

# CHAPTER I

## INTRODUCTION

The aims of this chapter are to introduce the research project and outline the research themes that guide the study. In this chapter, the background and the concept behind this study are described.

### 1.1 Background to the thesis

The petroleum industry is a high risk venture. Investment decision making in this industry is usually done under condition of risk and uncertainty and hence needs the sophisticated approaches to assess risk and uncertainty. Decision analysis techniques available today are used and utilized to reduce the exposure of the petroleum project to risk and uncertainty. Numerous techniques described in the decision theory are utilized for investment appraisal decision making. By using anyone or a combination of decision analysis techniques, the investors are provided with an indication of what their investment decision ought to be, based on logical argument (Clemen, 1991).

The traditional decision analysis techniques, such as discounted cash flow (DCF)<sup>1</sup> and expected monetary value (EMV)<sup>2</sup> are widely used as an investment appraisal tool in the petroleum industry; however these techniques have limitations which have been widely discussed by many writers (Hodder and Riggs, 1985; Bailey *et al.*, 2000; Newendorp and Schuyler, 2000). Mainly limitations that have been cited are that their methods do not adequately take risk into account. Those techniques consider only risk involved within a project but ignore risk of people who do make a decision. This risk is the risk of how a person reacts to the financial risk presented in a project.

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<sup>1, 2</sup> the concept and limitations of these approaches will be discussed more in detail in the next chapter.

As early as 1720 academics were beginning to modify the concept to include the biases and preferences that decision makers associate with money into a quantitative decision parameter. In essence these attempts were trying to capture a decision maker's intangible feelings in a quantitative decision parameter which the decision maker could then use to guide judgments (Macmillan, 2000). This concept is based on the risk preference theory which allows the users to incorporate their attitudes and feelings toward risk and money into a quantitative parameter. This can overcome the shortcomings of the traditional DCF and EMV concept.

As described above; therefore it is the aim of this study to quantify the thinking and feeling toward risk and money of the managers in E&P firm. And this is the first attempt to adopt the concept of risk preference theory to assess the thinking about money and risk of the petroleum E&P firm in Thailand. The research question that the thesis aims to answer is as follow.

## **1.2 Research question**

**How the decision makers in the petroleum E&P firm in Thailand making a decision under the condition of risk and uncertainty, in terms of their financial risk attitude and consistency in risk taking?**

This question comes from the fact that the decision analysis models we commonly used today ignore the reaction of the decision makers to the financial risk represented in the projects (Cozzolino, 1978). Therefore risk is not taken into account properly and adequately. Since at the final stage, the decision is made by an individual or group of people, therefore understanding individual or group preferences and attitude toward risk is important (Bailey *et al.*, 2000). Clearly, it needs to quantify the decision makers' specific attitude or preference about risk into a quantitative parameter and then incorporate it into a decision process. In order to achieve this goal, the preference theory is adopted as a tool to estimate the decision makers' risk perception.

This study draws on the risk preference theory which is a toolkit used to assess the risk and money thinking of the decision makers into a quantitative number. Two important values in the risk preference theory utilized in this study are the risk tolerance (RT) and the certainty equivalent (CE). The RT represents the degree of financial risk that a person can tolerate and the CE is the cash-in-hand equivalent to a

specified risk (Newendorp and Schuyler, 2000). The definition and concept of these two terms will be described in detail in Chapter III. Beside the risk tolerance value, the consistency of a decision maker can persist in decision making under condition of risk and uncertainty also determined.

### **1.3 Objectives**

The goals of this thesis are to

1. Assess an implied risk tolerance (RT) value of the managers in the petroleum E&P firm in Thailand.
2. Determine the degree of consistent behavior that the managers can preserve in decision making under conditions of risk and uncertainty.

### **1.4 Expected benefits**

Assessing the managerial risk attitudes provide a basis for the firms to establish a standard corporate risk policy which represents the risk behavior of the firms. With a corporate risk policy, decision makers can understand more clearly about risk in the same direction with the firm. Then they can incorporate the corporate risk policy into their investment decision makings to prevent making a decision against the firm risk strategy. Corporate risk policy enables the managers to rank projects and select the appropriate participation levels for each project consistent with the firm's willingness to take on risk (Walls and Clyman, 1998). In the absence of clearly stated policy, it is unlikely that decision made by managers at various levels will adequately reflect the desired corporate attitude (Hammond, 1967).

### **1.5 Outline of the thesis**

Chapter II of this book is a literature review of the study. The concept and shortcomings of traditional decision analysis tools are shortly discussed. Then the methods of assessing the risk preference of a person from previous researchers are illustrated.

Chapter III draws on the risk preference theory in which its concept, significant terms and related issues are presented.

Chapter IV presents the applications of the risk preference theory by showing how the risk attitude of the firm can incorporate in the decision making process in order to determine the appropriate participation level among the investment projects.

Chapter V solely deals with the methodology of assessing the degree of risk aversion of decision makers in the E&P firm as well as their consistency in risk-taking are illustrated.

Chapter VI provides the results of the study in which the risk tolerance and consistency measure of decision makers are shown and interpreted.

Chapter VII summarizes the discussions and conclusions of the study.

In this chapter the outlines and rough discussions of the research are described. Next chapter presents the literature review of this study.