

CHAPTER 2

REVIEW OF THE LITERATURE

2.1. Overview

This chapter consists of three parts. The first part discusses the theoretical framework of the market-driven strategic financial investment decision-making process based on Roger's diffusion model of 1983 (see Figure 2.1). This theoretical model explains the relationships among market environment changes, strategic/tactical planning, and investment decision-making based on the real option theory (see Figure 2.2). Then, the second part of the chapter is a discussion of the literature on environmental scanning, highlighting major sources of recent literature surveys, and also discusses the existing environmental scanning issues in the literature. Environmental scanning, environmental uncertainty and change, the environment and performance relationship, and understanding “threat and opportunity” are examined as sub-categories. The third part reviews the real option theory currently available in the literature, and also addresses the difference between the traditional valuation approach and the real option approach.

2.2. Theoretical Model of the Market-Driven Strategic Financial Investment Decision-Making Process

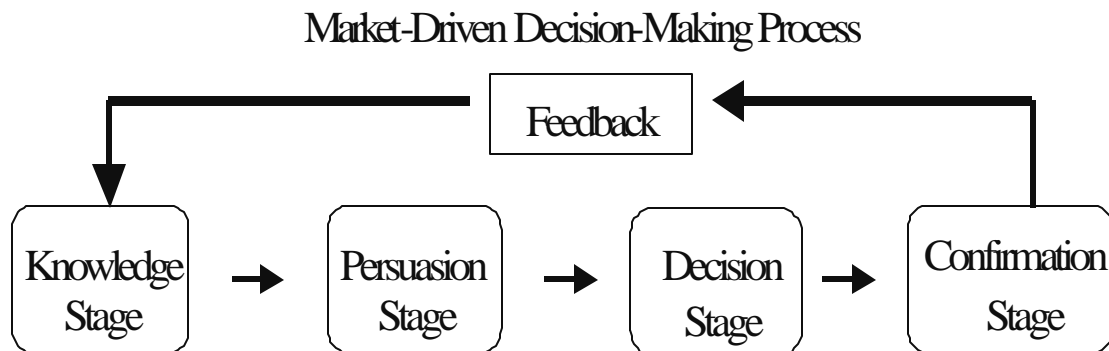


Figure 2.1: Diffusion Model (Adapted from Roger, 1983)

The theoretical model of the market-driven strategic investment decision-making process has been explained based on the diffusion model by Roger (1983). Four sequential stages are introduced in his model, including knowledge, persuasion, decision, and confirmation. The knowledge stage is when the individual, through exposure and attention to physical or social stimuli (i.e. high competition and system maturity), becomes aware of and develops some understanding of innovation. Environmental change would be put into the "knowledge stage" in the theoretical model (see Figure 2.1). In various ways, foodservice operators have acknowledged changes in the business environment, such as population change, disposable income changes, changes in consumer needs, and food consumption changes.

In Roger's diffusion model, the persuasion stage involves the formation of unfavorable or favorable attitudes, with the decision-maker weighing the potential gains and losses, and related risks. Acquiring and searching for information also occurs at this stage, which provides the decision-maker with a special opportunity. After the acknowledgement of environmental changes in the foodservice industry, these environment changes would lead foodservice operators to examine their strengths and weaknesses, internally and externally. Since there are numerous information sources

available due to the development of information technology, it is important to determine the validity of these information sources and synthesize this raw information into valuable data. Based on this information, the decision-makers should specifically understand the magnitude of the environmental changes in the current environment. And then, decision-makers should initiate strategic or tactical planning in the persuasion stage of the theoretical model. When the decision-makers formulate their strategic or tactical planning, they should use their expertise comparing foodservice operations; they should use their financial abilities, and also should examine their competitors' actions.

The decision stage in the Roger's model involves the activities that lead to either adoption or rejection of strategies, which could lead to success or failure for the decision-maker. Selection of strategic or tactical planning would be put into the decision stage of the theoretical model. This selection process usually is based on the financial valuation approach in the real world, such as the net present value approach, and the discounted cash flow approach. The option-based approach, however, has received much attention by many researchers, since the option-based approach provides more managerial flexibility than the traditional valuation approaches. In the theoretical model, the option-based approach was adopted in the decision stage. Since the option-based approach is very complicated and needs high levels of background in economics and mathematics, and also because individual restaurant owners may not be familiar with the financial option model, the fundamental concept of option-based theory will be used to understand the strategic investment decision-making process.

The final stage of confirmation is where decision-makers reinforce or reverse their decisions. In the option-based approach, there are three options for the decision-maker to choose from: "invest it now," "never invest," and "wait and see." In the traditional valuation approach, there are only two options: "invest it now," or "never invest." The difference is the "wait and see" option (see Figure 2.3). In the option-based approach, the decision-maker can hold the project if the operators are not sure about the outcome of this action. And also, if they are not sure about the true nature of environmental changes, including "fade," "trends," or "fact of life," they wait to exercise their strategic or tactical options until uncertainty is resolved. This decision-making cycle continuously repeats while the business environment is uncertain.

The body of the literature review is based on each component of the theoretical model, including environmental scanning, the option pricing model, and real option theory. The co-branding conceptual model is discussed in chapter 4.

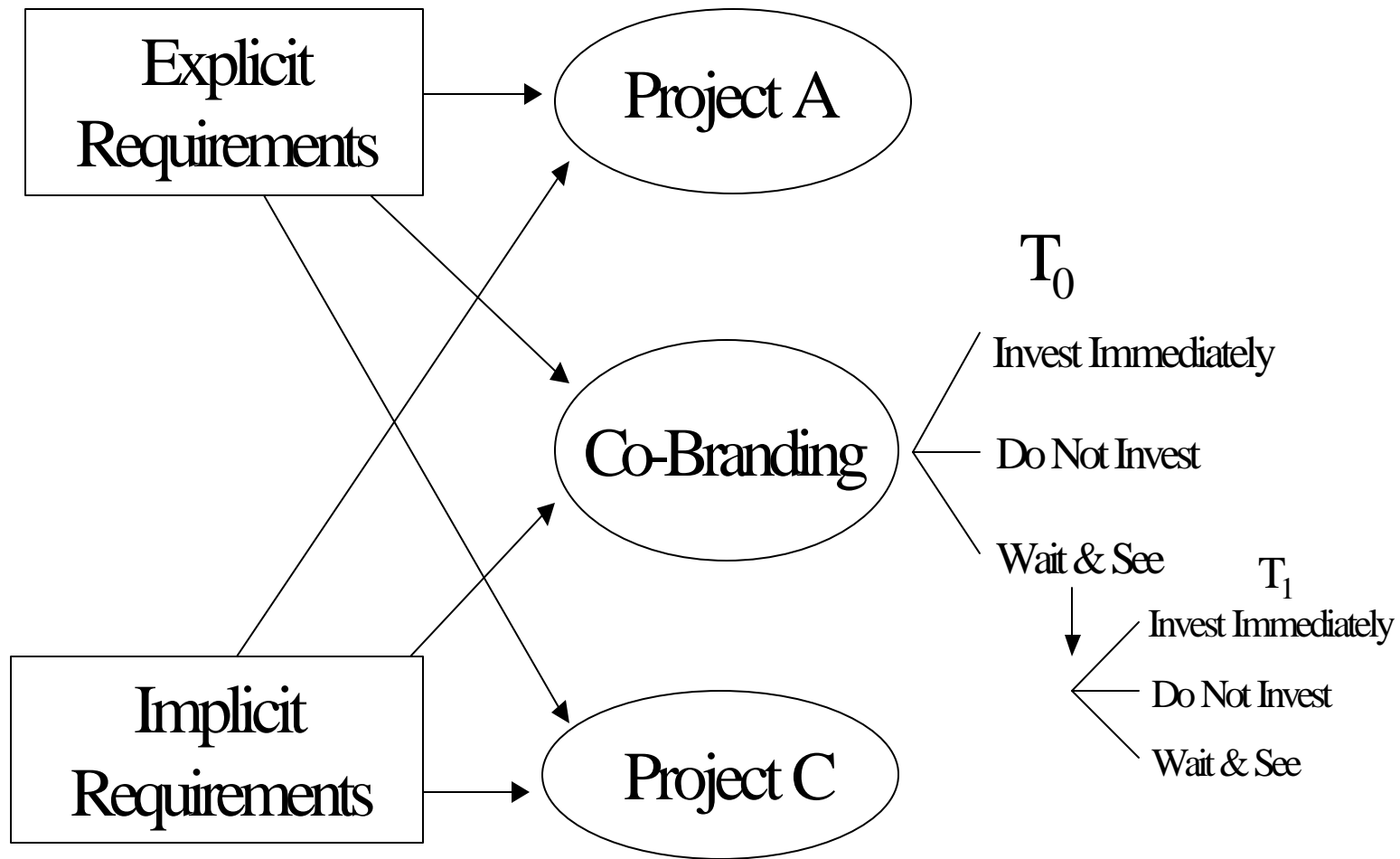


Figure 2.2: Theoretical Framework of the Market-Driven Strategic Investment Decision-Making Process

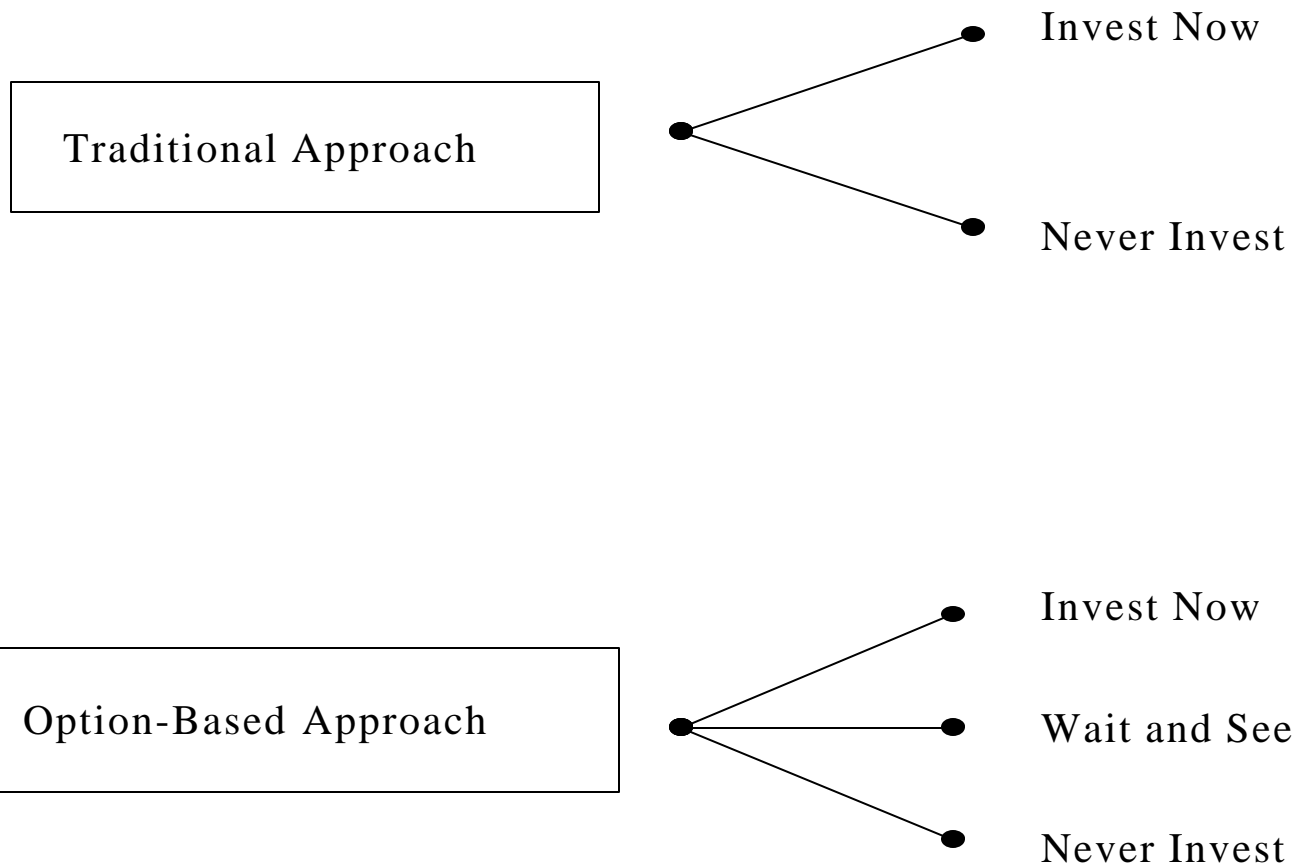


Figure 2.3: Traditional Valuation Approach vs. Real Option Approach

2.3. Environmental Scanning

The term "environmental scanning" has been defined in many ways over the last several decades. Fahey and King (1977) describe environmental scanning as "the process that seeks information about events and relationships in an organization outside the environment, the knowledge of which would assist top management in its task of charting the organization's future course of action."

The function of environmental scanning as defined by Stubbart (1982) is to provide information vital to strategic planning, and to arm decision-makers with accurate forecasts of significant trends. Stubbart describes the gathering of information as:

1. "broad in scope and future-oriented since the information serves as a vital resource to adapt the organization's strategy to a changing world," and
2. "must provide assumptions for a long-range planning system, assumptions about economy, changes in the work force, inflation, and interest rates."

The process of environmental scanning has played an important role in developing both long and short-term strategic plans. Diffenbach (1983) describes the development of environmental scanning in three phases: (1) the appreciation phase; (2) the analysis phase; and (3) the application phase. The appreciation phase, developed during the 1960s, is an approach for looking beyond the short-term market conditions when assessing the external environment. The analysis phase was developed during the latter 60s and continued into the 70s where it was necessary for organizations to search for reliable information sources in order to collect data which could then be examined in order to determine a strategic plan. The application phase was seen as the development or implementation of a strategic plan within an organization's environment. Aaker (1983) suggests that the formation of a strategic information scanning system can enhance the effectiveness of the scanning effort and preserve much of the information now lost to the organization.

Jain (1984) discussed the evolution of the scanning process through four descriptive categories.

1. Primitive: management is exposed to information, both strategic and non-strategic, without making any effort to distinguish the difference.
2. Ad Hoc: there is still no active search for information, but management shows a greater concern for its need.
3. Reactive: the scanning process is used to make an appropriate response.
4. Proactive: organizations are able to predict the environment for future development based on what they learned during the first three stages.

The environment that businesses are involved in today demands a broad, new outlook. The need to scan the environment is essential to formulate a strategic plan for remaining competitive in the market place.

2.3.1. Environmental Dimensions

Although conceptualizations of the environment are potentially broad, two dimensions are frequently identified by researchers studying the interaction between the firm and the environment: (1) environmental change (Chandler, 1962; Thompson, 1967; Child, 1972; Porter, 1980; Miller & Friesen, 1984; Snyder, 1987; Smith & Grimm, 1987; Ginsberg, 1988; Monge, 1990, Olsen et al., 1998), and (2) environmental uncertainty (Cyert & March, 1963; Emery & Trist, 1965; Thompson, 1967; Lawrence & Lorsch, 1967; Duncan, 1972; Paine & Anderson, 1983; Williamson, 1985; Jauch & Kraft, 1986; Snyder, 1987; Wernerfelt & Karnani 1987; Gerwin, 1993; Pagell, 2000).

Environmental change involves a transition between environmental states (Snyder, 1987; Monge, 1990). Changes are due to either the degree of competitiveness in the marketplace, the rate of technological innovation either within or across industry, or the variability in economic fluctuations (Shipper & White, 1983). Although environmental change is a complex process, objective indicators of change can be identified by examining such characteristics as magnitude, direction, and frequency of specific environmental changes (Snyder, 1987; Monge, 1990).

Environmental change leads to strategic change. For example, Oster (1982) predicts that economic decline will tend to trigger strategic change for firms. Mascarenhas (1989) finds empirical support for the notion that strategic change is

associated with substantial environmental volatility rather than economic stability. Specifically, during periods of economic decline, firms are more likely to change their strategies than during periods of economic stability or growth.

Environmental uncertainty involves indeterminacy about the nature of environmental variables or about relationships among them (Miller, 1992). Uncertainty arises when future economic conditions are unpredictable, regulatory positions are unclear, or the actions of competitors are difficult to assess. Objective measures of environmental uncertainty are often captured in volatility tests assessing the unpredicted movement of specific environmental variables (Snyder, 1987; Monge, 1990). Denoble and Olsen (1984) mentioned that it is difficult to get accurate information to understand the events taking place in an uncertain environment when understanding the causal relationships between and among these events as they effect the firm.

Furthermore, Lawrence and Lorsch (1967) extend their own research by exploring the link between environmental uncertainty and internal organizational structure. They conclude that for a firm to be successful, its internal organization must be adapted to the characteristics of the environment in which it operates. In a similar manner, Thompson (1967) notes that organizational structure and environmental characteristics are closely intertwined. Thompson argues that successful organizations in dynamic environments are more decentralized and rely more on planning than do unsuccessful organizations. Paine and Anderson (1983) also determine that firm strategy must be compatible with environmental characteristics for optimal performance. They theorize that environmental predictability is a key factor impacting formulation of organizational strategy.

Although change and uncertainty are distinct environmental characteristics, the two dimensions are interrelated. If environmental transitions are clearly foreshadowed, or follow observable patterns (i.e. rate of inflation), then there may be change but little uncertainty. Alternatively, if change occurs without precedence or discernible pattern, then change may be accompanied by increased uncertainty. Finally, even when the characteristics of change are known, change may increase uncertainty through unforeseen effects on other environmental elements.

2.3.2. Environment and Performance

Environment has been categorized in many ways by researchers, including the external & internal environment, the remote environment, the task environment, and the functional environment (Chandler, 1962; Galbraith, 1973; Argyris & Schon, 1978; Mintzberg, 1978; Lawrence & Dyer, 1983; Olsen et al., 1998). Since small changes in each environmental category directly or indirectly influence business performance, an understanding of small environmental changes are critical for a firm's success.

The organizational theory literature thoroughly discusses the importance of the external environment (Galbraith, 1973; Mintzberg, 1978; Olsen et al. 1998). Researchers have indicated that the short-term effectiveness and long-term survival of organizations are determined partly by the actions they take in response to their external environments (Chandler, 1962; Argyris & Schon, 1978; Lawrence & Dyer, 1983). Moreover, researchers have shown that large and powerful enterprises are seen as holding at least partial sway over the external environment (Child, 1972; Chandler, 1977; Hannan & Freeman, 1989). Such enterprises may possess sufficient economic, political or social clout to significantly shape the environments in which they operate.

Organizational research has, furthermore, supported the proposition that the better the "fit" or congruence between the organization's perceived task environment and the organization's structure, the higher the organization's performance (Lorsch & Allen, 1973; Lorsch & Morse, 1974; Venkatraman & Camillus, 1984). Research has also examined the relationships among environment, strategy and organizational performance (Jauch, Osborn & Glueck, 1977; Hitt, Ireland, & Stadter, 1982; Hambrick, 1983). Jauch and Kraft (1986) suggest that managers and the performance of their organizations influence the environment. Through its influence on the environment, an organization can create greater uncertainty for competitors, thereby enhancing its own competitive position.

2.3.3. Threat and Opportunity

The hospitality industry is facing significant challenges as a result of changes in technology, consumer needs, socio-economic changes, and high competition. Understanding these environmental changes will be critical success factors. This process

requires time-consuming and patient effort. The process may not generate revenue directly for the companies, but will positively affect a company's competitive advantage.

The terms "threat" and "opportunity" are used frequently by decision-makers, and are addressed in formal routines and programs in organizations. Environmental analytical procedures typically classify issues as threats and opportunities (Christensen-Szalanski et al., 1982). Although threats and opportunities contain "important" and "future-oriented" attributes, they are distinguished by distinctly different attributes. An opportunity implies a positive situation in which gain is likely and over which one has a fair amount of control. For instance, researchers who study decision-making (Mintzberg et al., 1976; Nutt, 1979), assume that opportunities represent positive situations in which gain is possible and perhaps likely.

In contrast, a threat implies a negative situation in which loss is likely and over which one has relatively little control. For example, Staw, Sandelands, and Dutton (1981) have defined threat as a negative situation. Arguments supporting the conclusion that uncontrollability is a key element of threatening stimuli have been presented by researchers of stress (Averill, 1973; Thompson, 1981).

Sometimes decision-makers have different perceptions of the same environmental changes in the same industry. The perceived difference between threat and opportunity depends on the decision-maker's way of viewing environmental changes. Some researchers have mentioned that an organization's actions are determined in part by the intentional behaviors of individuals in the organization, especially top-level decision-makers (Thompson, 1967; Child, 1972). Therefore, a better understanding of environmental change by decision-makers will have a significant impact on a company's performance.

2.4. The Option-Pricing Model

In this section, we present the definitions, terminology, and basic concepts used for pricing options on common stock. It should be noted that we have only attempted to present financial option theory in a simple manner as applied to stocks to enable one to understand the options approach for valuing investment opportunities in capital budgeting. The option-pricing theory is much more complex than presented here, and has become one of the most widely applied and researched areas in investment and finance.

An option holder has a choice. The option gives the holder a right to do something. The holder can choose whether or not to do it, and hence there is no obligation to act. Options are available on stocks, stock indices, foreign currencies, debt instruments, commodities, and futures contracts. Options are called derivative securities since their values are derived from other assets. In this section, only options on non-dividend paying common stocks are discussed, since they are the simplest types of stock option, but yet are sufficient to explain the basic concepts. There are two basic types of options - call options and put options (see Figure 2.4). We will first explain call options on common stocks.

2.4.1. Call Options on Common Stock

A call option is a contract giving the owner the right to buy a fixed number of shares of a specified common stock at a fixed price at any time on or before a given date (Cox, Ross, & Rubinstein, 1979). A call option on stock gives the option-holder the right to buy a specified common stock. The specified common stock is the underlying asset. The fixed or predetermined price at which the stock can be bought is known as the exercise price or strike price. The option-holder has no obligation to buy the stock on or before the fixed date in the contract. The fixed date specified in the contract is known as the expiration date, exercise date, or maturity date. The act of buying the stock is referred to as exercising the option. A call option could be either a European call or an American call. European call options can only be exercised at the expiration date. In contrast, American call options can be exercised any time on or before the expiration date. Therefore, European options are easier to price than American options.

An investor who buys a call option on a stock benefits if the stock price increases in the future. A call option's value can never be negative as long as there is some probability that the stock price will increase. If the stock price decreases, the investor will not exercise the option so its value will be zero (ignoring transaction costs).

2.4.2. Put Options on Common Stock

A put option is a contract giving the owner the right to sell a fixed number of shares of a specified common stock at a fixed price at any time on or before a given date (Cox, Ross, & Rubinstein, 1979). An investor buys a put option when he expects a stock's price to fall. If the stock price falls below the exercise price, the investor will gain by buying the stock at the market price and selling it at the exercise price. There are two types of put options. European put options can only be exercised on the expiration date, and American put options can be exercised any time on or before the expiration date.

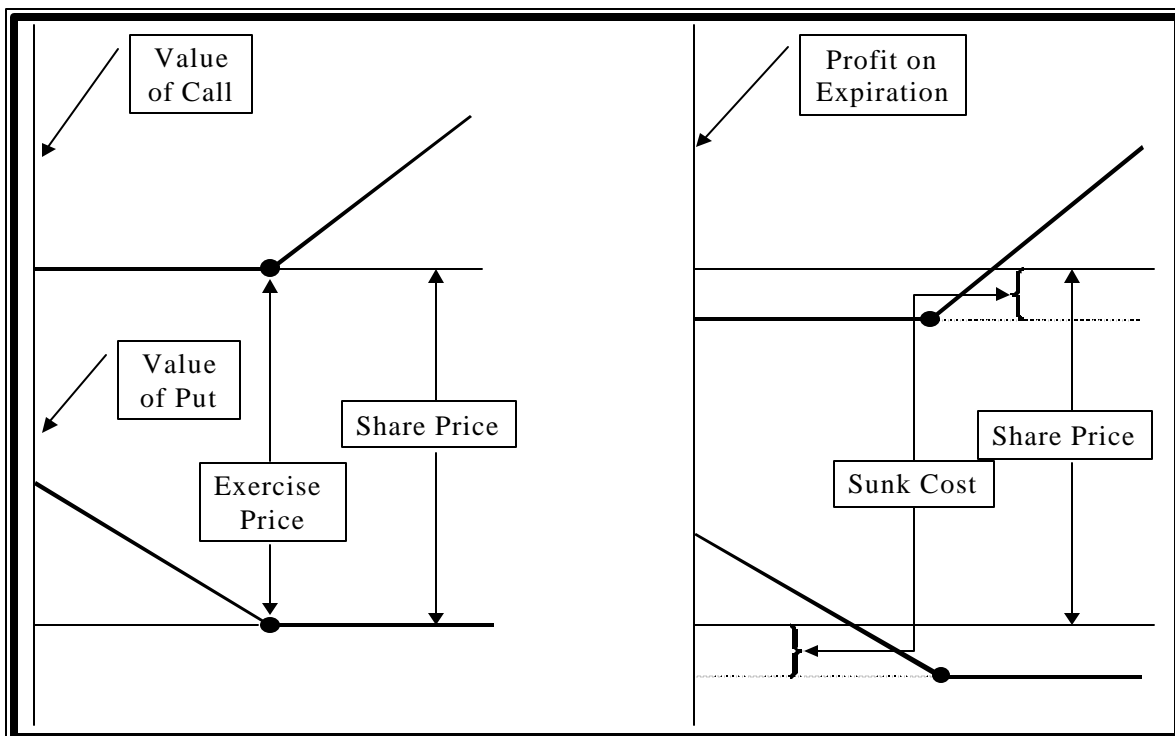


Figure 2.4: Call and Put Option Diagram (Adapted from Brealey and Myers, 1992)

2.5. Real Options Theory

The concept of a real option arose from earlier research on financial options by Fischer Black, Myron Scholes, and Robert Merton. Because of this financial research, Scholes and Merton were awarded the 1997 Nobel Prize for economics. Stewart Myers (1977) was the first to compare an investment to a call option on securities, and the term 'real options' was born. Early applications of real option theory have been in natural resource development related to mining and energy. Since then, the application of real option theory to capital budgeting has been expanded to other industries, such as pharmaceutical, automotive, and computer and consumer electronics (see Table 2.1).

Real options theory concerns classes of investments in real assets that are similar to financial options in structure (Myers, 1977; Dixit & Pindyck, 1994; Trigeorgis, 1996; Busby & Pitts, 1997). For example, the holder of an American call option on a stock has a right, but no obligation, to obtain the stock by paying a specific price prior to its given maturity. Similarly, the management of a firm having a discretionary investment opportunity has the right, but no obligation, to acquire the project's benefits if they exceed the required investment outlay (the exercise price) before the opportunity disappears (the expiration date).

Table 2.1
Common Real Options

Category	Description	Important in	References
Option to defer	Management holds a lease on (or an option to buy) valuable land or resources. It can wait x years to see if output prices justify constructing a building or a plant or developing a field.	All natural-resource-extraction industries; real-estate development; farming; paper products.	McDonald and Siegel 1986; Paddock et al. 1988; Tourinho 1979; Titman 1985; Ingersoll and Ross 1992
Time-to-build option (staged investment)	Staging investment as a series of outlays creates the option to abandon the enterprise in midstream if new information is unfavorable. Each stage can be viewed as an option on the value of subsequent stages and valued as a compound option.	All R&D-intensive industries, especially pharmaceuticals; long-development capital-intensive projects (e.g. large-scale construction or energy-generating plants); startup ventures.	Majd and Pindyck 1987; Carr 1988; Trigeorgis 1993
Option to alter operating scale (e.g. to expand; to contract; to shut down and restart)	If market conditions are more favorable than expected, the firm can expand the scale of production or accelerate resource utilization. Conversely, if conditions are less favorable than expected, it can reduce the scale of operations. In extreme cases, production may be halted and restarted.	Natural-resource industries (e.g. mining); facilities planning and construction in cyclical industries; fashion apparel; consumer goods; commercial real estate.	Trigeorgis and Mason 1987; Pindyck 1988; McDonald and Siegel 1985; Brennan and Schwartz 1985
Option to abandon	If market conditions decline severely, management can abandon current operations permanently and realize the resale value of capital equipment and others assets on secondhand markets.	Capital-intensive industries (e.g. airlines, railroads); financial services; new-product introductions in uncertain markets.	Myers and Majd 1990
Option to switch (e.g. outputs or inputs)	If prices or demand change, management can change the output mix of the facility (product flexibility). Alternatively, the same outputs can be produced using different types of inputs (process flexibility).	Output shifts: Any food sought in small batches or subject to volatile demand (e.g. consumer electronics); toys; specialty paper; machine parts; autos. Input shifts: All feedstock-dependent facilities; electric power; chemicals; crop switching; sourcing.	Margrabe 1978; Kensinger 1987; Kulatilaka 1988; Kulatilaka and Trigeorgis 1994
Growth options	An early investment (e.g. R&D, lease on undeveloped land or oil reserves, strategic acquisition, information network) is a prerequisite or a link in a chain of interrelated projects, opening up future growth opportunities (e.g. new product or process, oil reserves, access to new markets, strengthening of core capabilities). Like interproject compound options.	All infrastructure-based or strategic industries-esp. high tech, R&D, and industries with multiple product generations or applications (e.g. computers, pharmaceuticals); multinational operations; strategic acquisitions.	Myers 1977; Brealey and Myers 1991; Kester 1984, 1993; Trigeorgis 1988; Pindyck 1988; Chung and Charoenwong 1991
Multiple interacting options	Real-life projects often involve a collection of various options. Upward-potential-enhancing and downward-protection options are present in combination. Their combined value may differ from the sum of their separate values; i.e., they interact. They may also interact with financial flexibility options.	Real-life projects in most industries listed above.	Trigeorgis 1993; Brennan and Schwartz 1985; Kulatilaka 1994

Note: Adapted from Trigeorgis (1996)

If investments are staged so that expenditures end under poor conditions, losses can be contained. The cost of failure, in other words, is limited to the cost of creating the real option, less any remaining option value (Roberts & Weitzman, 1981; Mitchell & Hamilton, 1988; Dixit & Pindyck, 1995; Leslie & Michaels, 1998).

Recently, many companies have already used the option-based investment decision approach instead of using traditional valuation approaches. For example, consider the oil company valuing its license blocks. This is a classic example of a real option, in which paying the license fee (acquiring the option) gives the owner the right to invest (at the exercise price) after uncertainty over the value of the developed reserves (stock price) is resolved (Paddock, Siegel, & Smith, 1988)

Another example is technology investment. A hotel company considers installing Internet service. Investing for Internet service appears to have a negative net present value when considered in isolation, although this may have at least a protective option value. When a hotel company has a great future option possibility, they should pursue the project. Otherwise, they will lose their market share. Currently, many financial analysts are wondering about the “dot com” companies’ recent success in the financial market, since most of these companies’ business models could not be explained by traditional valuation approaches. Sometimes, the traditional valuation approaches and options valuation methods may give very different results.

Since the Myers' approach of real asset valuation, academics saw that the real options approach could be a bridge between finance and strategy (Kogut, 1991; Hurry, Miller, & Bowman, 1992; Kogut & Kulatilaka, 1994; Dixit & Pindyck, 1995; Trigeorgis, 1996; Busby & Pitts, 1998). For example, Avinash Dixit and Robert Pindyck (1994) insist that “the net present value rule is not sufficient.” To make intelligent investment choices, managers need to consider the value of keeping their options open. Tom Copeland and Jon Weiner (1990) observe that the “use of options methodology gives managers a better handle on uncertainty.” Real options can be profitably applied more broadly to business operations, where they encourage much greater flexibility and opportunism than the application of traditional valuation approaches.

2.5.1. Traditional Valuation Approach versus Real Options

The net present value approach has been the most widely used valuation technique for a long time. However, the business environment has changed rapidly and predicting the future is almost impossible. Many researchers have criticized the traditional valuation approach, since it may not properly evaluate the present value of future projects.

Myers (1977) was the first to compare an investment to a call option on securities and discuss the limitations of conventional net present value leading to an undervaluation of an investment decision. The conventional net present value treats an investment as a single project operating under deterministic conditions, and fails to capture strategic value. Kester (1984) also argues that conventional net present value tends to undervalue investments. Both Myers and Kester conclude that the real options approach enables the decision-maker to capture the time-series link between projects and integrates strategic planning with capital budgeting decisions.

Traditional valuation approaches also fail to provide an adequate decision-making framework because they do not properly value management's ability to wait, to revise the initial operating strategy if future events turn out to be different from originally predicted, or to account for future investment. Trigeorgis and Mason (1987) criticized the traditional valuation approaches in that the basic inadequacy of the net present value or discounted cash flow approaches to capital budgeting is that they ignore, or cannot properly capture, management's ability to revise its original operating strategy if and when, as uncertainty is resolved, future events turn out differently from what management expected at the outset. Aggarwal and Soenen, (1989), deal with a specific case of management flexibility, the ability to exit a project over its life. They design a procedure which integrates this ability into the net present value calculation. This is somewhat similar to the evaluation of the degree of specificity of a given project, and its effect on the net present value of this project. Furthermore, Ingersoll and Ross (1992) discuss the limitations of the net present value rule, and Ross (1995) further elaborates on the limitations of the net present value rule and argues that all major investment decisions be treated as option-based problems.

The traditional net present value approach is a one-period model of a perfect capital market. Uncertainty is treated by adding a risk premium based on specific assumptions with regard to the distributions of the cash flows and/or the nature of the utility functions. Once a decision has been made, time expires. In the next period, everything starts anew. However, this model cannot accommodate the complexity of the real life situation where the decision is a dynamic process of periodical adjustment, and where management can use complete information at any point of adjustment rather than summary variables such as the expected value, the variance, and the resulting risk premium.

Unlike the traditional valuation approach, taking a real option approach is not simply a matter of using a new set of valuation equations and models. The real option approach is about the value of managerial flexibility in irreversible capital investments in an uncertain world. Ramasesh and Jayakumar (1997) state that the need for "flexibility arises from the stochastic (i.e. uncertain) and dynamic (i.e. evolving over time) nature of the environment (both internal and external) in which it operates." This need necessitates a valuation that considers the interaction of different flexible systems with their environments. Benjaafar, Mortinn and Talavage (1995) state that "there is a lack of a unified framework for defining an evaluating flexibility...the relationship between flexibility, uncertainty, and value remains ambiguous and poorly quantified." The recent uncertain business environment requires flexible management skills rather than a concretely framed strategic plan.

Since evaluation of an investment project based on potential competitive impact is fundamentally different from evaluation based on cash flows, many researchers have proposed that a real option approach may be able to properly quantify the operating flexibility, synergy, and certain strategic aspects of project value. Therefore, many scholars applying a real options framework have emphasized its advantages over conventional approaches (such as net present value calculations) under conditions of uncertainty (Kogut, 1991; Hurry, Miller, & Bowman, 1992; Kogut & Kulatilaka, 1994; Dixit & Pindyck, 1995; Trigeorgis, 1996; Amram & Kulatilaka, 1999).

Although it is not practical to carry out a detailed quantitative analysis, the real option theory reflects much more closely the value of capital investments than apply net

present value and similar methods, and it provides support for some of the more qualitative arguments of strategic decision-making. In fact, strategic interaction becomes fundamentally important in the valuation and exercise of real options, while it may not be such a significant concern for financial options, because most financial options are widely held among agents external to the firm, and therefore their exercise does not influence the characteristics of underlying security. Hence optimal exercise strategies can be derived without consideration of the strategic interactions and competitive preemption across option holders.

In the case of real options, however, real business situations usually feature a limited number of interactions among players, each of whom can influence the real-option parameters and therefore the option value. Hence, strategic interactions may have important effects on option exercise equilibrium and the underlying business effects. Amram and Kulatilaka (1999) mentioned that the real value of real options lies not in the output of Black-Scholes or other formulas, but on the reshaping of executives' thinking about strategic investment. They concluded that the real options approach enables executives to think more clearly and realistically about complex and risky strategy decisions.

Understanding real options can be difficult. Unlike financial options, real options are not precisely defined or neatly packaged. But they do exist in almost every business decision, and they tend to take a limited number of forms (see Table 2.2). Trigeorgis (1993a) illustrates interactions among options to defer, abandon, contract, expand and switch use through simple examples, and shows that interactions, whether positive or negative, preserve the option characteristics such as flexibility having value. An excellent illustration of options to abandon, contract, expand and switch use can be found in Trigeorgis (1996) and Amram and Kulatilaka (1999). By understanding these forms, decision-makers can become better able to spot the options in their own decisions.

In hospitality investment analysis, the strategic aspects of an investment decision are usually captured using tools such as sensitivity analysis, decision tree analysis, and simulation. When a decision can be delayed and there is the possibility to obtain additional information or when there is an opportunity to replicate, a Bayesian type analysis is used. The Bayesian framework is a mathematically elegant tool for analyzing

decision problems involving learning and adaptation. For example, operating flexibility associated with postponing an investment is usually valued as a "wait and see" type of decision using decision tree analysis. Project interdependencies (opportunity to replicate) are valued as sequential investments with uncertainty resolution over time.

While the traditional tools are useful in valuing investment decisions under uncertainty, the real options approach is better suited for several reasons. First, it enables a decision-maker to capture future opportunities by lowering the chance of overlooking them. Second, as options involve choices rather than immediate commitments and are based on an asymmetry of payoffs, they enable decision-makers to view uncertainty as value creation. The options mindset of viewing investments as opportunities is critical in competitive and globally integrated business environments for both strategic reasons and shareholder value creation. We believe that real options can provide a systematic framework that will also serve as a strategic tool, and that it is in this strategic application that the real power of real options lies.