

Copyright
by
Hong Chul Ki
2010

**The Thesis Committee for Hong Chul Ki
Certifies that this is the approved version of the following thesis:**

**Vertical Integration and Diversification Perspectives on Entry
Decisions: Analysis of a Refiner's Decision to Enter E&P**

**APPROVED BY
SUPERVISING COMMITTEE:**

Supervisor:

Christopher J. Jablonowski

Co-Supervisor:

J. Eric Bickel

**Vertical Integration and Diversification Perspectives on Entry
Decisions: Analysis of a Refiner's Decision to Enter E&P**

by

Hong Chul Ki, MS

Thesis

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the Degree of

Master of Art

The University of Texas at Austin

December 2010

Abstract

Vertical Integration and Diversification Perspectives on Entry Decisions: Analysis of a Refiner's Decision to Enter E&P

Hong Chul Ki, M.A.

The University of Texas at Austin, 2010

Supervisor: Christopher J. Jablonowski

Co-Supervisor: J. Eric Bickel

Some oil refining companies have recently entered the field of exploration and production (E&P). Both the relatively high financial performances of E&P companies and the shrinking refining margin may motivate refiner's decision to enter E&P. However, in making this decision, there are other factors to be considered. This study utilizes vertical integration and diversification theories to develop an integrated framework. This framework determines the factors which should be involved in a firm's decision to enter another business area. In this theoretical approach and its application to Korean refining companies' decision to enter into E&P, we discuss both the cost benefits and the advantages to acquiring strategic assets of the new business. As sources of short-term cost benefits, the paper discusses site specificity and regional performance. As long-term requirements, the paper explores the need to acquire E&P strategic assets. In early-stage decision making, the best mode may be a small equity investment in regional consortia. As a company acquires more and more strategic assets, it can decide to pursue global opportunities and/or to acquire an E&P company.

Table of Contents

List of Tables	vii
List of Figures	viii
Chapter 1: Introduction	1
Chapter 2: Theories of the Vertical Integration and Diversification	4
2.1. Vertical Integration	4
2.1.1. TRANSACTION COST	5
2.1.2. MARKET FAILURE	5
2.2. Diversification	9
2.2.1. ECONOMIES OF SCALE AND ECONOMIES OF SCOPE	9
2.2.2. RELATEDNESS	10
2.2.3. RISK MANAGEMENT	14
2.2.4. THE ROLE OF PLATFORM	15
2.3. Integration Cost	16
2.4. Views on the Two Theories	17
2.4.1. POSITIVE ASPECTS	17
2.4.2. NEGATIVE ASPECTS	18
Chapter 3: Integrated Framework	20
3.1. Short-Term Requirement	22
3.1.1. VERTICAL INTEGRATION PERSPECTIVE	22
3.1.2. DIVERSIFICATION PERSPECTIVE	23
3.1.3. COST BENEFIT	23
3.2. Strategic Asset	24
3.2.1. STRATEGIC ASSET	24
3.2.2. ACQUISITION OF STRATEGIC ASSET	25
3.3. Core Competence	26
3.4. Integrated Framework	27
Chapter 4: Implementation Modes	29
4.1. Merger & Acquisition	30

4.1.1. ADVANTAGE	30
4.1.2. LIMITATION.....	31
4.2. Joint Venture.....	33
4.2.1. ADVANTAGE	34
4.2.2. DISADVANTAGE	35
4.3. Internal Development.....	37
4.3.1. ADVANTAGE	37
4.3.2. LIMITATION.....	38
Chapter 5: Entrance into E&P Business of the Refining Company.....	39
5.1. E&P Industry	39
5.1.1. OVERVIEW	39
5.1.2. INDUSTRIAL ORGANIZATION	41
5.1.3. RECENT PERFORMANCE	43
5.2. Refining Industry	44
5.2.1. OVERVIEW	44
5.2.2. INDUSTRIAL ORGANIZATION	47
5.2.3. RECENT PERFORMANCE	47
5.3. Integrated Framework Approach: Refining companies Decision to E&P49	
5.3.1. CORE COMPETENCE	51
5.3.2. SHORT-TERM	53
Implementation Mode.....	54
5.3.3. LONG-TERM	56
Implementation Mode.....	56
5.4. Application of the Integrated Framework: Korean Refining Companies59	
5.4.1. ‘B’ COMPANY’S ACTIVITIES BEFORE 2000.....	60
5.4.2. ‘B’ COMPANY’S ACTIVITY AFTER 2000	62
5.4.3. ‘A’ COMPANY’S ACTIVITY AFTER 2000.....	64
Chapter 6: Conclusion.....	66
References.....	69

List of Tables

Table 1:	Strategic assets and their relatedness (Markides and Williamson, 1994, 1997)	12
Table 2:	Ranking the World Oil Companies (Energy Intelligence Weekly) ..	41
Table 3:	Strategic assets in the existing refining company	52

List of Figures

Figure 1:	Vertical integration in the value chain.	4
Figure 2:	Sharing value chain activities (Porter, 1985).....	11
Figure 3:	Inverted U-curve, the diversification performance by the relatedness. (Souce: Palich, 2000).	13
Figure 4:	Core competences and the ‘production functions’ for assets (Williamson, 1994)	26
Figure 5:	Integrated framework of the growth strategy.....	28
Figure 6:	E&P business and its strategic assets (Source: Lerche, 1999., Jahn, 2008.,)	40
Figure 7:	Top 20 integrated oil companies, 20 independent oil companies of which market capacity is less than 3 billion dollar in NYSE.	43
Figure 8:	Refining business activities.....	45
Figure 9:	Cash flow comparison; Refining business and E&P business.....	46
Figure 9:	Net income vs. refining margin (Annual report of Valero, Historical refining margin from Shell)	48
Figure 10:	Exxon Mobil net income by business sectors and crude oil price	50
Figure 11:	Corporate Operating Income (Source: Annual Reports)	59
Figure 12:	E&P Projects of ‘B’ Company (Source: Annual Reports).....	62

Chapter 1: Introduction

Since 2003, a sharp increase in oil prices has been caused by a rise in developing countries' demand for oil. Thus, oil exploration and production (E&P) enterprises have demonstrated superior financial performance. Not only such performances, but the limited margin in refining may motivate some managers to make inroads into E&P. While not a large number of companies have done so yet, some refining companies in Korea and Japan have moved into E&P through a different mode, such as a consortium or joint venture.

When the new E&P venture provides their refineries with crude oil, the entrance into E&P can be understood as a vertical integration, which may be intended to counteract what is likely to be imperfect competition in the oil market. However, refining companies commonly purchase their crude oil requirements from the competitive oil market. Thus, classifying such a venture as vertical integration is questionable. It is more properly classified as diversification. Therefore, the motivating factors in deciding to enter into E&P are complex. Whether the strategy is vertical integration or diversification, such a strategic decision should not be guided by the apparent growth of the company but by a future financial performance better than the current state.

In this regard, management may be better equipped to make the optimum decision to enter E&P by using a theoretical approach. Such an approach allows them to look into the motivation and requirements for the success of a strategic decision. There has been

much theoretical development in both vertical integration and diversification, and a lot of empirical research deals with those strategies using industrial data. Some studies approach separately vertical integration and diversification. Others include vertical integration as part of a diversification strategy. Neither framework, however, sufficiently describes both strategies, for neither fully explains all the complex activities of a refining company.

Adding to the confusion is the fact that these studies were based on static analyses. As a firm is an organic institution, their strategic decisions can evolve. If a refining company enters E&P as part of a consortium in the region, it can then purchase, at reduced cost, equity crude oil for its refinery. After the successful operation of this consortium and acquisition of strategic assets, the refining company can move to another opportunity in the business. If the selected opportunity is geographically far from its refinery, it may no longer be economical to use this source of crude as provision for their refinery. In such a case, the company's first decision can be categorized as a vertical integration, but the latter should be regarded as a diversification. Therefore, the company's strategic decision must be understood dynamically.

The object of this research is to establish a framework which can be applied to the complex environment of refining companies' entrance to E&P. It focuses on the cost benefit as a short-term requirement and the acquisition of the strategic asset in E&P, as the long-term requirement that can ensure future competitiveness in the business. By contrasting and simplifying the vertical integration and diversification theory, I

developed a framework that can define the differences and commonalities. This simple framework will help top management determine the critical factors in their decision.

Chapter 2: Theories of the Vertical Integration and Diversification

2.1. VERTICAL INTEGRATION

Vertical integration takes place in the value chain of a production (Figure 1). A firm that has been supplying a product used as the input (intermediates) of another firm can decide to integrate the purchasing firm into its organization, or vice versa. Therefore, the vertical integration is the make-or-by decision of a firm (Coase, 1937).

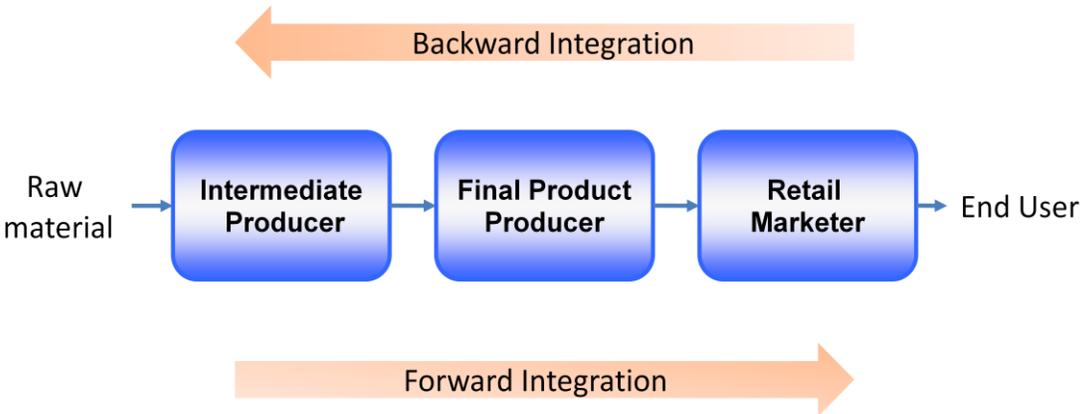


Figure 1: Vertical integration in the value chain.

2.1.1. TRANSACTION COST

Transaction cost theory originated with Coase (1937). His use of it dealt with the creation of a firm, yet it is widely applied as the theoretical base for vertical integration. Coase argued that the price mechanism cannot provide the complete framework to explain the emergence of a firm. It is because that the allocation of production factor is dependent not only on the price mechanism but also on the economic planning, which exists in the economic system. That is, the firm does not incur the transactions of the market. Instead these are substituted by a firm's coordination which directs the production.

Therefore the major reason of a firm's establishment is that there is a cost in using the market transaction. For example, negotiating to get a good position and making a contract with detailed terms and conditions of a transaction entail costs. Though, these transaction costs cannot be eliminated, they can be minimized by the firm's economic planning and coordinating function.

2.1.2. MARKET FAILURE

Williamson (1971) expanded on the advantages of a firm's integration from transaction cost benefits to a 'strategic misrepresent risk' perspective. If a firm integrates, it can get to the ex-post information, which will reduce the chance of being exploited through the opportunistic behavior of its opponent firm.

Contractual Incompleteness

Williamson gives as an example a purchasing firm; it may, if it is of the required input, have a preference for the short-term contracts to be adaptive in future environments and to make its sequential decisions. If the supplying firm, however, requires long-term investment to supply the inputs, it will ask the purchasing firm for a long-term supply. Thus conflicts may arise when there are, between the supply firm and the purchasing firm, opposing preferences for the contract period.

In addition to that, even when both firms prefer a longer term contract to a large number of short-term contracts, the long-term contract cannot include the exact products, services and other contractual content due to the uncertainties of the future environment. A long-term contract describing the exact information, which can also be applied in future, may be prohibitively costly and/or may be impossible to achieve. Moreover, sustaining the original contract requires additional cost in monitoring the contractual partner, enforcing contractual promises and solving conflicts and lawsuits that may happen during the lifetime of the contract. What is worse, if the production technology and design of the product change, this contract will be of no use. It will be necessary to go through the costs of making a new contract.

In summary, all of these factors related to future uncertainties make both the short-term and the long-term contract inefficient. So, internalization can help a firm avoid such contractual costs. Likewise, the vertical integration will cover the demerits in both short-term long-term contracts. (Mahoney, 1992)

Regulatory Authority

A portion of transaction costs incurred by the transaction regulatory authority (such as government) can be avoided through internalization. A purchasing firm has to buy inputs with their sales tax levied in the market. If the purchasing firm substitutes the transaction into the firm by producing them internally, they can minimize the transaction cost imposed by the regulatory power. That is, it can reduce the production cost by avoiding the sales tax levied on its intermediate inputs

Moral Hazard

Moral hazards can arise when competing for symmetric incentives on future uncertainties. In the case of a cost-plus contract, the supplying firm may feel the contract does not provide it any incentives. As a firm normally wants to achieve efficiency while minimizing the product's cost, the supplying firm makes no effort to produce the product effectively. Instead, the firm could reallocate its effective production resources to other work that could provide them more incentive. This moral hazard would impair the advantage of the cost-plus contract.

A purchasing firm may insist on the supplier's work being monitored to avoid the moral hazard of a supplying firm evaluating its own performance. An external purchasing firm, however, cannot do the monitoring effectively. Instead, a purchasing firm can internalize and bear the risks of the uncertainties and save on the monitoring cost while sustaining its input quality.

Anti-competitiveness

With some commodities having different price elasticities by industry, vertical integration can provide a monopolistic benefit. For example, if 'A' purchasing firm in 'C' industry purchases an intermediate and has a substitute for it, the input has a high level of elasticity. On the other hand, if 'B' purchasing firm operating in 'D' industry has no substitute input, its elasticity will be low. In this situation, to maximize the profit, the supplying firm may sell its commodity at a low price to 'A' and at a high price to 'C'. However, if 'A' trades to 'B' with a lower price than the supplying firm, the price policy of the supplying firm would work poorly. Accordingly, the supplying firm can choose to vertically integrate by merging with 'A' firm, and continue its price discrimination.

2.2. DIVERSIFICATION

The theoretical background for diversification is somewhat different from vertical integration. While vertical integration is 'linked' to its value chain, diversification does not require such boundary limitations. Penrose (2009) argues that if the current market provides little incentive, new opportunities for investment in other business areas compete with the investment in the current market. This strategy can strengthen a firm's productive activity and improve its financial performance without giving up the existing production base.

2.2.1. ECONOMIES OF SCALE AND ECONOMIES OF SCOPE

Economies of scale refer to the ability to perform activities at a lower cost per unit by performing them on a larger scale. In an economy of scale, a firm may have a big production base to reduce the unit cost and benefit from that scale. In contrast, there are economies of scope, which refers to reducing the total cost of producing a variety of goods in one firm than separately in multiple firms. If a firm invests in developing one product, the accumulated know-how can be applied to the related product development, and this costs less than the investing in separate development. In this way, learning and technological diffusion may contribute to increased profit (Bridge, 2005). Much research shows that economies of scale may be effective in simple capital-intensive industries where the learning economies are relatively insignificant. Economies of scope may be effective in the labor-intensive activities (Besanko, 1996).

2.2.2. RELATEDNESS

Diversification may focus on its present market with a new product or on a new market with a present product. Porter (1985, Figure 2) claimed that only effective sharing of the existing activities in a firm's value chain can realize the objectives in diversification.

In this sense, the relatedness between an existing business unit and a new opportunity is important. Many researchers have tried to discover the right calculation method of the relatedness. Some have used SIC codes to represent product relatedness and market numbers to show the market diversity (Hoskisson, 1993; Raphael, 1989). Other research has focused on the 'strategic asset' with the consideration that the real benefit of diversification comes from exploiting relatedness to create and accumulate new strategic assets more quickly and cheaply than competitors (Markides and Williamson, 1994, 1997) (Table 1).

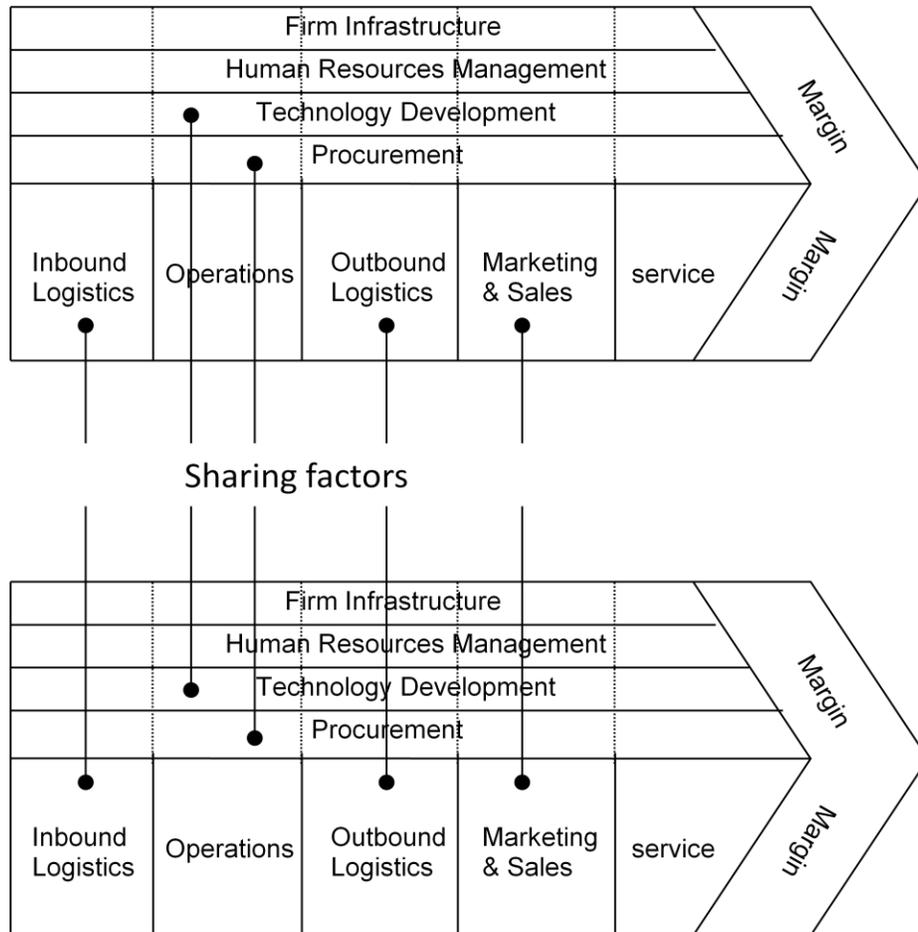


Figure 2: Sharing value chain activities (Porter, 1985)

Table 1: Strategic assets and their relatedness (Markides and Williamson, 1994, 1997)

Strategic Asset	Relatedness
customer assets	brand recognition, customer loyalty and installed base
channel assets	established channel access, distributor loyalty and pipeline stock
input assets	knowledge of imperfect factor markets, loyalty of suppliers and financial capacity
process assets	proprietary technology, product or market-specific functional experience (e.g., in marketing or production) and organizational systems
market knowledge assets	accumulated information on the goals and behavior of competitors, price elasticity of demand or market response to the business cycle

Penrose (2009) asserted that the initial reallocation of excess assets into related production increases overall performance. Indeed, the efficiency loss in using the asset is less than the overall gain from added scale and scope.

However, when assets are extended into unrelated businesses, efficiency loss may outweigh the gain, making the average performance of the business unit decline. Much research shows that there is inverted curvilinear relationship between the relatedness and diversification performance (Palich, 2000). Thus, when a firm diversifies into an unrelated business, it could be hard to achieve a higher performance (Shleifer, 1990, Figure 3).

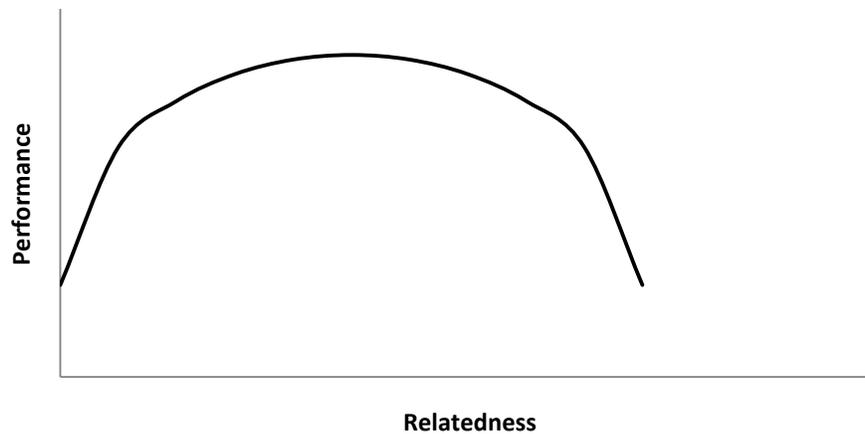


Figure 3: Inverted U-curve, the diversification performance by the relatedness. (Source: Palich, 2000).

2.2.3. RISK MANAGEMENT

One of the reasons to diversify comes from the concerns about future uncertainties. In a single company, top level managers can put all of their resources and attention into one single thing and become excellent at it. Through this concentration, the firm builds competences in the skills and abilities that are important to the business; it develops connections with customers and suppliers, and establishes a long-lasting reputation.

Later, it may seize opportunities to grow and maximize profit in its original base optimally allocating its resources, refraining from the competition, and minimizing the cost of production. Thus, such a specialized company, making one product and providing one service, may become more profitable than a diversified firm.

However, this is possible only in a favorable market. When the market changes because of new technologies in production and new customer needs, profitably allocating its resources may be impossible, and the specialized company may become weak.

In this environment, allocating a company's resources to new opportunities can make it more profitable. (Penrose, 2009). By allocating its resources away from its original production base, a firm can discover new opportunities in products and in markets, establishing a business portfolio that can reduce the risks of future uncertainties.

2.2.4. THE ROLE OF PLATFORM

If the base business is in a strong, stable position, it will continue to make a good profit and generate cash. When a business is growing slowly, it doesn't have to reinvest its earnings to provide assets to support its own expansion. Such a business more or less runs itself, freeing its owners to deal with diversification and also provides cash to work with. A firm is set to diversify when its core business is experiencing declining annual sales and profits, but it has the capital and managerial capability to compete in a new industry, and finally when there is relatedness that produces synergy among the businesses (Jung, 2010).

Therefore, it is crucially important to consider the condition of the base business before getting into diversification. In that, a new business unit generally depends on the base unit which supports the new business for some time (Besanko, 1996);

- Base unit may have to provide cash to purchase or start up another business unit or to fund early operations before the new business can pull its own weight.
- Base unit may have to provide technical knowledge and support to entrance into distribution channels, contacts among suppliers, and a reputation in the customer base.
- Base unit should have fewer risks than a new operation. As it is a source of stability for the combined firm.

2.3. INTEGRATION COST

Coase (1937) mentioned the integration cost in considering the evolving size of a firm. He assumed that, if a firm grows with the benefit of transaction cost, there would be just one firm, which would enjoy not only gains from the transaction cost reduction but also from the incentives of monopoly gains. In the real world, however, this does not happen.

Therefore, he claimed that there are opposing elements that prohibit the unlimited expansion of a firm. As a firm increases its size, the cost of adding a transaction function in the firm also increases. Furthermore, a firm may have difficulty in dealing with their increased complexity, failing to optimize the allocation of the many production factors. Therefore, the increased size of the firm may accelerate an increase in the integration cost. To illustrate this, when a marketing unit in an integrated firm has to cover diverse products, its original specialty may be diluted. Thus the firm must compromise the costs between generalization and specialization. Also, when a business unit wants to switch the production technology or exit the market, a firm using the common production facilities will suffer from the inflexibility.

Therefore, all of these costs make the internalization less competitive than market transactions and decrease the return on internalization (Masten, 1991; Aggarwal, 2009). So, deciding whether to vertically integrate or to diversify is limited by its internalization costs.

2.4. VIEWS ON THE TWO THEORIES

2.4.1. POSITIVE ASPECTS

Including those advantages discussed above, Williamson (1971) categorized the basic advantages of the internal organization in the vertical integration: incentives, controls, and inherent structural advantages.

- Integrating the function of the opponent firm removes the holdup problem from opportunistic behavior.
- Integration places the transaction parties in a repeating relationship. By doing this, small conflicts in the internal organization can be mitigated and controlled by the management.
- Resource allocation enables effective information exchange within the internal organization.
- New knowledge and services acquired will provide a foundation that will benefit the new business area.

In addition to the advantages from economies of scale/scope, business portfolio, and allocation of a firm's excess resources, Penrose (2009) points out the benefits from managerial competence and productive opportunity. She asserts that the biggest restriction to a firm's growth is its domination by unambitious employees. Specialization of managerial knowledge and capability, in comparison, is a less serious limitation to the firm's branching out into new lines of activities. Therefore, if the existing management is versatile and possesses the right vision and capability, and if there is a productive opportunity, the firm can successfully grow in a new market and a new line of production

2.4.2. NEGATIVE ASPECTS

As discussed above, if markets are competitive and “work well,” it is more attractive for a firm to depend on the market than to integrate. Moreover, in a perfectly static business environment, vertical integration, whether driven to settle the bilateral monopoly market or to adapt to other market externalities, can gain no advantage (Williamson, 1994). For in a perfectly static business environment, the effort to settle a transaction contract and the costs determining the exact terms and conditions of it would be applied to a merger with an opponent firm with the same level of negotiation and valuation of the firm.

Also, in internalization, there may be a problem of resource allocation. The increased complexity caused by integration can cause poor resource allocation. Especially compared to diversification, vertical integration requires more complex coordination in technology, management, production, and capital investment among vertically linked but dissimilar segments. Also, if a firm has insufficient strategic assets to share to help realize economies of scale or scope, it would be hard to benefit from integration.

One reason for diversification is the pursuit of growth by managers. This requires no assurance of increased performance through growth. Managers can diversify or vertically integrate when it is easier to acquire new sales than to develop them internally. These activities may be geared toward maintaining or enhancing the position of executives who make diversification decisions. Therefore, this agency problem may

lower the firm's performance while reducing the shareholder's wealth. Such managerial activities must be monitored (Andrei, 1986., Joseph, 1992, Peter, 1998).

In terms of business portfolios, resource concentration may, when a market environment changes negatively, weaken the firm. Nevertheless, it is not management's role to decide how to manage the risk from future uncertainties by allocating a firm's resources to another business. It is rather the shareholder's decision. The same level of resource and risk management can be carried out by investors who want to maximize their investments' return (Amihud, 1981).

Also, some authors claim that companies diversify so heavily because they could: rely on the firm's cash and enjoy high stock market valuations, managers "bought growth" rather than paying out dividends (Shleifer and Vishny, 1991)

Chapter 3: Integrated Framework

A firm's strategic decision to enter into another business area includes both vertical integration and diversification. Much theoretical and industrial research has been carried out on both ideas (Arocena, 2008, Fan, 2006). Some researchers use the transaction cost or market failure (Li, 2006) to explain both vertical integration and diversification theory; others use the competitiveness approach (Frery, 2006), of which various trials seem to be unclear in understanding the strategic decision of a firm.

Also, most research done by the industry on these growth strategies has been done without clearly classifying vertical integration and diversification. For example, Davis (1992) investigated relatedness with COMPUSTAT II industrial segment data using the classic definition of relatedness: two digit SIC code and relationship to the customer. He tried to explain, with the same tool, both vertical integration and diversification. He concluded, however, that vertical integration is hard to explain with the structural constraints of SIC codes, and therefore, vertical integration research should be done with information obtained directly from firms.

An additional problem in industrial research is that most of its surveys follow one time line (Claessens, 2003). If we admit that a firm's decision to enter into the new business area is not a static one but a series of dynamic ones, the comparison of the industrial performance at one static point has innate limitations.

Therefore, in this section, I try to explain both growth strategies in an integrated frame including the consideration of time.

3.1. SHORT-TERM REQUIREMENT

3.1.1. VERTICAL INTEGRATION PERSPECTIVE

The transaction cost in vertical integration theory may be added to the total production cost. If the transaction cost in purchasing an intermediate product is high, a firm may decide to just add the cost to the price of its final product. In this case, this transaction cost would do no harm to a firm's performance, and there is no reason for the vertical integration. In a market, however, that resists such additional costs, there would be pressure in increasing the market price of the product. This market will lower the profit of a firm and decrease its efficiency. Instead, if a firm can minimize the transaction-induced cost through integration, it can secure immediate benefits from it.

Williamson asserts that vertical integration may happen in a condition of market failure. The reasoning is that a firm is concerned about future uncertainties and their risks to a holdup possibility with its component firm. If the holdup problem, however, deals with things that can happen in future but not necessarily in the short-term, and if there is weak asset specificity, integration could be substituted with many short-term contracts. Therefore, whether a vertical integration comes from the transaction cost reduction or from the market failure condition, there should be an instant benefit from vertical integration.

3.1.2. DIVERSIFICATION PERSPECTIVE

Diversification provides benefits by utilizing a common production base or its current strategic assets in the new market. A firm will want to profit from its new product by sharing the existing production line to compete with substitutes for the newly developed product. To do so, the firm has to competitively price it with its substitutes. If it cannot do this, the firm profits little from diversifying. Likewise, if the benefit comes from the brand value, the benefit has to come from competitive pricing with same kinds of products of its competitors.

As the demand of the diversified firm's product is finite, consumers will buy it only if it is competitively priced. Therefore, we can assume that profit from diversification is obtained through competitive pricing. Namely, we can consider the benefit to be a competitive cost benefit. And, as with vertical integration, diversification should provide instant benefits.

3.1.3. COST BENEFIT

In the new business, reducing the transaction cost and securing the competitive cost structure is the primary source of the cost benefit. Both the vertical integration and diversification should secure greater benefit than what it costs to integrate. In this respect, the only difference between vertical integration and diversification is whether the growth strategy lies in the same value chain or off it. After entering into a new business, the cost benefit should be realized instantly.

3.2.1. STRATEGIC ASSET

Porter (1980) claimed that, to be competitive in a market, a firm must provide a customer benefit. It may come from a lower cost or from greater customer satisfaction. Thus, if scale is the key driver of the required competitiveness, a firm may have a larger production plant than its rival. Whatever the case may be, when a firm goes into a new business or a new market, it must secure its competitiveness. And, in that business area, strategic assets are necessary to compete with other firms.

There could be a variety of assets that differentiate a firm from its competitors. These include patent protection, brands and other methods of differentiating. The firm must control for the non-reproducible factors of production, such as site specificity, secret knowledge of the process, and retaining trained and experienced personnel. All of these will be the constraints of other competitors.

In the new business, different strategic assets will be required to compete with other firms that produce the same kinds of products and services. In diversification, a firm requires new knowledge about producing different product and services and in the different market. And all of these should be competitive so that a firm can be profitable in the new business and can compete with competitors.

3.2.2. ACQUISITION OF STRATEGIC ASSET

If competitors realize these asset values and pursue acquiring them by imitating or gathering similar, substitute assets, these assets may still not secure a firm's long-term competitiveness. Therefore, strategic assets to be utilized for long-term competitiveness should be hard to imitate and substitute (Dierickx, 1989).

Williamson (1994) asserts that to be competitive, a firm must have access to the tangible and intangible assets required and used in the business. A firm may have a patent, the proprietary technology developed in the firm, or it may purchase or lease an asset in the open market. They can also share it with partners.

As a strategic asset cannot be acquired over the short-term, it is necessary to begin an acquiring process. Williamson claimed that internal accumulation is most important and depends on an ability to continuously adapt and improve a firm's strategic assets to changing market requirements. Also, in Claessens's empirical work proves that long-term performance depends on the learning effect.

In summary, when a firm decides to enter into another business, it should acquire the strategic asset in the new business for its long-term competitiveness. And when making the decision, the firm must take into account its acquisition process.

3.3. CORE COMPETENCE

Core competence is the collective knowledge and coordination skills in an existing business (Figure 4). This might be excellent capability in resource allocation or in management. A company, to be competitive in the new business, must find its core competence that may exist in the current business. If a firm has a competence in establishing a distribution network, it can deploy this network to transfer its existing strategic assets to the new business or to acquire new strategic assets from a new business with greater ease and higher efficiency (Prahalad, 1990; Very, 1993; Pehrsson, 2006).

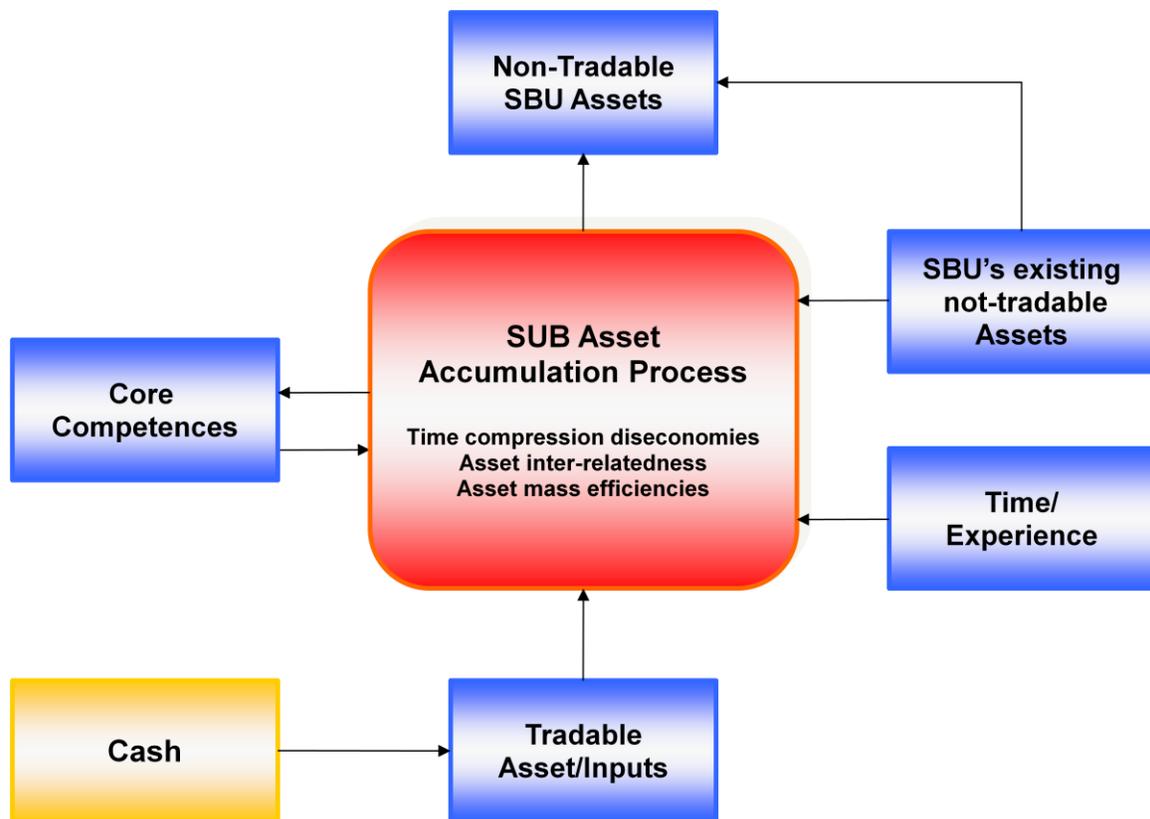


Figure 4: Core competences and the 'production functions' for assets (Williamson, 1994)

3.4. INTEGRATED FRAMEWORK

I categorized a firm's decision to enter into another business area by the different cost benefit sources and the position of the original value chain into the vertical integration and the diversification. In vertical integration, reducing transaction costs and opportunistic behavior are the primary sources of cost benefit for the new business. In diversification, securing the competitive cost structure is the primary source of the cost benefit in the new business. These benefits must surmount the integration cost and be realized instantly.

In the long-term, a firm must secure strategic assets of the new business by transferring its existing asset or by learning new ones from others. This is a requirement for the firm's long-term competitiveness. Therefore, the access plan to the new strategic assets has to be discussed and incorporated in the decision stage.

Both in the short-term and long-term, a firm needs to be able to transfer its core competence to utilize its current strategic assets in the new business and to acquire effectively the new strategic assets in the new business (Figure 5).

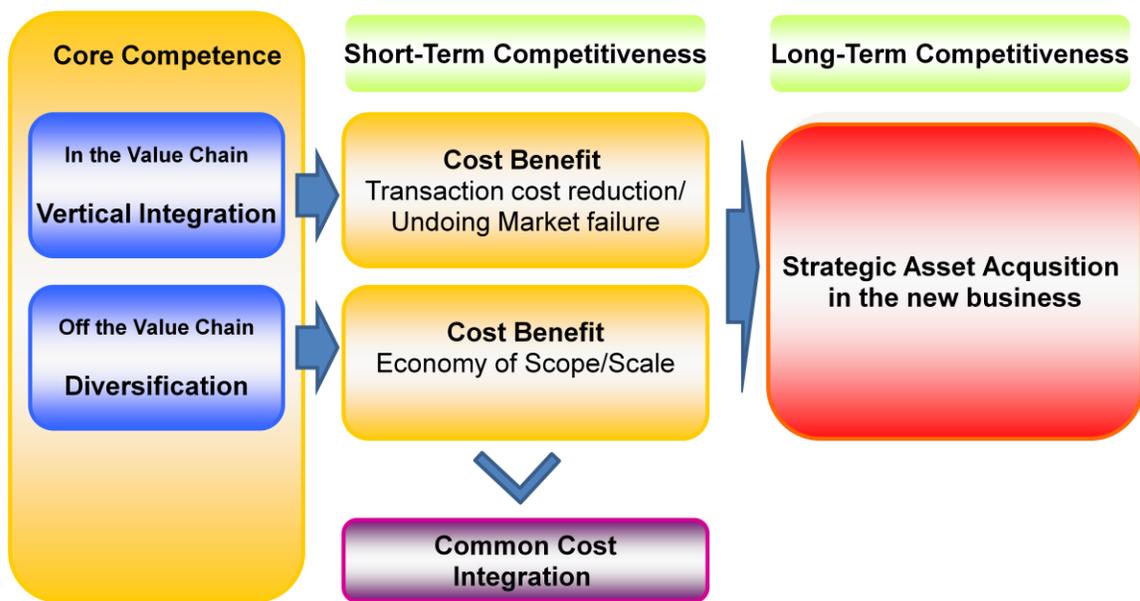


Figure 5: Integrated framework of the growth strategy

Chapter 4: Implementation Modes

I have discussed the theoretical reasoning, the benefits and limitations of vertical integration and diversification. Regarding the unclear theoretical applications and explanations done by the industrial research, the integrated framework was assessed in terms of the dynamics of business decisions and the long-term business life cycle.

When a firm decides to enter new business area, it may obtain the whole ownership of another firm's assets. Or in some cases the firm may obtain leverage over another firm's asset without fully acquiring it (Harrigan, 1985). In doing so, a firm may acquire the knowledge and material required to be profitable and competitive.

In this section, I will discuss the three major decision modes to implement the new business of a firm: merger and acquisition, joint venture, and internal development. Each of these modes has its pros and cons in terms of integration cost and accessibility to core knowledge (Saeed, 2007). A firm may decide to utilize only one of these modes at a time or to utilize several modes in a series of decisions. Even though many different modes can implement a firm's growth strategy, these three are considered typical implementation modes.

4.1. MERGER & ACQUISITION

4.1.1. ADVANTAGE

When a firm decides to enter a new business, investment requires not only new buildings and equipments but also the cost of securing new customers and distribution channels to ensure a smoothly operating business. If there is a firm in the target business area, which can be purchased, the acquiring firm would consider doing so if the total investment cost is less than that of directly entering the business. This opportunity also can provide customers, product distribution and input supply channels at once. In addition, a firm curtails the time it needs to develop a new business and as well as the risks during the business cycle (Ji, 2000).

If a firm wants to grow with no change to the existing position of other producers, and if acquiring a firm is less expensive than expanding internally, then it will choose to acquire the other producer. This strategy seeks to reduce competition or to change the industrial asset control such as patent rights and monopolistic input resource supply. If the acquired firm can lend an advantage in terms of market entry cost, acquiring the firm may be highly profitable, giving even more value to its present value (Penrose, 2009).

Undervaluation of a market may also explain the benefit of acquiring a firm. In that case, the stock market may be short of information about a firm. Its annual reports, balance sheets, and other statements may provide too little information on its performance. Such a scenario presents an opportunity to get the firm at a discount. If a

firm can find out the real value of the target firm, it will profit by taking over its stock or security.

Loss from one firm can be converted to assets for another firm when it deducts this loss from its taxable income. The acquisition may offset the profit of the acquiring firm. And when a firm wants to liquidize its subsidiary, the capital gains tax may be less than the income tax rate, affecting the seller's profit.

4.1.2. LIMITATION

The value of a firm to be acquired can be calculated by its present value through the cash flow of a given period. The price of the firm should at least equal its present value. When merger and acquisition is made and the asset is exchanged for its market price, it is hard to gauge the value gained by the merger and acquisition. If merger and acquisition can add to the value, this deal requires a strict discipline in its valuation, including the likely synergy. Therefore, an acquisition that at its present value cannot add value, will not be worth the capital investment of the acquisition.

A firm deciding to enter a new business that wants to purchase some strategic assets may find the existing firm unwilling to sell those assets and thus preventing the entrance of the new firm. Instead, the existing firm sells in one package all of the assets. The acquiring firm must then consider the exact value of the firm it wants to acquire. The firm wanting to be acquired will try to maximize its gain by increasing, up to the point of it no longer being profitable, the price of the acquisition (Wiersema, 1995). In

such a case, only when the candidate is unable to realize its value and the acquirer possesses the information for the valuation, the acquirer can profit from the merger.

Another limitation to mergers and acquisitions is that if there are many firms in the same business area that also want to expand, competition among them would be intensified and the profitability would be reduced by the increased price.

4.2. JOINT VENTURE

Harrigon (1985) and Hennart (1988) claimed that joint ventures take diverse forms and are used for various purposes. Both studies assumed that entering a joint venture comes from a desire to minimize the transaction cost. They classified joint ventures into two: 'scale' and 'link'. 'Scale' joint ventures are where more than two firms combine in an adjacent production stage or distribution or a new market. The parent firms may want to do the same thing through this scale joint venture. They may want to vertically integrate forward or backward, horizontally expand, or diversify. For example, an assembly firm may establish a joint venture with another assembly firm to produce some common components of their production line. This joint venture realizes economy of scale by reducing the production cost of those components; not doing so would leave both parent firms with higher costs. Therefore, the joint venture can be a useful mode where economy of scale for a component is much larger for a joint venture than for individual firms on their own. Stuckey (1983) argued that this type of joint venture can come from the market inefficiency for intermediate inputs as illustrated in the example of the aluminum industry.

On the other hand, a 'link' joint venture is the result of the asymmetric activities of its parent firm. That is, one parent firm will make a joint venture with its vertical integration with another firm which wants its diversification. As competition increases in the current global market, entering it with the equipment of a wholly owned local distribution channel is getting expensive and less profitable. A firm may instead choose a

joint venture to maximize its market size with low investment. A firm may also exchange the required knowledge in the new market with another firm in the joint venture. In addition, establishing with a local firm may soften the hostility to a foreign firm.

However, these two types of joint venture have common characteristics in their governance structure. One is their relationship through the equity sharing among parent firms. The other is those parent firms hold a shared ownership which is different from the wholly-owned subsidiary of a firm. Therefore, joint venture is the form of a particular internalization.

4.2.1. ADVANTAGE

Knowledge can be shared in a joint venture (Reuer, 2000). In a link joint venture, the used knowledge is asymmetric; the vertically integrated parent firm may provide technical expertise and the diversified parent firm provides the market knowhow in the region. In the scale joint venture, the symmetric knowledge can be shared. Both parent companies can provide the same type of knowledge and the merged knowledge can be utilized to produce a new product. Firms may do this when it is hard to transfer in written form a firm's specific knowledge, such as their experience in production and marketing in a specific region. This kind of knowledge is better shared in a joint venture. Moreover, a technology-intensive parent firm can send its technical and managerial personnel to transfer a wide range of knowhow, while this is impossible with other modes.

For a small and young firm, access to the capital market is difficult. Joint venture with a fund-requiring firm can be an efficient method of funding risky projects. Harrigan (1985) showed a number example of small R&D firms using joint ventures with larger firms to finance projects that that would've been impossible to finance either internally or through the capital market.

4.2.2. DISADVANTAGE

As Hennart (1988) makes clear, the joint venture should be considered as the foundation of its dynamic process which can focus on the rate of decay of some of the advantages traded in a joint venture, particularly knowledge (Jiatao, 1995; Reuer, 2001).

Harrigan (1985) claimed that there were drawbacks to using the joint venture. When a joint venture is implemented to expand internationally, the international joint venture may have a problem with its domestic partners or hosting country. When the objective of a parent firm is to take the advantage from a country, but its partner or hosting county wants to import the high technology of a firm, conflicts will arise because of the different viewpoints on a joint venture.

Another limitation is that there may be a cultural problem between parent firms. Each parent firm wants to coordinate the joint venture with their own culture. This desire creates communication problems and long decision processes, which may harm the flexibility of the joint venture. Likewise, parent firms may be concerned about the loss of

control over its investment, technology, and knowledge, which might be siphoned off by others.

Also, the motivation behind a joint venture will wither when a parent firm wants too much control over the joint venture's strategic decisions such as investment, expansion, and representatives on the board of the joint venture, or if the parent firm gives little attention to these factors.

4.3. INTERNAL DEVELOPMENT

4.3.1. ADVANTAGE

A company can decide on internal development when it has enough resources in its existing business to utilize in the new business. A firm may recombine its current strategic assets with its existing competence. It can adapt them in a timely manner to the changing business environment by extending the staging decision with low cost over a long period of time (Penrose. 2009)

This mode's most important advantage is its easiness. Employees who embrace the same culture as a firm can easily and effectively transfer its internal strategic assets. The firm's competence concerning its existing business unit can be applied instantly to the new business (Very, P. 1993). Furthermore, through the internal development process, a firm can accumulate the learning and experience that can be accumulated as the new business grows. This knowledge and experience can become a new resource for the further growth of the firm.

In a case where no firms possess the strategic assets required for a new business, the internal development may be the only mode to choose. This is especially true in the early stage of a business life cycle, when the firm has insufficient resources to compete in a new business field. A firm here must go the internal development route, as there is no other option to acquire strategic assets in the new business (Olivier, 2010).

4.3.2. LIMITATION

Among possible modes, internal development can be an easy one. However, there may be no technology for the completion of a new product, or once the firm has a new product, demand may be too low to achieve economies of scale. Hence, a firm has no chance at success if the market they are entering is not ready for the adaption of the internal development.

Moreover, internal development normally requires long term support and management decision making. Therefore, over a relatively long period, if management offers insufficient attention or support to the internal development, the success of that business is imperiled.

Chapter 5: Entrance into E&P Business of the Refining Company

5.1. E&P INDUSTRY

5.1.1. OVERVIEW

The uniqueness in this business is the high risk of the uncertainties, such as a dry hole, which can mean no return (Lerche, 1999). The nature of oil depletion requires continuous investment to secure a long-term sustainable business. Also, E&P business requires unique and combined knowledge in geology and engineering such as oil field delineation, facilities determination, and flow control (Figure 6). Moreover, despite the promising geological environments, a host country's political conditions must be favorable.

To be successful in this business, a firm must have the most appropriate technology and business process without any loss in safety and environmental standards. Therefore to maximize the profitability of the investment, it has to integrate knowledge gained from former experiences (Jahn, 2008).

In the first stage of E&P, before the first drilling, a firm must carry out field work, magnetic surveys, and seismic surveys to evaluate the prospective area. Supposing the exploration drilling finds oil, the data gathered during this stage provides too little information on the amounts of oil and its producibility. The firm must appraise the oil well. At this stage, more detailed data are gathered to reduce the uncertainties regarding

the reserve and to make an initial estimate. If the reserve turns out to be economically viable, the next step is a feasibility study including the generation of technical alternatives to use, process design and equipment size, etc. After considering cost and the estimated revenue of each alternative, the firm selects the most economical mode. Once the budget is committed to for executing the field development plan, producing the oil follows a sequence: detailed design, procurement, facilities fabrication and installation, and commissioning.

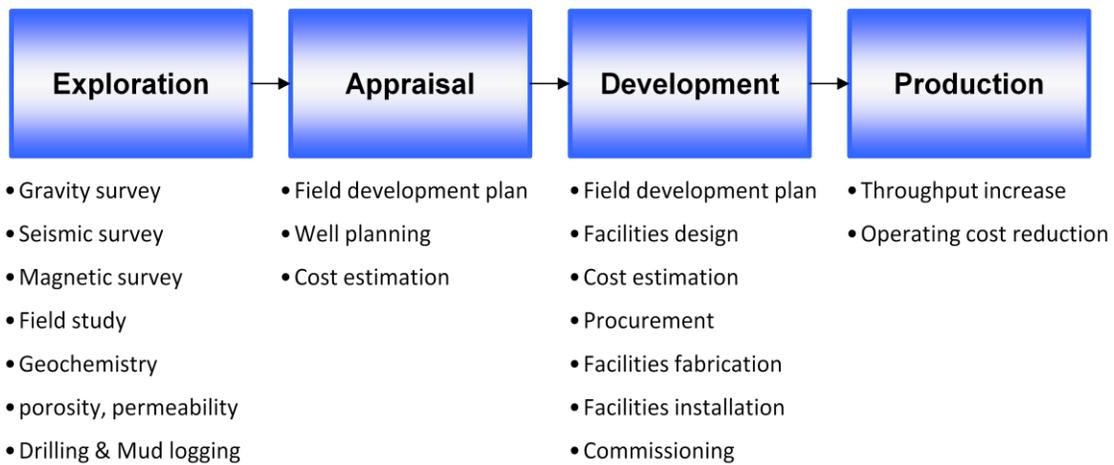


Figure 6: E&P business and its strategic assets (Source: Lerche, 1999., Jahn, 2008.,)

5.1.2. INDUSTRIAL ORGANIZATION

The major E&P companies are integrated International Oil Companies (IOCs) and National Oil Companies (NOCs) (Table 2). Their business areas are integrated in E&P and refining for the global market. While in developed countries most of those integrated companies are public, many integrated oil companies in developing countries are NOCs with securing s their own oil and gas resources in their countries.

Therefore, due to the difference of their origins, public and national oil companies have quite different objectives. While a public company’s objective is to maximize the shareholder’s value, the objectives of NOCs are more complicated. Besides wanting to maximize profit, they must consider the security of their national resources, the wealth of their people and other political issues, all of which can affect the management of those oil companies.

Table 2: Ranking the World Oil Companies (Energy Intelligence Weekly)

Ranking	Company	Country	State Ownership	Ranking	Company	Country	State Ownership
1	Saudi Aramco	Saudi Arabia	100%	11	Pemex	Mexico	100%
2	NIOC	Iran	100%	12	Sonatrach	Algeria	100%
3	ExxonMobil	US		13	Gazprom	Russia	0.5
4	PDV	Venezuela	100%	14	KPC	Kuwait	100%
5	CNPC	China	100%	15	Petrobras	Brazil	32%
6	BP	UK		16	Rosneft	Russia	0.75
7	Shell	UK/Netherlands		17	Petronas	Malaysia	1
8	Conocophiliips	US		18	Adnoc	UAE	1
9	Chevron	US		19	Lukoil	Russia	
10	Total	France		20	NNPC	Nigeria	1

In addition to these types of big oil companies, there are independent oil companies. Petroleum Association of America (IPAA) defines these independent oil

companies as non-integrated companies which receive nearly all of its revenues from production at the wellhead. Their major activities are the exploration and production with a small marketing or refining segment.

Some companies own and operate their own fleet of offshore drilling rigs, but most of the oil companies engage in drilling contracts with offshore drilling contractors. Moreover, the service providers provide global services at every stage of E&P business activities (Hallwood, 1991; Lee, 2008). Therefore, E&P companies sometimes own only their capital assets such as the platforms and cranes and outsource many parts of the E&P services such as drilling and mud logging. However, they may hold the engineering/production consultancy, which are their core strategic assets of the business.

In this business area, consortia allow oil companies to take part in a number of drilling projects, each of them with a limited probability of success, rather than in a few wholly owned drilling ventures (Skaf, 1999., Bridge, 2005).

5.1.3. RECENT PERFORMANCE

Owing to the recent global recession, the recent financial performances of the E&P companies are worse than that of three to five years ago. However, IOCs show relatively low higher performances than independent oil companies. Many independent E&P oil companies over the past two years show negative profitability (Figure 7). Therefore, we can assume that big IOCs have greater knowledge and more promising assets in this business than many oil companies.

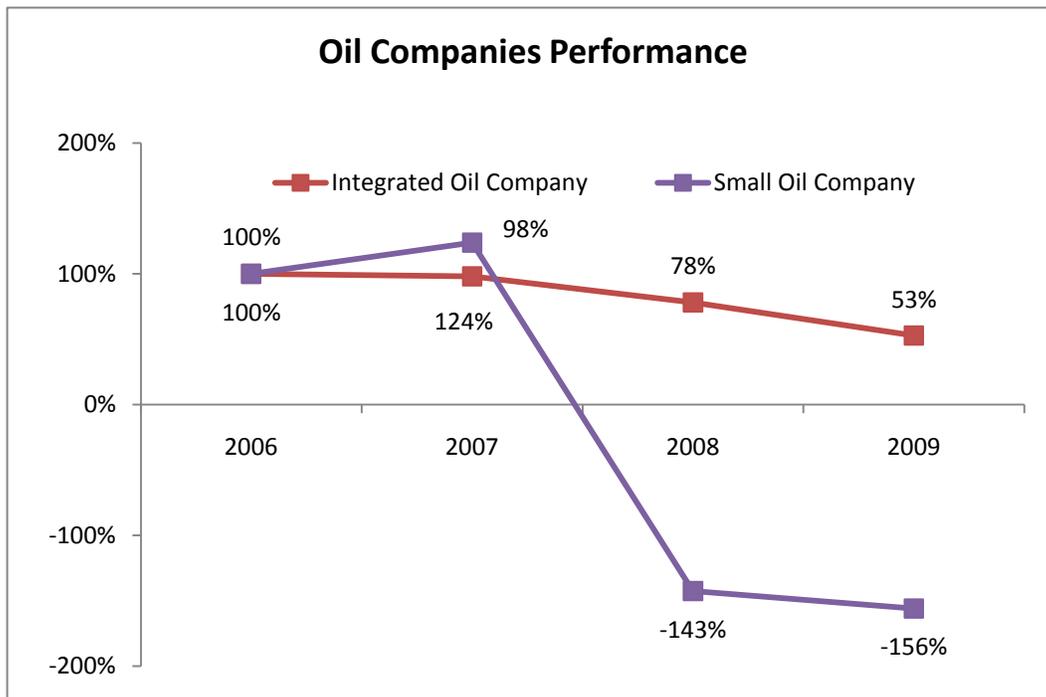


Figure 7: Top 20 integrated oil companies, 20 independent oil companies of which market capacity is less than 3 billion dollar in NYSE.

5.2. REFINING INDUSTRY

5.2.1. OVERVIEW

In the chain of production, a refining company purchases the crude oil from the oil market and produces a diversity of products ranging from petroleum gas to transportations fuel (Figure 8).

A refinery comprises two major processes. One is to distill crude oil and the other is to upgrade the final product. The direct distillation of crude oil is a physical process that utilizes the different boiling points of the hydrocarbon components of the crude oil. The distilled oil products then go through further processes, such as de-sulfurizing, to meet their market's product specifications. Product upgrading enhances the low-value refining products. For example, the hydrocracker adds value to the bunker fuel by cracking and converting it to diesel product.

These two processes determine the refining margin. Thus, a refinery equipped only with distillation-related facilities, can get its margin only from the price difference between the refining product and the crude oil price. Therefore, its profit is mainly dependent on the crude oil quality. This type of refinery has to purchase high quality crude oil at a relatively higher price. This refinery, thus, has little flexibility in selecting its crude oil. In contrast a refinery with full upgrading facilities can realize a higher combined profit from the value-added product from the upgrading facilities and the

flexibility in crude oil selection. Thus, this type of refinery, owning the upgrading facilities, is more competitive than a refinery equipped with distillation facilities only.

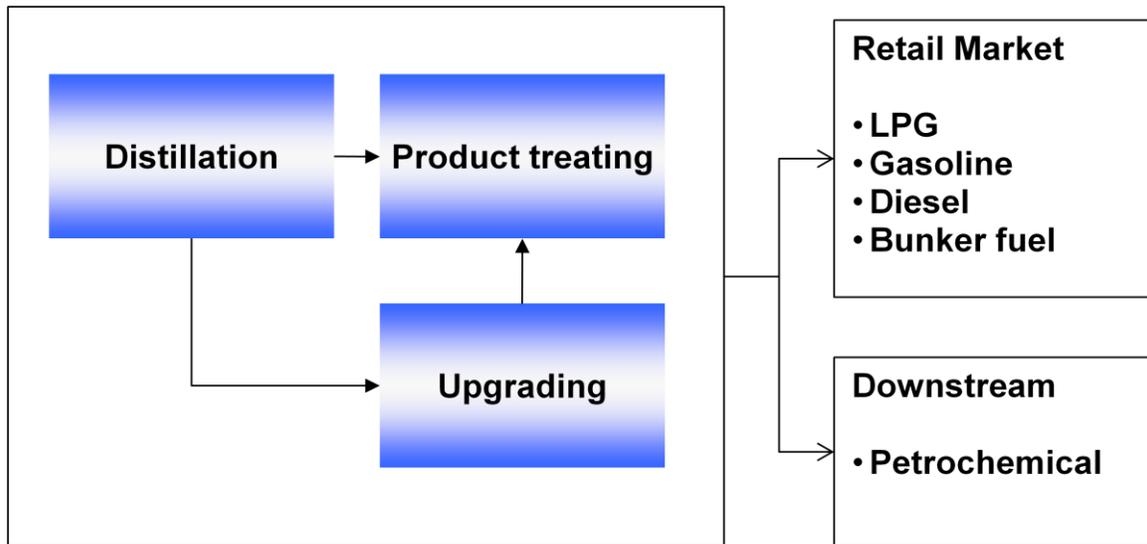


Figure 8: Refining business activities

In this regard, refining is a capital-intensive business. To be competitive, the production base requires not only distillation-related facilities but also high capital investment for the product-upgrading facilities. However, the cash flow of capital investment for both refining and E&P show different results (Figure 9).

Cash Flow Comparison

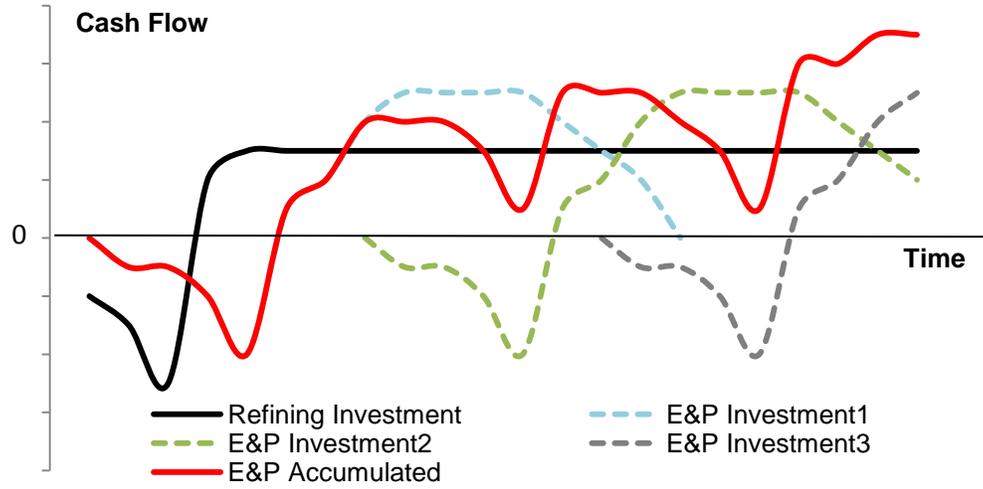


Figure 9: Cash flow comparison; Refining business and E&P business

5.2.2. INDUSTRIAL ORGANIZATION

Some refining companies have their own retail business and oil transportation network. Some have previously diversified into downstream businesses such as petrochemical and lube oil. And these diversified refining companies normally have some level of the competitiveness with the economies of scale by its refining capacity.

While a company may diversify in many ways into the downstream of oil refining, there are not many refining companies that enter the E&P business. Several Korean and Japanese refining companies having regional economies of scale and competitiveness take part in these activities.

5.2.3. RECENT PERFORMANCE

Currently the refining industry is underperforming E&P. This is due to the shrinking refining margin both in distillation and upgrading. As we can see in Figure 9, a refining company's performance typically depends on the difference between the price of crude oil and the price of the final product. Refineries having a low level of complexity in their facilities have no chance at profiting from their negative skimming margin. However, those that have invested in their upgrading facilities can enjoy profitable returns.

In terms of a refining company's working capital, however, the high price of crude oil negatively affects all refining companies. Compared to the low crude oil prices of the early of 2000s, refineries' inventory costs have been negatively affected. For

example, if a refining company operates a refinery with a capacity of two hundred thousand (200,000) barrels per day, and if it has to reserve five days' inventory of crude oil, a ten dollar increase in the price of crude oil would require an additional ten million dollars, directly affecting a company's annual cash flow.

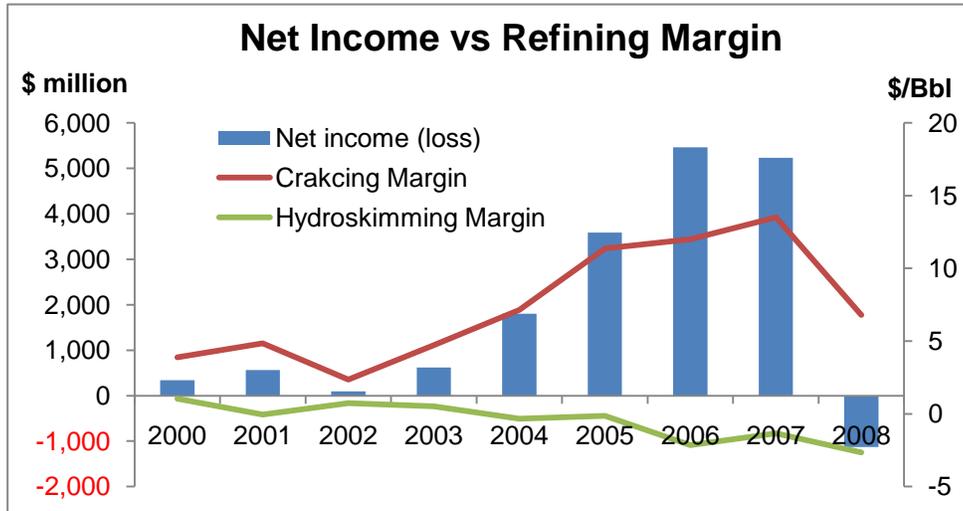


Figure 9: Net income vs. refining margin (Annual report of Valero, Historical refining margin from Shell)

5.3. INTEGRATED FRAMEWORK APPROACH: REFINING COMPANIES DECISION TO E&P

Several refining companies, especially in Korea and Japan, have entered into E&P. One reason for this is that these companies have economies of scale in refining and in its downstream business. Such economies enable a stable profit and regional competitiveness.

Another reason is that these companies have unique shareholder structures, where their managers can directly decide the company's business portfolio. The top management owns a substantial share of the major companies in Korea (Kim, 2004), and, likewise, the major shareholders of the Japanese companies are banks (Geringer, 2000; Fukui, 2007; Schaede, 2008). All of these unique shareholder's structures may justify the management's decision to enter new business.

The relative higher performance of the E&P industry apparently offer sufficient motivation for a refining company to try entering this field (Figure 10). As I addressed in the theory section, however, this simple motivation guarantees neither the further productive activities nor the higher financial performance which the company expected when it decided to enter the field.

It is unclear whether we should view their entering E&P in terms of vertical integration or diversification. These two businesses may or may not lie on a same value chain of the oil business. We should thus discuss and review both integration theories before determining the refining company's entrance to E&P. And, through the utilization

of the discussed integrated approach, a refining company can find out whether there is an opportunity ensuring the short-term benefits and long-term advantages, and whether their existing core competence can promote effectively its existing strategic assets to E&P.

In the continuing decision perspective, if a firm has committed to allocating its resources to integrate and has got its objectives of that decision, then a firm may look for another opportunity in a new business area.

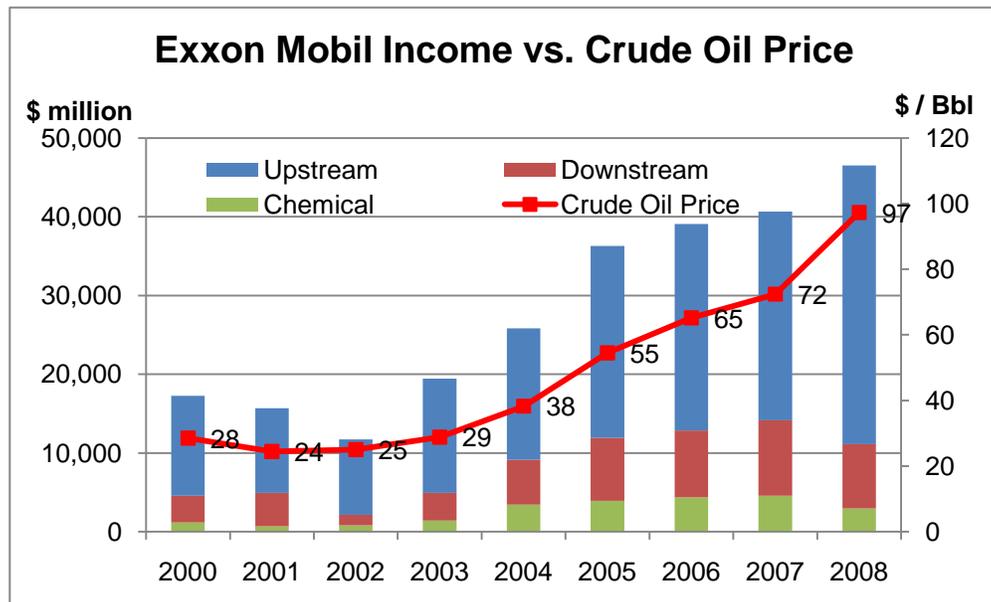


Figure 10: Exxon Mobil net income by business sectors and crude oil price

5.3.1. CORE COMPETENCE

Foremost, to be competitive in the new business, a company must find their core competence. If a refining company possesses coordination skills and competitive capability in resource allocation through management, it can apply them to E&P. In addition, decision makers must consider what kinds of their existing strategic assets (Table 3) can be transferred to the E&P business. They must also decide how to transfer or apply them with their core competences:

- Knowledge in managing the diverse business units (e.g. Refining and its downstream petrochemical complex)
- Operation of the capital-intensive industry
- Capital investment management (e.g. project planning, financing, execution).
- Purchasing and/or trading oil and petroleum products in local and regional market
- Operational excellence in the local and/or regional market
- Management excellence with vision

Table 3: Strategic assets in the existing refining company

Strategic Asset	Area
customer assets	<ul style="list-style-type: none"> · brand recognition in the local and regional market · customer loyalty
channel assets	<ul style="list-style-type: none"> · crude oil and petroleum products trading · distribution network of the petroleum products · petrochemical or byproduct business network · distributor loyalty
input assets	<ul style="list-style-type: none"> · knowledge of imperfect factor of the oil markets · financial capacity from the refining performance · loyalty of oil suppliers
process assets	<ul style="list-style-type: none"> · knowledge in crude oil and petroleum products trading · proprietary technology in refinery operation and maintenance · knowledge in combined operation with refinery and its downstream facilities such as petrochemical plant · product or market-specific functional experience
market knowledge assets	<ul style="list-style-type: none"> · local and regional market specific experience · Location of the entrance area · accumulated information on competitors, · price elasticity of demand or market response to the business cycle

5.3.2. SHORT-TERM

In the decision to enter a new business, management must consider the short-term benefit. In this regard, a refining company has to determine its sources of cost benefits. From a vertical integration perspective, we can consider the normal oil supply market to work well. That is, if there is a no opportunistic behavior, the transaction cost reduction cannot overcome the cost of integrating. Thus it would be better to purchase the required oil directly from the market. A refining company is unlikely to achieve a cost benefit by entering E&P. On the other hand, when oil reserves are near the refining base and the oil market in that region works poorly, there can exist a site specificity, which can provide a cost benefit to entering E&P in that region. In this case, even if the oil production from one reservoir cannot meet the refinery's capacity and even if opportunistic behavior is minor, entering regional E&P activities, by integration can provide a cost benefit to the refining company.

From a diversification perspective, a refining company may have some strategic assets that they can apply immediately to E&P business. If oil reservoirs are located in the oil trading business area of a refining company and the refining company has been competitive in that region, entering E&P can be an opportunity to achieve cost benefit through integration. Considering, however, the different business characteristics reviewed in the E&P industry, there may be a low level of strategic assets to immediately transfer to E&P. If it is, it may be hard to align its existing strategic assets with those of

the E&P's strategic assets. The core competence of the refining company may not do its catalytic role in transferring its current strategic assets to E&P to realize any cost benefit.

Implementation Mode

When entering E&P promises a cost benefit, a refining company may have the site specificity or specific capability in region. As an E&P business in a geographically different market has weak reasoning for the refining companies' opportunity, we should regard the refining company's entrance to E&P as having limited opportunity for its short-term benefit from either a vertical integration or a diversification perspective.

In the general E&P business, as consortia allow oil companies to take part in a number of drilling projects with a limited probability of success, a refining company can also pursue this opportunity to find the optimum implementation mode. If this integration can be done with a minimum share acquisition of an E&P project in the region, they may not require a separated business unit in it. Instead, it can utilize its existing unit at a minimum cost. For example, the crude oil purchasing part of a refining company can take the functional work to acquire the equity crude from the oil production venture. This activity may reduce the former work load of that purchasing unit, which required competition to acquire that amount of crude oil quickly. Or this can be an opportunity to utilize the excess resources of that unit. Therefore, the participation of a geographically adjacent E&P development project consortia or joint venture can be chosen as its optimum short-term decision mode. With this mode, a refining company can get its cost benefit at a slight integration cost. It can secure the oil supply from this organization and

have a base from which to try acquiring the strategic assets it currently lacks but needs for future growth.

On the contrary, considering the weak relationship among the strategic assets between refining and E&P businesses, and the integration-related cost for a new inner organization, merger or acquisition of an E&P company may not provide a cost benefit to the refining company. Moreover, this cannot benefit them greatly only considering that the E&P business does not respond quickly.

Likewise, internal development would not be possible because new knowledge would be quite expensive or non-transferable from existing E&P companies to refining companies.

5.3.3. LONG-TERM

When the entrance into the E&P secures the short-term benefit, this new business should be competitive during the long-term business life cycle. Therefore, whether it is from the vertical integration or diversification, the refining company has to acquire the new strategic assets in the E&P business. If some strategic assets of the E&P business are acquired, the E&P business is no longer a new business. Refining companies can accelerate their acquiring of strategic assets and can choose another growth strategy. To the degree that they acquire strategic assets, the refining company can find other optimum implementation modes as part of its continuing decision making.

Implementation Mode

At this stage, the decision should consider both the cost benefit and the competitiveness in the business. If entering E&P ends up as a small equity investment in a regional E&P consortium, and only keeps status quo, the refining company may enjoy the return on investment by their working interest. However, even if the consortium resulted in great success, there would be no opportunity in acquiring the strategic assets in the E&P business. They cannot access the operation of the E&P consortium. Moreover, the operator and other big equity partners of the consortium would not transfer any knowledge of the E&P business to its small equity participants.

The company should thus consider an equity increase to strengthen its position in the consortium or taking other opportunities by participating with other consortia in the region (Harrigan, 1985). By doing either of these, it can promote its relationships with the

operating company and with other equity partners. It can acquire experience obtaining some knowhow. For example, it will better understand the E&P consortium's holding countries and be familiar with the bidding process of the E&P service companies and drilling contractors. To do that, it may be necessary at this stage to develop an organization that will manage several consortia and to acquire the strategic assets. And also the management of the refining company has to consider the balance of the benefit and the internalization cost of each decision mode.

Additionally, as described in the short-term implementation modes, the refining company can expect an advantage only from site specificity or excellent operations regionally. Therefore, during the transportation of the strategic assets, management may have to focus on the regional E&P consortia or joint venture for its additional opportunity. If the firm successfully acquires several key strategic assets in E&P and successfully generate positive cash flow, the refining company may consider the E&P business as another current business.

Then, even though there are remaining strategic assets to be acquired, it can broaden its E&P business area with its stable refining business unit and newly incorporated E&P business. Its core competence can accelerate competitiveness in E&P and reduce the intensity of the regional limitation. The accumulated experience with the enhanced capability to acquire and share strategic assets in the business may open up opportunities to join global E&P ventures (Finch, 2002).

The refining company can take another implementation mode for future growth. If there is a firm in the E&P business area which can be bought, the refining company can consider acquiring it, under the condition that the total investment cost is less than that of its direct entrance cost in a new area. Among the advantages in merger and acquisition, curtailing the time requirement to acquire the strategic assets in the E&P business would be crucial.

As discussed in the decision mode section, a refining company may want some selective key strategic assets which it has not acquired through the current E&P operation, such as knowhow concerning the optimization of engineering planning. If, however, the E&P Company wants to sell all the assets in one package, then the refining company must consider the exact value of the E&P company, so as not to decrease the profitability by that merger and acquisition. Likewise when there is competition in the bidding to acquire an E&P company, the refining company, through a strict valuation of the E&P company, should avoid profitability loss by the competition.

5.4. APPLICATION OF THE INTEGRATED FRAMEWORK: KOREAN REFINING COMPANIES

In Korea, two refining companies are currently involved in E&P business activities. As discussed in 5.3, these companies have economies of scale in refining and in their downstream businesses, providing stable profit and regional competitiveness. Also, these companies have unique shareholder structures which enable the management to decide whether or not to enter the new business. To apply the developed integrated framework, I denote them as ‘A’ and ‘B’ refining companies. ‘A’ decided to enter E&P in the early 2000s; ‘B’ entered earlier, in the 1980s. Both refining companies share similar financial performances except in the E&P business (Figure 11).

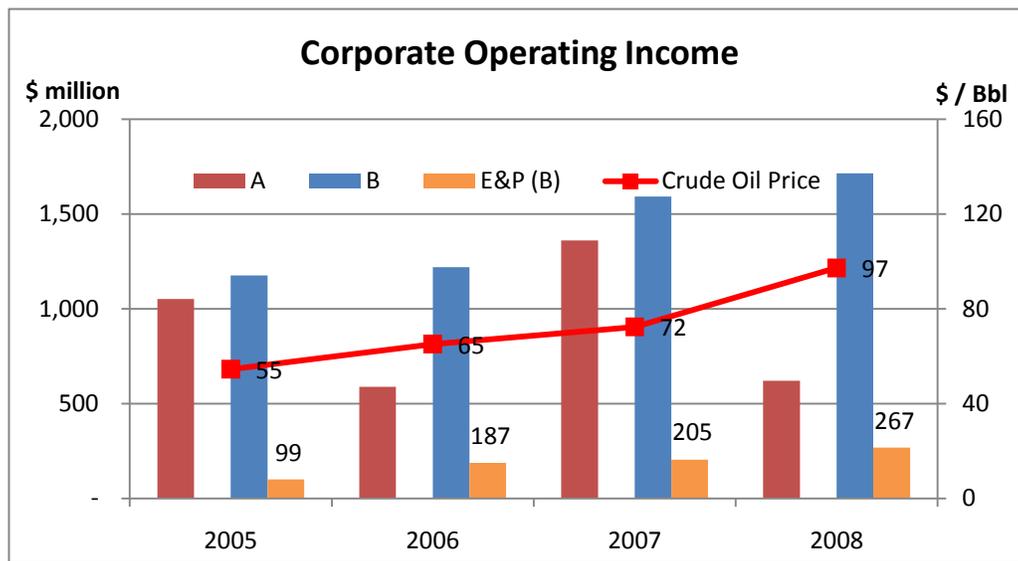


Figure 11: Corporate Operating Income (Source: Annual Reports)

(Note: No revenue in E&P from ‘A’ company.)

5.4.1. 'B' COMPANY'S ACTIVITIES BEFORE 2000

'B', a privatized refining company in the early 1980s, was a national refining company in the early 1960s. In 1983 it began investing in E&P in Southeast Asia. Its first success, however, was in the Middle East, in Yemen in 1987. 'B' owned a small share of the project and has lifted an average of over 2 million barrels of equity oil per year. In the 1990s, three other small successes were made in other regions, again in the Mideast, as well as Latin America and Northwest Africa. The equity oil production in each of these regions, however, amounted to less than 3,000 barrels per day.

In these two decades, from the integrated framework perspective, the core competence must not have been considered in B's decision to enter the E&P business. During that era, it secured profits only in the domestic market thanks to a governmental policy that promoted the refining industry to help develop the national economy. Moreover, the company may have had a hard time building up its core competence because of a low level of complexity at the refining facilities and limited experience in oil and petroleum product trading. Furthermore, there were, at that time, low strategic assets to apply to E&P.

Moreover, in the integrated framework, B's decision to enter E&P fails to fit the short-term requirement. Let us concede the site specificity of lifting equity oil from the Mideast to its refinery. Nevertheless, its activities in Latin America and Northwest Africa provide, from a vertical integration viewpoint, insufficient rationale for B's decision. Rather, it is likely the result of the diversification trend of that era. Considering, however,

the relatedness of the strategic assets of that time in both E&P and the refining business, it seems to be an unrelated diversification. As discussed above, research on the relationship between relatedness and financial performance suggests that unrelated diversification is unlikely to deliver better performance. To illustrate this, during the past two decades, 'B' has participated in about fifty E&P projects in more than 20 countries in Southeast Asia, Latin America, Northwest Africa, and Australia. There seems to be a very low level of relatedness in terms of regions. Only four of these projects (20%) have realized their commercial production of oil. In addition, there was insufficient knowledge in 'B' to handle its equity oil except that coming from the Middle East.

During this time, 'B' participated in E&P projects with a small share acquisition, and it did not establish a separate business unit for E&P. Instead, it only utilized its existing unit at a slight integration cost. Also, the cash inflow from the productive oil wells was reinvested in other E&P opportunities. These investments enabled 'B' to continue to fund its E&P activities. The performance over two decades is not exceptional, however, 'B's participation in various E&P projects enabled them to acquire some strategic assets in E&P business.

5.4.2. 'B' COMPANY'S ACTIVITY AFTER 2000

Discovering oil in Vietnam in 2000 accelerated 'B's E&P activities. It increased their participation in E&P consortia (Figure 12). Moreover, it extended B's strategic E&P region of to the North Sea, West Kamchatka, and South America. The company has accumulated some strategic assets and is now an operator in several E&P projects.

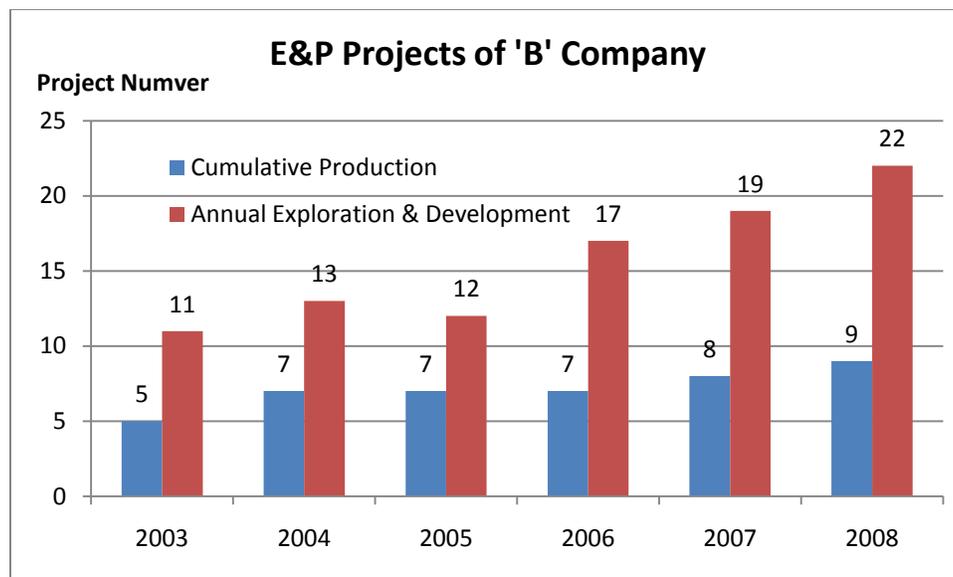


Figure 12: E&P Projects of 'B' Company (Source: Annual Reports)

At this stage, 'B' considers E&P to be a key part of the company. Its initial decision to enter E&P in the early 80s failed to consider its short-term requirement. This failure resulted in not only a low performance but also a long journey in establishing a continuous cash inflow from that business. In spite of all this, 'B' considers E&P to be a key component of its corporate financial performance.

To achieve its long-term goals in the E&P business, 'B' has decided to become more active in its acquisitions of strategic assets in E&P. As discussed above, if E&P entry is implemented as only a small equity investment, there is little opportunity to acquire strategic assets, especially crucial technical and operational knowledge, in the E&P business. Operators and large equity partners dominate the decision-making process. In response to this reality, 'B' has been increasing its equity share in E&P consortia to strengthen its position and to acquire the required strategic assets. In some projects, 'B' made fifty to fifty equity partnerships with the operator of the project. Furthermore, it has considered a merger and acquisition of an E&P company as a way to accelerate its learning and business performance.

5.4.3. 'A' COMPANY'S ACTIVITY AFTER 2000

In the late 1960s, 'A' company started its business as the first Korean public refining company. Even though its current financial performance and business interests are similar to 'B' company, it only entered the E&P business in the early 2000s. Since then, it has been active as a small equity investor in six E&P consortia in Southeast Asia.

'A' has focused only on Southeast Asia, a reasonable course from the integrated framework perspective. It considers its core competence to be regional excellence in oil and product trading in the Asia-Pacific. Also, it understands the different strategic assets between refining and E&P and thus there is low level of the strategic assets to apply directly to E&P.

As a short-term requirement, we can explain their focus on Southeast Asia as an entrance to E&P by its site specificity from the vertical integration perspective. That is, when oil reserves are near a refining base and the oil market in that region shows any signs of market power or opportunistic behavior, 'A' can secure a cost benefit by entering E&P in that region. As discussed above, even when its equity oil cannot meet its refinery's full capacity and even when opportunistic behavior is minor, entering regional E&P activities can provide a cost benefit. Therefore, though having no successful results yet from these activities, 'A' should focus its current decisions to avoid the errors made by 'B' during its long-term E&P period. By doing this it can utilize effectively its equity oil when it is produced, which also fits the short-term requirement of the integrated framework.

Once 'A' realizes cash inflow by discovering oil, it may be better to reinvest in additional opportunities in the same region. They should do so until 'A' acquires some strategic assets which require it to widen its opportunities in other regions and until its E&P business has become a new profit center. And then, it can continue its new decisions of acquiring the strategic assets in E&P to compete in the market. This is currently exemplified by 'B' meeting its long term requirements in the E&P business.

Chapter 6: Conclusion

While not a large number of companies have done so yet, some Korean and Japanese refining companies have entered into E&P. These companies are apparently motivated by the relative high financial performance of the E&P industry, their own limited margins in refining, and the slow market growth. It is not clear, however, whether these business environments alone can ensure the success of their growth strategy. In deciding to enter another business area, management should take into consideration other factors.

To determine the proper motivation and rationale for choosing an organizational strategy and the specific mode of implementation, we reviewed two major growth theories: vertical integration and diversification. In vertical integration, transaction costs in the market and future opportunistic behavior of opponent firms are major factors that substitute internal organization for buying through a market transaction. In diversification, to enjoy the economies of scope or economies of scale, a firm must be able to utilize its current strategic asset in a new business, which makes the relatedness important in deciding the strategy of a firm's growth. Also, in allocating its resources and transferring its current strategic assets into a new business, a company must utilize effectively its core competencies.

However, when the market works well and/or there are few strategic assets to share, integrating another business can be limited in its success. The integration's increased complexity may cause poor resource allocation, and the decision should avoid the agency problem. Moreover, even when management executes a decision that lowers risk from future uncertainties, they should consider that shareholders can also decide on the same level of risk management.

In the integrated framework approach, a firm's integration of other business area is categorized by the different cost benefit sources and by the position of the original value chain into the vertical integration and the diversification. The short-term benefit is derived from the cost benefit in reducing transaction costs, from reducing opportunistic behavior, or from securing a competitive cost structure in the new business. These benefits must be superior to the integration cost. For the long-term requirement, as a new business requires different strategic assets to compete with other firms, a firm has to secure strategic assets by transferring its existing assets or by learning it from others. To secure short-term and long-term benefits, a firm needs its core competence to transfer its current strategic assets to the new business and to acquire effectively the new strategic assets from the new business.

With the understanding of the industrial characteristics of E&P and refining, the integrated framework is applied to the refining company's decision to enter into E&P. For short-term consideration, we regarded sources of cost benefit to be the site specificity in oil supply under market failure or the specific operational capability in the region. This

is also a limitation to entering into E&P. Thus venturing into E&P in geographically distant region may not provide a sound basis for a refining companies' decision. From a long-term outlook, a company should consider acquiring strategic assets, such as know-how about controlling the drilling bids, technology service contractors, and engineering optimization during E&P project planning.

As an early stage decision about going into E&P, a refining company can take part in some consortia of E&P projects in the region with a small equity and with a minimum integration cost. When it attains positive cash flow, it can consider increasing its equity stake so as to strengthen its position and acquire some strategic assets in the consortium.

If a refining company manages to acquire some strategic assets, its E&P venture will no longer be considered a new business. At this point it can broaden its E&P interests with the stability of its refining business unit and newly incorporated E&P business. At this stage, it can accelerate competitiveness in E&P and free itself of geographic limitations. The company might choose to participate in global E&P consortia opportunities and/or to acquire an E&P company, given the refining company can cover the investment.

References

- Aggarwal, R. 2009. "The Diversification Discount Puzzle: Evidence for a Transaction-Cost Resolution." *Financial Review*, 44(1): 113-135.
- Amihud, Y., & Lev, B. 1981. "Risk Reduction as a Managerial Motive for Conglomerate Mergers." *The Bell Journal of Economics*, 12(2): 605-617.
- Andrei, S., & Robert, W. V. 1986. "Large Shareholders and Corporate Control." *The Journal of Political Economy*, 94(3): 461-488.
- Arocena, P. 2008. "Cost and quality gains from diversification and vertical integration in the electricity industry: A DEA approach." *Energy Economics*, 30(1): 39-58.
- Bridge, G., & Wood, A. 2005. "Geographies of knowledge, practices of globalization: learning from the oil exploration and production industry." *Area*, 37(2): 199-208.
- Besanko, D., Dranove, D., Shanley, M. 1996, *Economics of Strategy*. New York: John Wiley & Sons.
- Carlton, D.W., Perloff, J.M. *Modern Industrial Organization: Fourth Edition*. Boston:MA, Pearson
- Claessens, S. 2003. "When does corporate diversification matter to productivity and performance? Evidence from East Asia." *Pacific-Basin Finance Journal*, 11(3).
- Coase, R. H. 1937. "The Nature of the Firm." *Economica*, 4(16): 386-405.
- Constantinos, C. M. 1995. "Diversification, Restructuring and Economic Performance." *Strategic Management Journal*, 16(2): 101-118.
- Fan, J. P. H. 2006. "On the patterns and wealth effects of vertical mergers." *Journal of Business*, 79(2): 877-902.
- Financial Supervisory Service, 2010, Refining Companies Annual Report <http://dart.fss.or.kr/> (Accessed November 18, 2010)
- Frery, F. 2006. "The fundamental dimensions of strategy." *MIT SLOAN Management Review*, 48(1): 71.
- Fukui, Y., & Ushijima, T. 2007. "Corporate diversification, performance, and restructuring in the largest Japanese manufacturers." *Journal of the Japanese and International Economies*, 21(3): 303-323.
- Geringer, J. M., Stephen, T., & David, M. O. 2000. "Product and International Diversification among Japanese Multinational Firms." *Strategic Management Journal*, 21(1): 51-80.
- Finch, H. J. 2002. "Transferring exploration and production activities within the UK's upstream oil and gas industry: a capabilities perspective." *Journal of Evolutionary Economics*, 12(1): 55-81.
- Hallwood, C. P. 1991. "On Choosing Organizational Arrangements: The Example of Offshore Oil Gathering." *Scottish Journal of Political Economy*, 38(3): 227-241.
- Harrigan, K. R. 1985. "Vertical Integration and Corporate Strategy." *The Academy of Management Journal*, 28(2): 397-425.

- Harrigan, K. R. 1985. "Chapter 12" In *Strategies for Joint Ventures*. Lexington, MA: Lexington Books
- Hennart, J.-F. 1988. "A Transaction Costs Theory of Equity Joint Ventures." *Strategic Management Journal*, 9(4): 361-374.
- Hoskisson, R. E., Hitt, M. A., Johnson, R. A., & Moesel, D. D. 1993. "Construct Validity of an Objective (Entropy) Categorical Measure of Diversification Strategy." *Strategic Management Journal*, 14(3): 215-235.
- Ji, H.J., Park, Y.W. 2000, *M&A*, Seoul, Korea, Bub Moon Sa.
- Jiatao, L. 1995. "Foreign Entry and Survival: Effects of Strategic Choices on Performance in International Markets." *Strategic Management Journal*, 16(5): 333-351.
- Jahn, F. 2008. *Hydrocarbon exploration and production*. Amsterdam. 2nd.Edition. Elsevier, 2008.
- Joseph, T. M. 1992. "The Choice of Organizational Form: Vertical Financial Ownership Versus Other Methods of Vertical Integration." *Strategic Management Journal*, 13(8): 559-584.
- Jung, D.S., Chu, K.W., Park, J.H. 2010. *Business Strategy*. Seoul, Korea: Management and Future.
- Kim, H., Hoskisson, R. E., Tihanyi, L., & Hong, J. 2004. "The Evolution and Restructuring of Diversified Business Groups in Emerging Markets: The Lessons from Chaebols in Korea." *Asia Pacific Journal of Management*, 21(1): 25-48.
- Lerche, I., & MacKay, J. A. 1999. *Economic risk in Hydrocarbon Eypxploration*. San Diego: CA: Academic Press.
- Li, M. 2006. "Business groups and market failures: A focus on vertical and horizontal strategies." *Asia Pacific Journal of Management*, 23(4): 439-452.
- Mahoney, J. T. 1992. "The Choice of Organizational Form: Vertical Financial Ownership Versus Other Methods of Vertical Integration." *Strategic Management Journal*, 13(8): 559-584.
- Markides, C. C. 1997. "To Diversify or Not to Diversify." *Harvard Business Review*, 75(6): 93-99.
- Markides, C. C., & Williamson, P. J. 1994. "Related Diversification, Core Competencies and Corporate Performance." *Strategic Management Journal*, 15: 149-165.
- Masten, S. E., Meehan, J. W., Jr., & Snyder, E. A. 1991. "The Costs of Organization." *Journal of Law, Economics, & Organization*, 7(1): 1-25.
- NYSE, 2010, Stock Price Information money.cnn.com/ (Accessed August 10, 2010)
- Olivier, F. 2010. *Corporate Level Strategy: Theory and Applications*. Hoboken, NJ : Taylor & Francis.
- Palich, L. E. 2000. "Curvilinearity in the diversification-performance linkage: An examination of over three decades." *Strategic Management Journal*, 21(2).
- Pehrsson, A. 2006. "Businessrelatedness and performance: a study of managerial perceptions." *Strategic Management Journal*, 27(3): 265-282.
- Penrose, E. 2009. *The Theory of the Growth of the Firm*. 4th Edittion. Oxford : OUP Oxford,

- Peter, J. L., Albert A. Cannella, Jr., & Michael, H. L. 1998. "Agency Problems as Antecedents to Unrelated Mergers and Diversification: Amihud and Lev Reconsidered." *Strategic Management Journal*, 19(6): 555-578.
- Prahalad, C. K. 1990. "The Core Competence of the Corporation." *Harvard Business Review*, 68(3): 79-91.
- Raphael, A., & Joshua, L. 1989. "Efficient Corporate Diversification: Methods and Implications." *Management Science*, 35(7): 879-897.
- Reuer, J. J. 2000. "Parent Firm Performance across International Joint Venture Life-Cycle Stages." *Journal of International Business Studies*, 31(1): 1-20.
- Reuer, J. J. 2001. "From Hybrids to Hierarchies: Shareholder Wealth Effects of Joint Venture Partner Buyouts." *Strategic Management Journal*, 22(1): 27-44.
- Saeed, J. 14 Dec, 2007. *Contemporary Corporate Strategy : Global Perspectives (1st ed.)*: Routledge.
- Schaede, U. 2008. *Choose and Focus: Japanese Business Strategies for the 21st Century*. Ithaca:NY, Cornell University Press.
- SEC. 2010, Companies Annual Report(K-10, F-20).
<http://www.sec.gov/edgar/searchedgar/companysearch.html> SEC Company Search (Accessed September 2010)
- Shell. 2010. Historical refining margin <http://www.shell.com/> (Accessed August 10, 2010)
- Shleifer, A., & Vishny, R. W. 1990. "The Takeover Wave of the 1980s." *Science*, 249(4970): 745.
- Skaf, M. A. 1999. "Portfolio Management in an Upstream Oil and Gas Organization." *Interfaces*, 29(6): 84-104.
- Stuckey, J. A. 1983. *Vertical Integration and Joint Ventures in the Aluminum Industry*. Cambridge, MS: Harvard University Press
- Very, P. 1993. "Success in diversification: Building on core competences." *Long Range Planning*, 26(5): 80-92.
- Wiersema, M. F. 1995. "The Effects of Leveraged Buyouts on Corporate-Growth and Diversification in Large Firms." *Strategic Management Journal*, 16(6): 447-460.
- Williamson, O. E. 1971. "The Vertical Integration of Production: Market Failure Considerations." *The American Economic Review*, 61(2): 112-123.