Chinese Buyers	Number of Buyers (size<30SQM)	Number of Buyers (size30-40SQM)	Number of Buyers (size40-50SQM)	Number of Buyers (size>50SQM)
My Hip Condominium	31		1	27	3
Astra The Astra	21	1	9	11	
The Siri Condominium	19	1	12	5	
Pansook The Urban Condominium	18	3	12	3	
Harmony Home Condominium 1	15	1	10	3	
Parano Condominium	15	3	3	8	1
Prompt condominium	14	2	12		
D Condominium Sign	12		10		2
Sum		10	65	63	5

Evidently, the condominium size at 30-50 SQM is the most popular because as it is shown in the table Chinese buyers have bought more than 87.6% of that particular condominium size. For that reason, the researcher has concentrated on the 30 to 50SQM condominium buyers and also the potential buyers for this property size. The snowball sampling method has been employed in taking the sample group for the interview because of the faced difficulty in reaching the entire population. The previous 6 people

who have provided the demographical data rendered similar results from the land office data analysis. These results ensure the sample's correctness. Consequently, this study collects data from 3 persons who have already bought a condominium unit and 3 persons who would want to buy a condominium in Chiang Mai.

### **3.2.3 Data Collection**

#### **3.2.1.1 Primary Data**

- 1) Data from already condominium owners: semi-structured interview
- 2) Data from potential owners: semi-structured interview

#### **3.2.1.2 Secondary Data**

- 1) Bank reports, real estate industry reports
- 2) Condominium purchase decision papers
- 3) Chiang Mai condominium industry related websites
- 4) Knowledge management theories and implementation

#### **3.2.3.3 Data Collection Tool**

- 1) Semi-structured interview
- 2) Type record

### **3.2.4 Data Analysis**

The research data collection by semi-structured interview instrument is a qualitative research; typically, the interviewer has a paper-based interview guide that he or she follows. The semi-structured interview guide provides a clear set of instructions for interviewers and can provide reliable, comparable qualitative data. However, Bernard (1988) states that because semi-structured interviews often contain open-ended questions, discussions may diverge from the interview guide. It is generally best to later transcribe the data collected for analysis.

The descriptive analysis in this research was employed by the Common KADs assessment template. Schreiber, G. (2000) proposed that Common KADS is the leading methodology to support structured knowledge engineering and also provides the methods to perform a detailed analysis of knowledge-intensive tasks and processes. Thus, the common KADs method is acceptable to be employed in this research. The Common KADs assessment template was conducted to analyze the interview contents

in which the interview cases describe the condominium purchase process and find a set of domain specific norms and norm value that include the affecting factors, preferences and constraints criteria.

### **3.2.5 Study Area**

The research area was mainly in Chiang Mai city, mainly focusing on the study of knowledge capturing the purchase decision-making process of Chinese condominium owners and potential buyers. It was conducted under knowledge engineering common KADs methodology.

### **3.2.6 Issues of Validity and Reliability**

Theoretical validity and the internal information reliability will be conducted in this research to ensure the reliability of the research. Also, the whole research process will be conducted under the structure of marketing mix 4Ps and purchase decision-making model theory that is supported by the Common KADs methodology. Furthermore, in order to avoid the information bias, the research sample has not only chosen the group of Chinese already condominium owners in Chiang Mai but has also selected the group of Chinese potential buyers in Chiang Mai. The knowledge analysis results will be refined with a case study and expert validation to ensure the validity of the research findings.

After conducting a semi-structured interview with the selected sample, the descriptive analysis and modeling were done according to the Common KADs template. Moreover, The more detail of domain knowledge captured was conducted through a case study to ensure the descriptive reliability and validity of the interview cases. In the case study, both groups - the already owners and potential buyers of condominiums in Chiang Mai were asked to confirm and expand the semi-structured interview description and to make the data more credible.

The knowledge validation aims to confirm and improve the research findings. Thus, an expert sales manager who has more than 3 years of experience working with Chinese buyers was asked.

### 3.2.7 Research Time : 2014 - August 2016

### 3.2.8 Research Method and Design

According to the knowledge engineering process, the critical knowledge capture process is separated into four steps (Table 3.2): knowledge scoping, knowledge capturing, case study and validation.

Table 3.2 The knowledge engineering process, the critical knowledge capture process is separated into four steps

Steps	Theory & tools	Expected results
1. Knowledge scoping (landscape)	Knowledge scoping; Snowballing method	1) Scope the critical task ; Scheduling of interview: time +places; 2) Scope of the interview sample and population
2. Knowledge capturing	<ul style="list-style-type: none"> <li>➤ Theory               <ul style="list-style-type: none"> <li>❑ - 4Ps</li> <li>❑ - Purchase decision-making model</li> </ul> </li> <li>➤ Method/Tool               <ul style="list-style-type: none"> <li>❑ - KE: Common KADs (Assessment template )</li> <li>❑ - Semi-structured interview</li> </ul> </li> </ul>	Identification the task knowledge ❖ Inference knowledge(knowledge about the purchase decision-making process in the solution.) ❖ Domain knowledge(the knowledge principles, how to or causes and effects in the task of purchasing decision-making.
3. Case study	<ul style="list-style-type: none"> <li>❑ - knowledge script and transcript</li> </ul>	More details of domain knowledge of the inference in each subtask
4. Knowledge validation	Expert validation Knowledge representation	Knowledge pack(knowledge map)

The method and design followed in this entire research project were guided by the knowledge engineering's Common KADs methodology and the knowledge modeling approach. Petrash, G. (1996) proposed that KM is capturing the right knowledge for the right people in real time. Knowledge engineering can be applied in

varied fields in knowledge management. It is the key technology for knowledge extracted from an expert which aims to extract the tacit knowledge into explicit knowledge. The term “expert” refers to a person who has and applies the knowledge. In over the years, knowledge has been involved in the development of theory, methods, and tools for the knowledge-intensive applications. Hence, in this research, the indirect method was used to overcome this obstacle in which the researcher has utilized the advantages of the language, cultural factors, and technology related to knowledge engineering to facilitate the knowledge capture and modeling. Common KADs offers a structured approach to break down and structure the knowledge engineering process. In terms of knowledge process, Common KADs provides a template that supports the knowledge modeling process. It is a methodology that nearly concerns all activities of knowledge activities, for instance, knowledge audit, knowledge capture, knowledge analysis, knowledge validation, and representation. However, knowledge capture (elicitation) from tacit into explicit knowledge is given more attention in the methodology employing the semi-structure interview as the knowledge elicitation tool. The details of template application and semi-structured interview utilized will be explained next.

### **3.2.8.1 Knowledge Scoping**

Knowledge scoping aims to identify the critical task of the knowledge model. It identifies who has the critical role in the knowledge modeling process, clearly informs the research objectives, and schedules the interview including the time and interview objectives.

### **3.2.8.2 Knowledge Capturing**

Knowledge capture is conducted by using the semi-structured interview. The knowledge capture meeting has to be conducted 15 minutes before the knowledge capture interview starts. Knowledge capture meeting mainly relates clearly the research objectives and interview questions to the interviewee.

#### **1) The Analysis Template Model in Knowledge Capturing**

The assessment template is classified under analysis task template. A task template forms a common type of reusable combination of finding a category for a case based on a set of domain specific norms. This research topic is focused on the

knowledge capture in understanding the Chinese condominium buyers' purchase decision-making process. The research is based on the decision making process model to find the critical knowledge about the key decision points in each purchase decision-making process that include the affecting factors, preferences, and constraints criteria. Therefore, the assessment template was employed to form the design of the semi-structured questionnaire in order to find and decide which category to use for a case based on domain-specific norms. The assessment template is shown as follows:

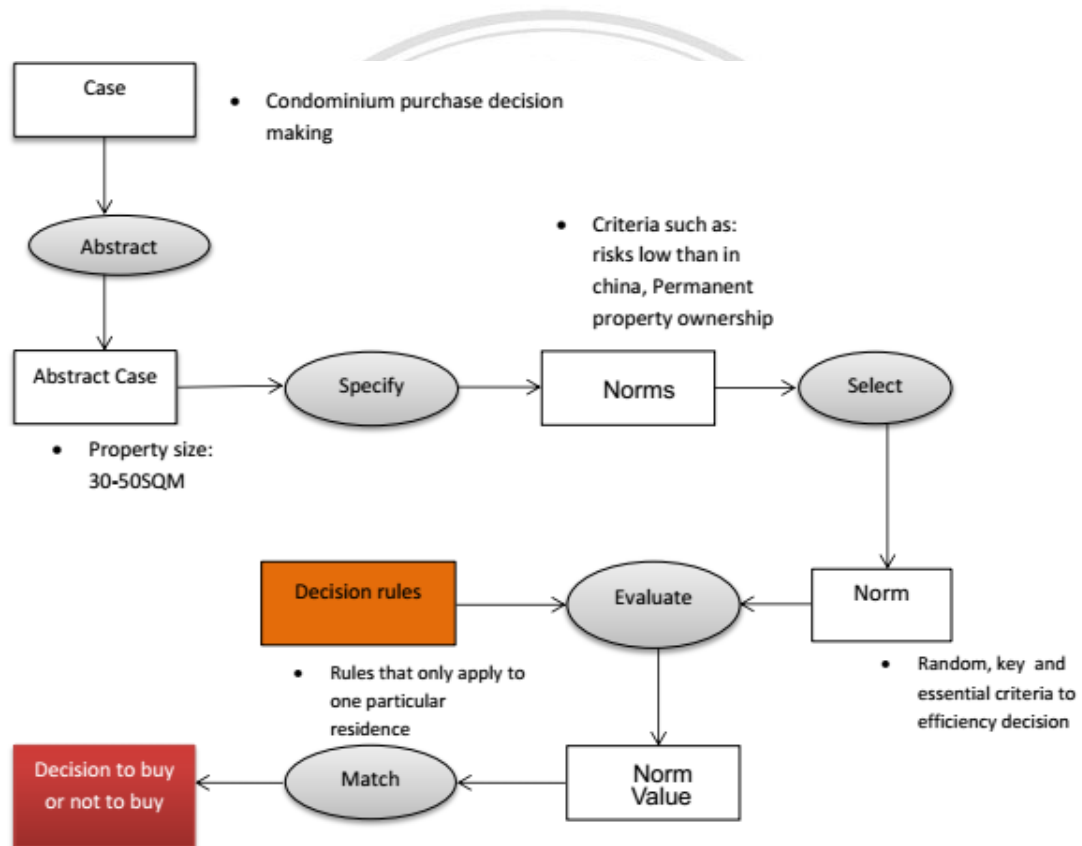


Figure 3.1 The Inference Structure of the Condominium Purchase Decision Assessment Template

Based on the inference structure of the condominium purchase decision assessment template, other than the orange box being added, the rest is taken directly from the task template for assessment. The Definition of terms in assessment template are as follows:

Case: A case that needs to be assessed. In this research, the case is Chinese condominium purchase decision-making in Chiang Mai.



Abstracted case: For abstracted case (not all cases need an abstracted case), almost always, some of the case data need to be abstracted. For example, in the condominium purchase decision-making, the preference of the buyers relating to property size needs to be abstracted. The property size's abstracted result is 30 to 50 square meters. Abstraction is modeled here as an inference that is especially repeated until no more abstractions can be made. The abstracted features are added to the case condominium purchase decision-making process assessment.

Specific norms: After abstractions, the first step that needs to be taken is to find the norms or criteria that can be used for this case. The norms are specified based on the 4Ps and the decision-making process model. An example of a norm in a price assessment purchase would be the "price amount match affordable price".

Selected norm: From the set of norms generated by the previous inference, one norm needs to be selected. The norm that needs to be selected in this study is the most important and critical norm which will affect the final condominium decision making.

Evaluate norm value: In this step, buyers need to combine the selected norm and decision rules which are only applied for special condominium unit purchases in order to evaluate what the norm value for condominium purchase decision is such as the price for buyers with lower income or units that have a peaceful environment suitable for retirement. The decision to buy or not to buy uses the norm value to match the final decision making. If the norm value is the truth, the buyers will purchase the condominium, but if not, then they will still wait and observe the attitude of buyers regarding the purchase of Chiang Mai condominium units.

2) Reasons for choosing this template:

- A. This research topic concentrates on the knowledge capture to understand the Chinese condominium buyers' purchase decision-making process. The decision making process model has been used as a basis to obtain critical knowledge about the key decision points in each purchase decision-making process that include the affecting factors, preferences, and constraints. The assessment template is suitable for finding the decision category for a case based on domain-specific norms.

- B. The assessment template is classified as an analysis task template. A task template forms a common type of reusable combination of finding a category for a case based on a set of domain specific norms.

#### **3.2.8.3 Case Study**

The case study aims to explicit more details of task knowledge by means of an in-depth semi-structured interview.

#### **3.2.8.4 Knowledge Validation**

Knowledge validation was conducted by asking the sales manager and already condominium owner to confirm the captured knowledge that is to confirm the knowledge map.

### **3.3 The Application of Semi-Structured Interview in This Study**

The research methodology has employed the Common KADs to conduct the knowledge capture, analysis, validation and modeling from already condominium owners and potential owners. This methodology is recommended for KM projects that are concerned about the knowledge capture from knowledge owners. The two conducted semi-structured interviews were designed based on the Common KADs assessment template model. Firstly, it was employed in the second research step to support the task knowledge capturing. Secondly, the semi-structured interview performed in the third research step of the case study aims to get more details of the task knowledge. There are principally 3 categories of questioning which can be presented in the model suit as follows:

What? What are the key factors (norms) affecting the condominium purchase decision making?

How? How are the factors affecting the purchase decision-making (norms value) assessed?

Why? Why do the buyers have to assess the proposals before making a final purchase decision?

The first semi-structured interview questions were created based on the assessment template as follows:

Table 3.3 First Semi-Structured Interview Topic Design

Condominium purchase decision-making process	Questions	Topic guideline (4Ps, culture factors, motivation, risks)
Condominium purchase need recognition	Why do you want to purchase a condominium property in Chiang Mai?	(motivation: education, investment, retirement, risks)
Relative information search	What information have you searched related to your purchase of a condominium in Chiang Mai?	Property type, utility area, space, function, enough parking lot and security system such as 24CCTV, price, facilities, location, developer, style, risks,
Condominium programs or units alternative choice	How do you compare your preference condominium programs and units?	Location, developer, price and price value. Facilities
Purchase decision-making	Why have you made your current condominium property as your final choice? Did any other factors affect your final decision?	Culture factors (reference group, culture difference, personal habits)
Post purchase evaluation	Could you make an evaluation about your condominium property that you have bought in Chiang Mai?  Do you have any other thoughts that you would want to share with me?	Price value, design, location

The first semi-structured interview topic design follows the Chapter 2 Literature Review relating to the condominium purchase decision-making process and its affecting factors. Also, the Common KADs assessment template was used to capture the task knowledge, inference knowledge, and domain knowledge. The interview results that were collected are shown in Table 3.4.

Table 3.4 First Interview Content Collection Form

Process Factors	Need recognition	Information search	Alternative choice	Purchase decision	Post purchase evaluation
Product					
Price					
Promotion					
Place					
Risks					
Cultural Factors					
Motivation					

The content collection table above is primarily used to collect the norms (know what) of the purchase decision assessment. The norms include the 4Ps marketing mix, risks, cultural factors, and motivation to support the task knowledge analysis.

The second semi-structured interview conducted in the third research step of the case study aims to capture more details of the task knowledge (know who and why). Table 3.5 presents the design.

Table 3.5 The Second Semi-Structured Interview Questions

Basic knowledge of questionnaire design guideline	Interview Questionnaire design	Interview Topic Expansion
[Need recognition] Motivation	<p>Question1: In the need recognition process, did you think motivation is the most important factor in fostering your condominium purchase idea?</p> <p>Question2: Could you tell me more details about how you have assessed these factors?</p>	<p>“May I make a conclusion from the details that you have provided?”</p> <p>“May I confirm again .....”</p> <p>“Are there any ideas that you want to share with me?”</p>
[Information search] house type, risks	<p>Question3: Did you think the house type and the risks information are among the things you must know before your purchase of the condominium?</p> <p>Question4: Could you give me a more detailed description of those two factors?</p>	<p>“May I form a conclusion based on the details that you have provided?” “Could you tell me what information channel have you used in order to collect the related information about the condominium? And why have you not used the other information channels?”</p>
Alternative choice Location Price value	<p>Question5: Did you prefer to compare the location and the price value when making an alternative choice of a condominium unit?</p> <p>Question6: Could you give more details as to how you have compared the location and the price value?</p>	<p>“May I make a conclusion from the details that you have provided?”</p> <p>“Why did you have to compare location/developer/price, but not the other factors? Have your parents given you recommendations?”</p> <p>“Are there any ideas that you want to share with me?”</p>

Table 3.5 the Second Semi-Structured Interview Questions (cont.)

Basic knowledge of questionnaire design guideline	Interview Questionnaire design	Interview Topic Expansion
Purchase decision <ul style="list-style-type: none"> <li>• price</li> <li>• cultural factors</li> </ul>	Question7: Did you consider the price and cultural factors as the most important factors that supported your final decision in your purchase decision-making process? Question 8: Could you explain more about how those two factors affected your decision?	“May I form a conclusion from the details that you have provided?” ”Did your friends’ or families’ recommendations affect your final purchase decision? Why?” “Could you explain how they made recommendations to you?” “Do you have any other thoughts that you would want to share?”
Post purchase evaluation design	Question9: Do you agree that the Chiang Mai Condominium design is an essential point to improve? Question10: Could you provide more details as to what points are in need of improvement? Question 11: Do you have any other thoughts?	“May I make conclusions from the details that you have given?” “May I confirm again.....” “Are there any ideas that you want to share with me?”

The second semi-structured interview topic design was designed based on the assessment template and the purchase decision-making process to elicit more details about Chinese buyers’ purchase decision-making and to assess norm values. Moreover, it was conducted to obtain more domain knowledge about how they make a decision and why they decide the way they do. The interview content is shown in the table below.

Table 3.6 Form to Collect the Interview Contents

Purchase decision-making process	“What” they prefer (norms)	“How “: How the buyer assesses the affecting factors (norm values)	Why assess like this
Need recognition			
Information search			
Alternative choice			
Purchase decision			
Post purchase decision-making evaluation			

This interview contents table was outlined this way to easily separate the task knowledge, inference knowledge, and domain knowledge that support the Chinese buyer's decision making.

### 3.4 Knowledge Map Application in the Knowledge Representation

According to the knowledge engineering, the structure of knowledge can be separated into three levels namely task knowledge, inference knowledge, and domain knowledge. Each level has the details as follows:

- 1) The task knowledge is the objective of the considered task.
- 2) The inference knowledge is the knowledge about the steps in the solution.
- 3) The domain knowledge is the knowledge principles, how to or causes and effects in the task of interest.



Figure 3.2 Task Knowledge Representations



Figure 3.3 Subtask Knowledge

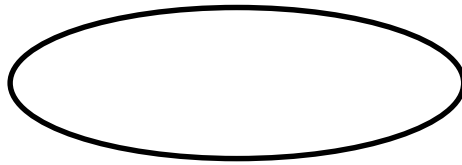
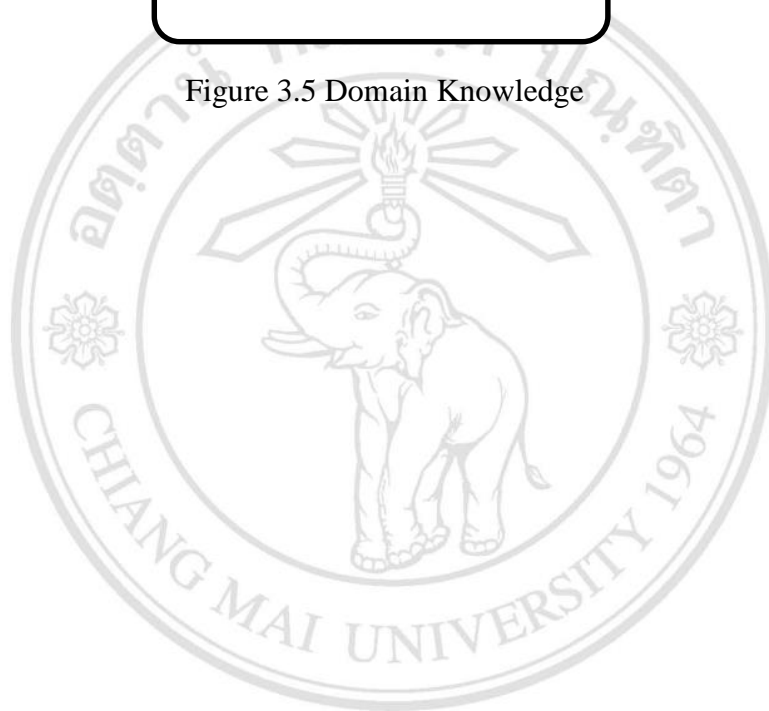


Figure 3.4 Inference Knowledge



Figure 3.5 Domain Knowledge



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