

THE RELATIONSHIP BETWEEN FUNCTIONS, ASSETS AND RISKS, AND PROFITABILITY

ความสัมพันธ์ระหว่างหน้าที่งาน ทรัพย์สิน และความเสี่ยง กับความสามารถในการทำกำไร*

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บทคัดย่อ

บทความนี้มีวัตถุประสงค์เพื่อศึกษาความสัมพันธ์ระหว่างหน้าที่งาน ทรัพย์สิน และความเสี่ยงประเภทต่าง ๆ กับความสามารถในการทำกำไร และการเปลี่ยนแปลงของความสัมพันธ์ดังกล่าว เมื่อบริษัทเลือกใช้กลยุทธ์ทางธุรกิจที่แตกต่างกัน และอยู่ในอุตสาหกรรมหลักที่แตกต่างกัน การศึกษาใช้การวิจัยเชิงสำรวจ โดยการแจกแบบสอบถามให้กับบริษัทผู้ผลิตขนาดใหญ่จำนวน 385 บริษัท ที่อยู่ภายใต้การกำกับดูแลของสำนักบริหารภาษีธุรกิจขนาดใหญ่ กรมสรรพากร สถิติที่ใช้ในการวิเคราะห์คือ การวิเคราะห์กลุ่มย่อยโดยใช้ Chow test และการวิเคราะห์ถดถอยพหุ การศึกษายังใช้การสัมภาษณ์เจาะลึกผู้บริหารระดับสูงของบริษัทผู้ผลิตขนาดใหญ่จำนวน 10 ท่าน โดยใช้การวิเคราะห์เนื้อหาในการวิเคราะห์ข้อมูล ผลการศึกษาพบว่าหน้าที่งาน ทรัพย์สินที่ไม่มีรูปร่าง และความเสี่ยงประเภทต่าง ๆ มีความสัมพันธ์กับความสามารถในการทำกำไรของบริษัท โดยที่ความสัมพันธ์นี้แตกต่างกันไปตามประเภทของมาตรวัดความสามารถในการทำกำไรที่ใช้ ผลการศึกษายังพบว่า กลยุทธ์ทางธุรกิจและอุตสาหกรรมหลักของบริษัทเป็นตัวแปรที่ไปปรับเปลี่ยนความสัมพันธ์ดังกล่าว โดยที่อุตสาหกรรมหลักเป็นตัวแปรปรับที่มีอิทธิพลมากกว่ากลยุทธ์ทางธุรกิจ กล่าวโดยละเอียด การผลิตและทรัพย์สินที่ไม่มีรูปร่างด้านการผลิตส่งผลในทางบวกต่อความสามารถในการทำกำไรของบริษัทที่เลือกใช้กลยุทธ์ความเป็นผู้นำด้านต้นทุน และบริษัทที่อยู่ในอุตสาหกรรมสินค้าผู้ผลิต ในขณะที่การตลาดและทรัพย์สิน

*บทความนี้เรียบเรียงจากวิทยานิพนธ์เรื่อง ความสัมพันธ์ระหว่างหน้าที่งาน ทรัพย์สิน และความเสี่ยงกับความสามารถในการทำกำไร ซึ่งได้ผ่านการสอบป้องกันวิทยานิพนธ์เรียบร้อยแล้ว โดยมีคณาจารย์ที่ปรึกษา 3 ท่าน คือ รองศาสตราจารย์ ดร.ฉวี นิลใบ ดร.คณัย ปัตตพงษ์ และดร.พล ชีรคุปต์ และคณะกรรมการสอบป้องกันวิทยานิพนธ์ 5 ท่าน คือ รองศาสตราจารย์พิเศษ ดร.จิรโชค วีระสย รองศาสตราจารย์ อุไรวรรณ แยมนิยม ผู้ช่วยศาสตราจารย์ ดร.ชัชพงษ์ ตั้งมณี ผู้ช่วยศาสตราจารย์ ดร.กังวาน ยอดวิเศษศักดิ์ และดร.วรรณ โฉม พงสุวรรณ
**นักศึกษารับปริญญาเอก โครงการปรัชญาดุษฎีบัณฑิตทางสังคมศาสตร์ สาขาวิชาบริหารธุรกิจ คณะบริหารธุรกิจ มหาวิทยาลัยรามคำแหง

ที่ไม่มีรูปร่างด้านการตลาดส่งผลในทางบวกต่อความสามารถในการทำกำไรของบริษัทที่เลือกใช้กลยุทธ์ด้านความแตกต่างและบริษัทที่อยู่ในอุตสาหกรรมสินค้าอุปโภคบริโภค ผลการศึกษายังชี้ให้เห็นว่าโดยทั่วไปแล้ว การวิจัยและพัฒนาและการบริหารบุคคลส่งผลในทางบวกต่อความสามารถในการทำกำไรมากกว่าการเงิน ในขณะที่ผลกระทบของความเสี่ยงจากความผันผวนของเศรษฐกิจและอัตราดอกเบี้ยต่อความสามารถในการทำกำไรอาจเป็นบวก เป็นลบ หรือ ไม่ชัดเจน ผลการศึกษาดังกล่าวสามารถนำมาประยุกต์ใช้กับการบริหารเชิงกลยุทธ์ การกำหนดราคาโอน และการศึกษาเปรียบเทียบทางภาษีอากร

คำสำคัญ: (1) หน้าที่งาน (2) ทรัพย์สิน (3) ความเสี่ยง (4) ความสามารถในการทำกำไร (5) การกำหนดราคาโอน

ABSTRACT

This paper aims to study the relationship between functions, assets and risks, and profitability, and the change in such relationship when firms adopt different business strategies and engage in different industries. The study involved a survey research in which the questionnaires were distributed to 385 large manufacturing firms under supervision of Bureau of Large Business Tax Administration, Revenue Department. The statistical techniques utilized in the analysis were subgroup analysis basing on Chow test and multiple regression analysis. The study also used in-depth interview to collect data from 10 executives of large manufacturing firms, and these data were analyzed by mean of content analysis. The study found that functions, intangible assets and risks have the relationship with firms' profitability where such relationship varies depending on the types of profitability measure used. The study also found that firms' business strategy and main industry are the moderators that change the relationship between functions, intangible assets and risks, and profitability where main industry has stronger influence than business strategy. That is, production and manufacturing intangibles positively affect profitability of firms adopting cost leadership strategy and firms engaging in producer goods industry whereas marketing and marketing intangibles positively affect profitability of firms adopting differentiation strategy and firms engaging in consumer goods industry. The findings also show that, in general, research and development and personnel management have more positive effects on profitability than finance. Nonetheless, the effects of risks from fluctuation of economy and interest rate on profitability may be positive, negative, or unclear. The findings of the study can be applied to strategic management, transfer pricing, and benchmarking study for taxation.

Keyword: (1) Function (2) Asset (3) Risk (4) Profitability (5) Transfer pricing

INTRODUCTION

The fact that some firms have better profitability than others has prompted researchers to investigate and search for a theory to explain the relationship between factors controlling or indicating firms' characteristics and behaviors, and profitability. The understanding of such relationship is crucial for economy at both micro-level and macro-level. At micro-level, such relationship can assist firms in improving their profits and in allocating profits among subsidiaries of group companies via transfer prices. OECD (1996) proposed the use of the relationship between functions performed, assets employed and risks assumed, and firms' profitability (concerning firms' business strategy and main industry) to allocate profits among subsidiaries via transfer prices.

At macro-level, better profitability enables firms to expand their production capacity and increase employment. Hence, government can collect more taxes for country development. All of these aspects have a vital role in increasing total wealth of the whole economy. In addition, the relationship between firms' functions, assets and risks, and profitability (concerning business strategy and main industry) is now widely used by many countries in setting their tax policy regarding transfer price (e.g. the Departmental Instruction No. Paw. 113/2545 in Thailand).

Since multinational corporations often set up their subsidiary as a production base in developing countries, such relationship affects tax cost of their subsidiary via transfer price, thus influencing the investment and international trade volume of countries around the world, including Thailand. From governments' perspective, such relationship has helped in determining of the appropriate and fair transfer prices for tax purpose, thus increasing the willingness of taxpayers to pay tax. From these considerations, the author was interested in investigating whether such relationship is hold for large manufacturing firms in Thailand, and how.

The author considered 5 main functions generally performed by manufacturing firms, i.e. research & development ("RD"), production ("PROD"), marketing ("MKT"), finance ("FIN"), and personnel management ("HR") (Gabrielsson *et al.*, 2004; Hitt *et al.*, 2001; Hooley *et al.*, 1999; Ireland *et al.*, 1990; Rosenzweig & Roth, 2004). From both types of assets that manufacturing firms normally use, i.e. tangible and intangible assets, the author considered intangible assets as they have more importance in generating profits than tangible assets (Gabrielsson *et al.*, 2004; Hitt *et al.*, 2001), especially manufacturing intangibles ("TECH") and marketing intangibles ("BRAND") (Deramus, 1999). Also, from both types of risks assumed by manufacturing firms, i.e. systematic risks (the risks that affect all firms in market) and specific risks (the risks that affect firms specifically), the author considered only systematic risks as they

have greater effects on firms (Fama & French, 1992; French 2003), especially the risks from fluctuation of economy (“GDP”) and interest rate (“INT”). In measuring profitability, the author used 3 measures, i.e. net profit on sales (“NPOS”), net profit on assets (“NPOA”), and net profit on shareholders’ equity (“NPOE”) (Wattanakul, 2002; Zehir *et al.*, 2006). Net profits, sales, and assets used in calculating profitability come from normal operation, excluding all extra-ordinary items.

The study also included business strategy and main industry as the moderators affecting the relationship between independent variables and dependent variables (Gibson & Birkinshaw, 2004; Spanos *et al.*, 2004). Miller (1988a) pointed out that three business strategies proposed by Porter (1980), in essence, can be grouped into two business strategies, i.e. cost leadership strategy (“COST”) and differentiation strategy (“DIF”) as focus strategy can be viewed as a part of both strategies. In their study, Hooley *et al.* (1999) classified industries basing on buyer types, i.e. producer goods industry (“PRODUCER”) whose goods are sold to producers for business uses or further processes, and consumer goods industry (“CONSUMER”) whose goods are sold to consumers for personal uses.

In developing constructs and measurement scales, Resource-based Theory of Firm was applied for measuring functions and intangible assets while Theory of Capital Asset Pricing Model was applied for measuring risks. This study has contributed substantial benefits to academics as it helps confirming whether both theories (which are main theories in the fields of strategic management and financial economics, respectively) can be applied to firms in Thailand. In addition, business strategy (involving the concept of Porter (1980)’s Five Forces Model) and main industry (involving the concept of Structure-Conduct-Performance Paradigm) were also examined for their moderating effects on the relationship between functions, intangible assets and risks, and profitability. With that in mind, the research objective is to study the relationship between RD, PROD, MKT, FIN, HR, TECH, BRAND, GDP and INT, and NPOS, NPOA and NPOE, and the differences in such relationship between firms adopting COST and DIF, and between firms engaging in PRODUCER and CONSUMER.

LITERATURE REVIEW

The study of the relationship between factors controlling or indicating firms’ characteristics and behaviors, and firms’ performance has long history and is controversial. There are two main streams in this field of research; one course is supporting the importance of firms’ external factors, e.g. market structure, competitive environment and market risk, and the other course is

advocating the significance of firms' internal factors, e.g. resource, capability and competency. In the past, the Structure-Conduct-Performance Paradigm ("SCP paradigm"), among five schools of thought in industrial organization economics, is the dominant theory in explaining the relationship between firms' external factors and their performance (Conner, 1991). SCP paradigm proposes that market structure (i.e. the distribution of number and size of firms in industry) is the factor determining the behaviors of market (i.e. the interactions among firms in that industry) and these behaviors in turn determine firms' performance (e.g. profitability, growth rate, market share). Researchers in SCP paradigm thus believe that the difference in firms' performance originates from the internal structure of industry and its competitive environment, and that market characteristics, e.g. indices of industry concentration, measures of economies of scale and measures of barriers to entry, can be utilized as independent variables in explaining firms' performance, including profitability (Capon *et al.*, 1990). Nonetheless, the proposition of SCP paradigm cannot explain the important question why firms operating in the same industry still have different performance. Besides, some research results indicate that market characteristics or industry factors can explain only 20 percent of the variation of firms' performance (Acquaah, 2000). This phenomenon has prompted researchers to investigate and search for other factors that can explain another 80 percent of the variation of firms' performance.

Accordingly, researchers have diverted their focus to examine firms' internal factors, e.g. resource, capability and competency. The dominant school of thought in this main stream is the Resource-based Theory of Firm ("RBT"). RBT proposes that firms are basically different in terms of internal resources and capabilities, and if such resources and capabilities are valuable, rare, inimitable, and non-substitutable (together called "distinctive"), firms can create sustainable competitive advantage and have better performance (Barney, 1991; Ulrich & Smallwood, 2004; Zehir *et al.*, 2006). The causal ambiguity and path-dependence are the key properties that protect firms' resources and capabilities from imitation by competitors, thus making firms' competitive advantage sustainable.

Apart from researchers in the fields of industrial organization economics and strategic management, researchers in the field of financial economics are also interested in searching for factors explaining the variation of firms' profitability. Viewing that firms' profit is one type of asset return, financial economists examine the relationship between financial variables, e.g. systematic risk, and firms' profitability (Slade, 2004). One of the important theories in this field is the Theory of Capital Asset Pricing Model ("CAPM"), which proposes that the expected return of asset is equal to the return of risk-free asset plus the additional return compensating for systematic risk of that asset where systematic risk is the risk that cannot be diversified by holding

a portfolio of assets (Fama & French, 1992; French, 2003; Mullins, 1982).

Concept of functions under Resource-based Theory of Firm

The classification of firms' activities into various functions is commonly found in business practices. OECD (1996) proposes that functions which can affect firms' profitability must compose of economically significant activities. By applying RBT, to measure economic significance of functions is, therefore, to measure whether such functions are performed by using distinctive capabilities according to Barney (1991)'s definition. In other words, the difference in firms' profitability is resulted from the difference in firms' distinctive resources and capabilities. Webster (1992) and Day (1994) suggested frameworks for searching distinctive capabilities and resources where Webster viewed them via 3 dimensions; (i) cultural level, (ii) strategic level, and (iii) operating level, and Day viewed them via 3 processes: (i) Outside-in process, emphasizing first on forecasting firm's external environment, and then on managing firm's internal capabilities and resources to respond to external environment, (ii) Inside-out process, emphasizing first on developing internal capabilities and resources, and then on applying them to external environment, and (iii) Spanning process, resulting from combining Outside-in process with Inside-out process. Researchers use Webster's and Day's frameworks to search for distinctive capabilities that produce competitive advantage and positively affect firms' profits for each function as follows:

Research & development The research & development function is defined as the activities that firm performs in order to develop and improve firm's product and manufacturing process by using two distinctive capabilities, i.e. (i) capability in sensing the stability of firm's external environment and (ii) capability in leveraging firm's diversification strategy. These two distinctive capabilities assist firm in making decision regarding (i) the types of research & development, i.e. product development and process improvement, (ii) the level of investment in research & development, and (iii) the types of linkage and the degree of control between research department and other departments (Hough & White, 2003; Ireland *et al.*, 1990; Lapre *et al.*, 2000), thus creating sustainable competitive advantage and improving profitability.

Production The production function is defined as the activities that firm performs in order to produce goods whose characteristics are consistent with firm's objectives by using four distinctive capabilities, i.e. (i) conformance quality capability, (ii) delivery reliability capability, (iii) volume flexibility capability, and (iv) low cost capability. In the process of developing higher capabilities, i.e. from quality, reliability, flexibility to low cost, respectively, firm has to increase the degree of integration and coordination among various processes, starting from those at factory level to those at supply chain level (involving suppliers and customers). The development of

production capabilities enables firm to produce the right amount of non-defect goods at the right time with low costs, hence producing sustainable competitive advantage and enhancing profitability (Boyer & Lewis, 2002; Flynn & Flynn, 2004; Rosenzweig & Roth, 2004).

Marketing The marketing function is defined as the activities that firm performs in order to deliver goods to customers under the conditions that fulfill's objectives by using two distinctive capabilities, i.e. (i) capability in creating clear and distinctive market position and (ii) capability in building relationship with customers via product, price, place, and promotion (Day, 1994; Hooley *et al.*, 1999; Webster, 1992). Hooley *et al.* (1999) found that clear and distinctive market position as well as strong relationship with customers has positive effects on firms competitive advantage and performance. Besides, as market position and customer relationship have causal ambiguity and are path-dependent, it is difficult for competitors to imitate, thus creating sustainable competitive advantage and improving profitability.

Finance The finance function is defined as the activities that firm performs in order to support its other activities in the form of employing financial resources through various organizational processes by using three distinctive capabilities, i.e. (i) financial management capability (financing, investment and liquidity management), (ii) internal auditing capability, and (iii) capability in complying accounting and financial regulations. These three distinctive capabilities assist firm by lowering financing costs and signaling firm's financial stability, hence creating sustainable competitive advantage and improving profitability (Amit & Schoemaker, 1993; Eisenhardt & Martin, 2000; Gabrielsson *et al.*, 2004; Hitt *et al.*, 1982).

Personnel management The personnel management function is defined as the activities that firm performs in order to support its other activities in the form of employing human resources through recruitment, development and deployment by using three distinctive capabilities, i.e. (i) capability in building and maintaining appropriate composition of personnel, (ii) capability in accelerating learning process to create firm's knowledge, and (iii) capability in motivating personnel. These three distinctive capabilities assist firm in terms of increasing firm's productivity, creating firm's knowledge, and improving firm's creativity, thus producing sustainable competitive advantage and enhancing profitability (Daily *et al.*, 2000; Hitt & Ireland, 1985; Hitt *et al.*, 2001; Ittner, *et al.*, 2001; Lepak & Snell, 1999; Szulanski, 1996).

Concept of intangible assets under Resource-based Theory of Firm

Analogous to the application of RBT to functions, to measure the economic significance of intangible assets is to measure whether such intangible assets are composed of distinctive resources. By using Webster (1992)'s and Day (1994)'s frameworks, researchers propose distinc-

tive resources that create competitive advantage and positively affect firms' profits for each intangible asset as follows:

Manufacturing intangibles The manufacturing intangibles is defined as the intangible asset that firm employs in operating various production activities in order to create competitive advantage, composing of two distinctive resources, i.e. (i) operational knowledge and (ii) technique in reducing statistical variation of production. Firm can use this intangible asset to improve productivity and reduce waste of manufacturing process (Corbett & Kirsch, 2001; Grant, 1996; Lapre *et al.*, 2000; Rosenzweig & Roth, 2004; Schmenner & Swink, 1998).

Marketing intangibles The marketing intangibles is defined as the intangible asset that firm employs in operating various marketing activities in order to create competitive advantage, consisting of two distinctive resources, i.e. (i) market orientation and long-term stance of firm in marketing and (ii) firm's reputation. Firm can use this intangible asset to increase effectiveness and decrease cost of marketing activities, e.g. launching new product (Doyle & Hooley, 1992; Greenley & Foxall, 1998; Hough & White, 2003; Kohli & Jaworski, 1990; Narver & Slater, 1990; Shrum & Wuthnow, 1988).

Concept of risks under Theory of Capital Asset Pricing Model

According to CAPM, the economic significance of systematic risk depends on the degree of change in firm's profit rate comparing to the change in market rate of return when the factor causing such risk, e.g. interest rate, changes. Thus, to measure the economic significance of systematic risks is to measure whether such risks are non-diversifiable and have high impacts on firms' profitability comparing to the change in market rate of return. Two of the most important systematic risks are as follows:

Risk from fluctuation of economy The risk from fluctuation of economy is defined as the potential loss of firm resulting from the fluctuation of economy (GDP growth). Since this risk affects firms' performance in general (จิราวรรณ นวลเจริญ, 2543; ชีระพงษ์ วิทิตเสรษฐ, 2546), firms expect the return from bearing this risk by adding risk premium to the prices of goods.

Risk from fluctuation of interest rate The risk from fluctuation of interest rate is defined as the potential loss of firm resulting from the fluctuation of interest rate. Since this risk affects firms' performance in general (ชีระพงษ์ วิทิตเสรษฐ, 2546), firms expect the return from bearing this risk by adding risk premium to the prices of goods.

Concept of business strategy under Porter (1980)'s Five Forces Model

Influenced by five competitive forces, i.e. threat of new entrants, power of suppliers, power of buyers, availability of substitutes, and competitive rivalry, business strategy involves the

determination of targeted market that firm chooses to enter and the approach that firm chooses to use in competing with other firms in that market (Porter, 1980). Porter proposed that firms can carry out 3 types of business strategy, i.e. cost leadership strategy, differentiation strategy and focus strategy which, in essence, can be grouped into two types, i.e. cost leadership strategy and differentiation strategy, according to Miller (1988a). Barney (1991) viewed that Porter's concept of business strategy primarily aims to firms' external factors or market conditions (following the SCP paradigm), naturally involving opportunity and threat in SWOT diagram. Nonetheless, Lynch (1998) pointed out that the weakness of explanation basing on external factors is its inability to clarify why firms have different performance even when they are competing in the same industry. Lynch proposed the approach that aims to firm's internal factors (following the RBT), naturally involving strength and weakness in SWOT diagram. Lynch found that there are the linkages among business strategy, capability/resource and performance, i.e. the appropriate matching between strategy and capability/resource has positive effects on firms' performance. In other words, business strategy affects the relationship between functions and intangible assets, and profitability.

Concept of main industry under the Structure-Conduct-Performance Paradigm

In studying the effects of industry on firms' performance, industrial classification is the building block for measuring the environment of industry (Dess & Beard, 1984). Spanos *et al.* (2004) figured out that the high performance firms are frequently found in the high profitability industries. Hooley *et al.* (1999) suggested industry classification basing on buyer types, i.e. producer goods industry and consumer goods industry as the structures and conducts of these two industries exhibit large difference, therefore unequally affecting firms' profitability of both industries.

Concept of business strategy and main industry as moderators

Gibson and Birkinshaw (2004) and Miller (1988b) pointed out that the success of firms relies on the consistency among distinctive capabilities, business strategy, and environment (e.g. industry). Firms give importance to capabilities, processes, activities, and functions that make firms success, and allocate more resources to them than others (Lumpkin & Dess, 2006). Firms adopting cost leadership strategy are appropriate for the simplistic approach, which reduces the scope and variety of activities that firms performed, and emphasizes only on activities that are important and necessary, i.e. production, finance, personnel management, and manufacturing intangibles (Lumpkin & Dess, 2006; Porter, 1996; Pozzebon, 2004; Spanos *et al.* 2004). Nonetheless, firms adopting differentiation strategy need more creative thinking, more variety of activities, and more flexible structure, therefore the important functions and intangible assets are research &

development, marketing, finance, personnel management and marketing intangibles (Lumpkin & Dess, 2006; Porter, 1996; Pozzebon, 2004; Spanos *et al.* 2004)

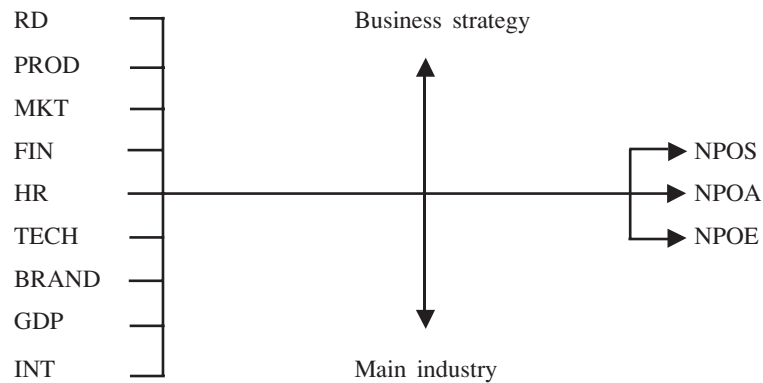
Firms engaging in producer goods industry sell their goods to producers for business uses or further processes, therefore price and quality of goods are required to match the producers' needs. As a result, production efficiency and quality control are more important than marketing activities. Design and customization, as well as employing and keeping specialists, are also necessary activities (Hitt & Ireland, 1985; Pozzebon, 2004; Spanos *et al.* 2004). The important functions and intangible assets are research & development, production, finance, personnel management, and manufacturing intangibles. Firms engaging in consumer goods industry sell their goods to consumers for personal uses. Market for this type of goods is sizable and has heterogeneous buyers. To be widely accepted, firms must produce quality goods using mass production efficiently. Fierce competition requires emphasis on finance activities and marketing activities that use personnel's creative thinking (Hitt & Ireland, 1985; Lumpkin & Dess, 2006; Pozzebon, 2004; Spanos *et al.* 2004). As a result, the important functions and intangible assets are production, marketing, finance, personnel management, manufacturing intangibles and marketing intangibles.

RESEARCH FRAMEWORK

Even though there are research works that examine the relationship between functions and firms' profitability, between intangible assets and firms' profitability, and between risks and firms' profitability, to the author's knowledge, there is no any research work that studies the relationship between functions, intangible assets and risks, and firms' profitability simultaneously, taking in to account the roles of business strategy and main industry. With the literature reviewing of past researches, the hypothesized relationship of all variables is shown below:

From the above diagram, the author hypothesized that 9 independent variables, i.e. RD, PROD, MKT, FIN, HR, TECH, BRAND, GDP and INT have relationship with each of 3 dependent variables, i.e. NPOS, NPOA and NPOE, and that business strategy, i.e. COST and DIF, and main industry, i.e. PRODUCER and CONSUMER, are the moderators affecting such relationship.

Basing on all observations of sample group, the author used multiple regression analysis to investigate the relationship between 9 independent variables and each of 3 dependent variables, one at a time. Hypothesis 1 was tested as follow:



H1: For large manufacturing firms in Thailand, RD, PROD, MKT, FIN, HR, TECH, BRAND, GDP and INT have the relationship with NPOS, NPOA and NPOE (details of all expected signs of relationship are shown in table 1)

Then, the author used subgroup analysis basing on Chow test (Chow, 1960; Sharma *et al.*, 1981) to investigate the change in such relationship when firms adopt different business strategies and engage in different main industries. The subgroup analysis started from examining the restricted model using multiple regression analysis (which using all observations of sample group). Then, the full model was examined using multiple regression analysis (which using observations from each sub-sample group categorized by business strategy and by main industry). After that, the analyses for testing the difference of the relationship between independent variables and each of 3 dependent variables were performed using Chow test, i.e. comparing the F-statistics calculated according to the following formula with the F-statistics obtained from standard table,

$$F(DF_1, DF_2) = \frac{[SSE_{Total} - (SSE_{Group1} + SSE_{Group2})] / DF1}{(SSE_{Group1} + SSE_{Group2}) / DF1}$$

SSE = Sum of Squared Error DF = Degree of Freedom

Hypotheses 2 and 3 were tested as follows:

H2: For large manufacturing firms in Thailand, the relationship between RD, PROD, MKT, FIN, HR, TECH, BRAND, GDP and INT, and NPOS, NPOA and NPOE changes when firms adopt different business strategies (details of all expected sings of relationship are shown in table 3)

H3: For large manufacturing firms in Thailand, the relationship between RD, PROD, MKT, FIN, HR, TECH, BRAND, GDP and INT, and NPOS, NPOA and NPOE changes when firms engage in different main industries (details of all expected sings of relationship are shown in table 3)

Finally, the results of multiple regression analysis of full model (by using observations from sub-sample groups of firms adopting different business strategies and engaging in different main industries) were used to investigate the relationship between 9 independent variables and each of 3 dependent variables.

RESEARCH METHOD

This study mainly involved a quantitative research using questionnaire as an instrument for collecting field data while in-depth interview was used to support the quantitative results. The questionnaire consists of 3 parts, i.e. questions regarding general information of firms and respondents, questions regarding firms' business strategy and main industry, and questions regarding firms' functions, intangible assets and risks. The variables used are independent variables, i.e. RD, PROD, MKT, FIN, HR, TECH, BRAND, GDP and INT, dependent variables, i.e. NPOS, NPOA and NPOE, and moderators, i.e. COST, DIF, PRODUCER and CONSUMER. The interview form composes of 4 parts, i.e. questions regarding firms' basic information, questions regarding firms' business strategy and main industry, questions regarding the effects of functions, intangible assets and risks on firms' profitability, and questions regarding the effects of business strategy and main industry on firms' decision concerning functions, intangible assets and risks.

The development of research instruments and quality testing started from reviewing relevant documents and literatures in order to refine research framework. The measurement items were developed, and then reviewed by a group of experts in order to validate the items measuring each construct. Content validity was tested using IOC score (Index of Item-Objective Congruence Score) before bringing all the measured items to tryout with sample group. The data collected from pretest were factor analyzed by using principal component analysis with varimax rotations, and then reliability test was performed using Cronbach's alpha. At the end, some revisions of questionnaire were made on the basis of pretest before reviewing again by the same group of experts to validate. The IOC score of 68 measurement items are ranged from .80 to 1.00. For example, "How strong do you agree that your company has introduced new product ahead of your competitors in the market" has IOC score .80. Respondents can indicate their opinion by rating the score from 1 to 5 (1=strongly do not agree; 5=strongly agree). Regarding the in-depth interview, the interview form was also content validated by the same group of experts before bringing such form to tryout and to test its reliability.***

In main survey, the data were collected using questionnaires distributed to top executives or their delegates of large manufacturing firms under supervision of Bureau of Large

Business Tax Administration, Revenue Department. Due to limitation of database, the author had to sampling first the name list of firms from 30 business types, and then retrieved additional information from database in order to screen out inappropriate firms. By using simple random sampling, the author obtained the name list of 750 firms (from total 1,500 firms) and after discarding 365 inappropriate firms (firms that cease/dissolve operation or bankruptcy, that have incomplete information, and that are holding companies or trading companies), the sample reduced to 385 firms, which is more than 306, the figure obtained from the table of Krejcie and Morgan (1970, pp. 608-609), with targeted 5 percent error and at confident level .95. The author asked for cooperation from Revenue officers in distributing questionnaires to firms' executives, and finally received the responses from total 385 firms (100 percent).

In assessing the validity of measures, data of all measurement items were factor analyzed by using principal component analysis with varimax rotations. A set of 68 items was factorized into 14 groups consisting of 5 groups of function, 2 groups of intangible asset, 2 groups of risks, and 5 groups of the remaining. Items found in the remaining 5 groups, which have highest factor loading inconsistent with the relevant constructs, were considered together with the results of reliability test (using Cronbach's alpha) in order to determine which items should be excluded from the analysis. At the end, the Cronbach's alpha of all constructs after excluding some items are ranged from .720 to .901, which are above .700.

Before analyzing the data collected, the author examined the abnormalities of the data, i.e. extreme value, outlier, high leverage and high influence, and tested the assumptions for using multiple regression analysis, i.e. linearity, normality, heteroscedasticity, multicollinearity, and autocorrelation. Then, the multiple regression analysis and the subgroup analysis basing on Chow test were performed. For in-depth interview, the information collected was analyzed by using content analysis.

RESEARCH RESULTS

1. From table 1, results of multiple regression analysis support H1. For large manufacturing firms, 9 independent variables together can explain the variation of NPOS, NPOA and NPOE 19.5 percent, 23.8 percent and 12.4 percent, respectively. The independent variables that are significant at .05 level for NPOS are MKT, TECH and BRAND, for NPOA are MKT,

***The details of questionnaire and interview from are available upon request.

HR and BRAND, and for NPOE are MKT and HR. In addition, the independent variables that are significant at .10 level for NPOA is FIN, and for NPOE are RD, TECH and BRAND. For NPOS, it is found that no independent variable is significant at this level.

2. From table 2, results of subgroup analysis basing on Chow test support H2. The F-statistics from Chow test for the analysis of relationship between 9 independent variables and NPOS, NPOA and NPOE using business strategy as moderator are $F(10,354) = 6.25$, $F(10,357) = 8.14$ and $F(10,332) = 2.68$, respectively, all of which are significant at .05 level. This indicates that business strategy has moderating effect on the relationship between functions, intangible assets and risks, and profitability. In addition, from table 2, results of subgroup analysis basing on Chow test also support H3. The F-statistics from Chow test for the analysis of relationship between 9 independent variables and NPOS, NPOA and NPOE using main industry as moderator are $F(10,354) = 8.88$, $F(10,357) = 10.28$ and $F(10,332) = 4.76$, respectively, all of which are significant at .05 level. This indicates that main industry has moderating effect on the relationship between functions, intangible assets and risks, and profitability.

3. From table 3, results of multiple regression analysis indicate that, for large manufacturing firms adopting cost leadership strategy, 9 independent variables together can explain the variation of NPOS, NPOA and NPOE 42.3 percent, 41.2 percent and 16.8 percent, respectively. The independent variables that are significant at .05 level for NPOS are PROD, FIN, HR, TECH and GDP, for NPOA are PROD, HR, TECH and GDP, and for NPOE are HR, TECH and GDP. In addition, the independent variable that is significant at .10 level for NPOE is FIN. For NPOS and NPOA, it is found that no independent variable is significant at this level.

For large manufacturing firms adopting differentiation strategy, 9 independent variables together can explain the variation of NPOS, NPOA and NPOE 20.4 percent, 31.5 percent and 16.2 percent, respectively. The independent variables that are significant at .05 level for NPOS are MKT, BRAND and INT, for NPOA are RD, PROD, MKT and BRAND, and for NPOE are MKT and BRAND. In addition, the independent variables that are significant at .10 level for NPOA are FIN and TECH, and for NPOE are RD and TECH. For NPOS, it is found that no independent variable is significant at this level.

4. From table 3, results of multiple regression analysis also indicate that, for large manufacturing firms engaging in producer goods industry, 9 independent variables together can explain the variation of NPOS, NPOA and NPOE 32.8 percent, 40.1 percent and 19.0 percent, respectively. The independent variables that are significant at .05 level for NPOS are RD, PROD, TECH and BRAND, for NPOA are RD, PROD, TECH and BRAND, and for NPOE are RD, PROD, TECH and BRAND. In addition, the independent variable that is significant at .10

level for NPOS is INT. For NPOA and NPOE, it is found that no independent variable is significant at this level. For large manufacturing firms engaging in consumer goods industry, 9 independent variables together can explain the variation of NPOS, NPOA and NPOE 34.5 percent, 36.9 percent and 23.3 percent, respectively. The independent variables that are significant at .05 level for NPOS are PROD, MKT, HR and BRAND, for NPOA are PROD, MKT, HR and BRAND, and for NPOE is MKT. In addition, the independent variables that are significant at .10 level for NPOS is GDP, and for NPOE is HR. For NPOA, it is found that no independent variable is significant at this level.

5. The results of in-depth interview regarding the relationship between functions, intangible assets and risks, and profitability are as follows: (i) the majority of executives agreed that RD, PROD, FIN and TECH have positive effects on firms' profitability; (ii) a half of executives agreed that that MKT, HR, BRAND and GDP have positive effects on firms' profitability; and (iii) the minority of executives agreed that INT has positive effects on firms' profitability.

The results from in-depth interview reveal that functions and intangible assets can enhance firms' profitability by increasing their revenues or decreasing their costs. Some of the reasons provided by executives regarding the ways to increase revenues are as follows: (i) RD helps designing new product or creating new food recipe, (ii) PROD helps producing quality product that meets customers' requirement, (iii) MKT helps differentiating firms' product from others, (iv) FIN helps enhancing firms' ability to provide credit term to customers, (v) HR helps motivating staff to create new concept, (vi) TECH helps producing high quality and reliable product, and (vii) BRAND helps building consumer's confidence in purchasing product. Some of the reasons provided by executives regarding the ways to decrease costs are as follows: (i) RD helps finding a method to reduce scraps and wastes, (ii) PROD helps producing goods at low costs, (iii) MKT helps reducing the costs of launching new product into market, (iv) FIN helps lowering financing costs, (v) HR helps developing the skills of labor, (vi) TECH helps minimizing wastes incurred from production process, and (vii) BRAND helps reducing the costs of introducing new product.

The results from in-depth interview also reveal that risks assumed by firms can positively affect firms' profitability when (i) risk premium that firms add to the price of goods is more than enough to compensate for the damage incurred by such risk and (ii) firms can pass their risks to counter parties of the transactions. For instance, in signing contract, customer provides a guarantee to buy all of the outputs produced by firm.

The following is an example of information obtained from interview: "...Our company is one of the leading manufacturers in beverage business. As the life-cycle of beverage product

is short, the company must keep launching new product repeatedly. The company's important key is the market research aiming to explore customers' needs where information obtained can be used to improve the products in terms of taste, smell, appearance, and packaging. Relatively, we think that marketing activities are far more important than production activities. The reason is that the technology in manufacturing beverage products is rather simple while the ability to catch market trend is far more complex. In addition, brand is also the crucial factor for the company. In introducing new beverage product to market, the chance that such product succeeds is minimal if the brand of that company is not strong or well-known. Accordingly, the company has a very strict policy in protecting our brand from infringing by other parties. Concerning the risks from fluctuation of economy and interest rate, they should not affect the company much as beverage products are the daily life consumer products. ...”

6. The results of in-depth interview regarding the moderating effects of business strategy and main industry on the relationship between functions, intangible assets and risks, and profitability indicate that almost all executives agreed that business strategy and main industry affect firms' decision making concerning functions performed, intangible assets employed and risks assumed.

The results of in-depth interview show that business strategy affects firm's decision making concerning functions, intangible assets and risks by determining the framework of what functions and intangible assets firm should emphasize, what risks firm needs to undertake, and how resources are allocated among all departments. For instance, the objective to emphasizing cost and quality necessitates firm to allocate the majority of resources to production and quality control department, and requires firm to expand capacity in order to reach economies of scales. As a result, firm needs to bear higher risks resulting from economy and interest rate fluctuation. In addition, the results of in-dept interview indicate that main industry also affects firm's decision making concerning functions, intangible assets and risks. That is, characteristics of product, competitive environment and industry practice are the factors determine the framework of what functions and intangible asset firm should concentrate, what risks firm needs to assume, and how resources are distributed among all departments. For instance, the short product life-cycle nature of consumer goods requires firm to conduct market research and launch new product repeatedly. In this case, firm's reputation and brand are valuable assets as they help shortening the time for market to accept its new product. Besides, firm needs to bear higher risks resulting from new product/market uncertainty caused by economy fluctuation.

The following is an example of information obtained from interview: “...Steel industry has two distinct characteristics; (i) it is industry practice that steel manufacturers do not sell

finished goods directly to customers, but instead sell through traders, and (ii) steel is a commodity goods whose its physical appearance and specifications are standard. As a result, it is inevitably that our company does not perform marketing activities. We have learnt that advertising and public relationship do not affect our customers' decision as they, the manufacturers of steel-related products (e.g. automobiles, electrical appliance), give more weight to the quality and price of products than other factors. By leveraging on our advantage of low costs, we adopt price competition as the business strategy, thus concentrating on production and technology. In order to reduce costs, the company needs to expand production capacity until reaching economies of scales. Due to debt financing from banks, the company has to concern about the risks from economic recession and high interest rate. ...”

DISCUSSION AND CONCLUSION

Issues for discussion and conclusion are as follows:

1. RD, MKT, FIN, HR, TECH and BRAND have positive relationship with profitability of large manufacturing firms where such relationship varies depending on the types of profitability measures used. These results are supported by (i) the works of Hough and White (2003), Ireland *et al.* (1990), Hooley *et al.* (2004), Gabrielsson *et al.* (2004), and Hitt *et al.* (2001), which found that if firms' RD, MKT, FIN, and HR are performed using distinctive capabilities, firms can create competitive advantage and improve their performance, and (2) the works of Rosenzweig and Roth (2004), Hough and White (2003), and Narver and Slater (1990), which found that if firms' TECH and BRAND are composed of distinctive resources, firms can create competitive advantage and improve their performance.

2. Business strategy and main industry are moderators that change the relationship between 9 independent variables and profitability. This result is consistent with the researches of Gibson and Birkinshaw (2004), Miller (1988b), Pozzebon (2004), and Spanos *et al.* (2004). The finding shows that main industry has more influence than business strategy in moderating such relationship. From the formula of F-statistic under Chow test,
$$F(DF_1, DF_2) = \frac{SSE_{Total} - (SSE_{Group1} + SSE_{Group2})}{DF1} \div \frac{(SSE_{Group1} + SSE_{Group2})}{DF1}$$
 ; the numerator is the difference between SSE obtained from multiple regression analysis using all sample observations and the sum of SSE obtained from multiple regression analysis using sample observations from each of two sub-sample groups (adjusted by DF1). The denominator is the sum of SSE obtained from multiple regression analysis using sample observations from each of two sub-sample groups (adjusted by DF2). Therefore, the higher the F-statistic, the better the results of multiple regression analysis using sample observations from each of two subgroups than the results

of multiple regression analysis using all sample observations. From the analysis, it is found that the F-statistics calculated when using main industry as moderator (i.e. $F(10,354) = 8.88$, $F(10,357) = 10.28$ and $F(10,332) = 4.76$) are higher than the F-statistics calculated when using business strategy as moderator (i.e. $F(10,354) = 6.25$, $F(10,357) = 8.14$ and $F(10,332) = 2.68$). The findings indicate that main industry is better than business strategy in explaining the relationship between 9 independent variables and profitability, which is consistent with the findings of Hitt *et al.* (1982), i.e. main industry is a better moderator than grand strategy.

3. PROD and TECH positively affect profitability of firms adopting cost leadership strategy and firms engaging in producer goods industry while MKT and BRAND positively affect profitability of firms adopting differentiation strategy and firms engaging in consumer goods industry. These results are supported by the works of Hitt and Ireland (1985), Lumpkin and Dess (2006), Porter (1996), Pozzebon (2004), and Spanos *et al.* (2004).

4. When considering firms by business strategy and main industry, it is found that, in general, RD and HR have more positively effects on profitability than FIN. The reason may be that the processes under RD and HR are difficult to imitate than the processes under FIN. Hooley *et al.* (1999) stated that the complexity of process and the causal ambiguity when acquiring capabilities under that process help protecting competitors' imitation. This is crucial condition for creating firm's competitive advantage.

5. The effects of GDP and INT on profitability may be positive, negative or unclear. The reason may be that risk premiums added to the prices of goods are not enough to compensate for the damage caused by those risks, which is consistent with the findings of Griffin and Boomgaardt (1999), which state that the expected profit of firm may not be realized as firm expects if the actual damages from risks are different from what firm has forecasted.

6. The qualitative results of in-depth interview mostly support the quantitative results of survey research. That is, 50 percent or more than 50 percent of executives concurred that RD, PROD, MKT, FIN, HR, TECH, BRAND and GDP have positive effects on firms' profitability whereas less than 50 percent of executives agreed that INT also has positive effects on firm's profitability. Interestingly, almost all executives admitted that business strategy and main industry affect firms' decision making concerning functions performed, intangible assets employed and risks assumed.

In conclusion, the research results show that the relationship between functions and intangible assets, and profitability originates from whether such functions and intangible assets can create sustainable competitive advantage where the higher the competitive advantage created the greater the profitability earned. For functions and intangible assets to create sustainable

competitive advantage, they must have two properties; (i) the functions and intangible assets that firms emphasize must in accordance with firms' business strategy and main industry and (ii) those functions must be performed by using distinctive capabilities and those intangible assets must compose of distinctive resources. In addition, even though the relationship between functions and intangible assets, and profitability varies depending on the types of firm considered and profitability measure used, the effects of production (marketing) on firms' profitability almost have the same direction as those of manufacturing intangibles (marketing intangibles). In order to succeed, firms have to concentrate on the factors that most positively affect their success (Lumpkin & Dess, 2006) therefore the results from table 3 can be utilized as a guideline for considering which functions and intangible assets are appropriate for which types of firms.

The relationship between risks and profitability depends on the economic impact of such risks on firms' profitability. The higher the economic impact levied on firm, the greater the risk premium added to the price of goods. Nevertheless, whether the risk premium added is sufficient depending on the actual damages incurred by such risk. The fact that the effects of risks on firms' profitability may be positive, negative, or unclear is, in essence, the phenomenon that confirms the uncertain nature of risks.

LIMITATION OF RESEARCH

Limitation of research comes from limitation of Chow test, which can test two sub-sample groups at a time, hence making it impossible to consider business strategy and main industry simultaneously.

RESEARCH IMPLICATION

Firms should place importance on creating competitive advantage, which can achieve by emphasizing functions (performed by distinctive capabilities) and intangible assets (composed of distinctive resources) that are appropriate for firms' business strategy and main industry. For instance, firms that adopt cost leadership strategy should emphasize production function and manufacturing intangibles to create competitive advantage and improve profitability whereas firms that adopt differentiation strategy should emphasize marketing function and marketing intangibles instead. At the same time, firms have to consider the risks from fluctuation of economy and interest rate from both expected aspect and actual aspect since firms' expected profits may not be realized as they anticipate for. In addition, group companies can use the relationship between functions, intangible assets and risks, and profitability to help allocating profits among subsidiaries

in the group according to functions performed, intangible assets employed and risks assumed of each subsidiary conditioning on business strategy and main industry. That is, the profits allocated to each company in the group should commensurate with the functions performed, the assets employed and the risks assumed by each subsidiary assigned to each stage of the value chain taking into account the business strategy adopted and main industry engaged.

Revenue Department can use such relationship to help drafting the regulation involving transfer pricing audit. The reason is that the Departmental Instruction No. Paw. 113/2545 does not clarify the procedure regarding the benchmarking study for taxation, causing a problem for taxpayer to comply with the Instruction. In practice, taxpayers have to search for independent companies that are comparable to taxpayers in terms of functions performed, assets employed and risks assumed in order to use those companies' profitability range as a benchmark for setting transfer prices. The problem arises as which functions, assets and risks should be emphasized is not clear since there are so many functions, assets and risks involving the course of business. Revenue Department may issue the guideline for taxpayers in order to limit the scope of works, thus increasing the willingness of taxpayers to comply with the regulation.

RECOMMENDATION FOR FUTURE RESEARCH

As this research is a study of main types of functions, intangible assets and risks, which can generally be found in manufacturing firms, the future research should study other functions, intangible assets and risks that are more specific and detailed such as logistics, human resource, and risk from exchange rate. The further study can be done by changing performance measure to others such as sales growth rate, market share as different measures give different results and different applications. In addition, since Chow test has limitation in testing two sub-sample groups at a time, future research can be improved by using other analytical methodologies that can test more than two sub-sample groups at a time, enabling researchers to investigate business strategy and main industry simultaneously.

Table 1. Expected signs and results of multiple regression analysis of relationship between 9 independent variables and profitability

		NPOS		NPOA		NPOE	
RD	+	.000	+	.001	+	.003*	
		(0.70)		(1.09)		(1.94)	
PROD	+	.000	+	-.001	+	-.003	
		(-0.26)		(-1.13)		(-0.82)	
MKT	+	.002**	+	.003**	+	.007**	
		(4.23)		(4.78)		(3.83)	
FIN	+	.001	+	.002*	+	-.003	
		(1.38)		(1.81)		(-0.88)	
HR	+	.001	+	.002**	+	.006**	
		(1.54)		(1.99)		(2.03)	
TECH	+	.002**	+	.002	+	.006*	
		(1.97)		(1.43)		(1.72)	
BRAND	+	.002**	+	.003**	+	.003*	
		(3.28)		(4.43)		(1.82)	
GDP	+	-.001	+	-.002	+	-.007	
		(-0.43)		(-1.02)		(-1.50)	
INT	+	-.001	+	.000	+	.007	
		(-0.92)		(-.024)		(1.33)	
Const.		-.218**		-.283**		-.546**	
		(-7.87)		(-8.42)		(-4.67)	
Adj.R ²		.195		.238		.124	
F		11.03		14.06		6.54	
Sig.		.000		.000		.000	

* significant at .10 level

** significant at .05 level

Table 2. Results of subgroup analysis basing on Chow test for the analysis of relationship when using business strategy and main industry as moderators

	Business strategy as moderator					Main industry as moderator				
	NPOS					NPOS				
	Adj. R ²	SSE	DF	F	Sig.	Adj. R ²	SSE	DF	F	Sig.
TOTAL	.195	1.252	364	11.03	.000	.195	1.252	364	11.03	.000
COST	.423	.346	189	17.12	.000	.328	.686	225	13.67	.000
DIT	.204	.718	165	5.97	.000	.345	.315	129	9.09	.000
	F(10,354) from Chow test			6.25	< .001	F(10,354) from Chow test			8.88	< .001
	NPOA					NPOA				
	Adj. R ²	SSE	DF	F	Sig.	Adj. R ²	SSE	DF	F	Sig.
TOTAL	.2381	.852	367	14.06	.000	.238	1.852	367	14.06	.000
COST	.412	.601	189	16.40	.000	.401	.907	227	18.53	.000
DIF	.315	.907	168	10.03	.000	.369	.531	1301	0.05	.000
	F(10,357) from Chow test			8.14	< .001	F(10,357) from Chow test			10.28	< .001
	NPOE					NPOE				
	Adj. R ²	SSE	DF	F	Sig.	Adj. R ²	SSE	DF	F	Sig.
TOTAL	.124	13.932	342	6.54	.000	.124	13.932	342	6.54	.000
COST	.168	7.532	178	5.20	.000	.190	8.152	207	6.64	.000
DIF	.162	5.359	154	4.49	.000	.233	4.034	125	5.52	.000
	F(10,332) from Chow test			2.68	< .01	F(10,332) from Chow test			4.76	< .001

Table 3. Expected signs and results of multiple regression analysis of relationship when using business strategy and main industry as moderator

	Cost leadership strategy						Differentiation strategy					
	NPOS		NPOA		NPOE		NPOS		NPOA		NPOE	
RD	-	.000	-	-.001	-	.002	+	.001	+	.002**	+	.004*
		(-1.00)		(-1.22)		(0.85)		(1.55)		(2.20)		(1.79)
PROD	+	.003**	+	.003**	+	.003	-	-.002	-	-.004**	-	-.003
		(3.77)		(2.83)		(0.62)		(-1.42)		(-2.37)		(-0.66)
MKT	-	.001	-	.001	-	.004	+	.004**	+	.005**	+	.011**
		(1.16)		(1.49)		(1.57)		(3.62)		(3.57)		(3.01)
FIN	+	.002**	+	.001	+	-.008*	+	.000	+	.003*	+	.004
		(2.01)		(0.71)		(-1.88)		(-0.09)		(1.76)		(0.76)
HR	+	.003**	+	.005**	+	.010**	+	-.001	+	-.001	+	-.001
		(2.76)		(3.49)		(1.98)		(-0.60)		(-0.82)		(-0.21)

Table 3. Expected signs and results of multiple regression analysis of relationship when using business strategy and main industry as moderator

		Cost leadership strategy					Differentiation strategy					
		NPOS	NPOA	NPOE	NPOS	NPOA	NPOE	NPOS	NPOA	NPOE		
TECH	+	.003** (2.85)	+	.004** (2.97)	+	.012** (2.76)	-	-.001 (-0.66)	-	-.003* (-1.82)	-	-.009* (-1.76)
BRAND	-	.000 (-0.44)	-	.000 (-0.01)	-	.001 (0.19)	+	.003** (3.71)	+	.005** (5.29)	+	.006** (2.36)
GDP	+	-.003** (-2.25)	+	-.004** (-2.61)	+	-.013** (-2.03)	+	.004 (1.63)	+	.005 (1.61)	+	.007 (0.85)
INT	+	.000 (-0.26)	+	.001 (0.31)	+	.008 (1.00)	+	-.005** (-2.06)	+	-.004 (-1.47)	+	.000 (0.05)
Const.		-.228** (-8.44)		-.287** (-7.98)		-.543** (-3.14)		-.164** (-3.14)		-.216** (-3.78)		-.468** (-2.94)
Adj. R ²		.423		.412		.168		.204		.315		.162
F		17.12		16.40		5.20		5.97		10.03		4.49
Sig.		.000		.000		.000		.000		.000		.000
		Producer goods industry					Consumer goods industry					
		NPOS	NPOA	NPOE	NPOS	NPOA	NPOE	NPOS	NPOA	NPOE		
RD	+	.002** (3.53)	+	.003** (5.12)	+	.008** (3.54)	-	.001 (1.22)	-	.000 (0.37)	-	.004 (1.35)
PROD	+	.004** (4.00)	+	.005** (3.83)	+	.009** (2.14)	+	-.003** (-2.61)	+	-.005** (-3.01)	+	-.007 (-1.56)
MKT	-	-.001 (-1.28)	-	-.001 (-1.60)	-	-.001 (-0.18)	+	.002** (3.50)	+	.003** (3.76)	+	.007** (3.10)
FIN	+	.002 (1.45)	+	.002 (1.57)	+	-.005 (-1.19)	+	.000 (-0.28)	+	.001 (0.63)	+	-.004 (-0.72)
HR	+	-.001 (-1.10)	+	-.001 (-0.91)	+	.000 (-0.03)	+	.003** (2.10)	+	.004** (2.48)	+	.009* (1.91)
TECH	+	.004** (3.80)	+	.005** (4.02)	+	.014** (3.63)	+	.000 (-0.30)	+	-.002 (-0.87)	+	-.007 (-1.19)
BRAND	-	.003** (3.71)	-	.004** (4.92)	-	.006** (2.24)	+	.002** (2.08)	+	.003** (2.61)	+	.005 (1.50)
GDP	+	.000 (0.07)	+	.000 (0.20)	+	-.008 (-1.33)	+	.005* (1.95)	+	.004 (1.09)	+	.012 (1.28)
INT	+	-.003* (-1.71)	+	-.003 (-1.47)	+	.001 (0.23)	+	.001 (0.46)	+	.002 (0.57)	+	.011 (1.26)
Const.		-.251** (-7.93)		-.348** (-9.56)		-.637** (-4.41)		-.224** (-4.97)		-.260** (-4.45)		-.574** (-3.15)
Adj. R ²		.328		.401		.190		.345		.369		.233
F		13.67		18.53		6.64		9.091		0.05		5.52
Sig.		.000		.000		.000		.000		.000		.000

* significant at .10 level

** significant at .05 level

REFERENCE

1. Amit, R., and Schoemaker, P. J. H. 1993. Strategic assets and organizational rent. *Strategic Management Journal*, **14**(1): 33-46.
2. Acquaah, M. 2000. Firm resources and the sustainability of firm-specific profitability: An empirical analysis. Doctoral dissertation, University of Wisconsin at Milwaukee.
3. Barney, J. B. 1991. Firm resources and sustained competitive advantage. *Journal of Management*, **17**(1): 99-120.
4. Boyer, K. K., and Lewis, M. 2002. Competitive priorities: Investigating the need for tradeoffs in operations strategy. *Production and Operations Management*, **11**(1): 9-20.
5. Capon, N., Farley, J. U., and Hoenig, S. 1990. Determinants of financial performance: A meta-analysis. *Management Science*, **36**(10): 1143-1159.
6. Chow, G. C. 1960. Tests of equality between sets of coefficients in two linear regressions. *Econometrica*, **28**(3): 591-605.
7. Conner, K. R. 1991. A historical comparison of resource-based theory and five schools of thought within industrial organization economics: Do we have a new theory of the firm. *Journal of Management*, **17**(1): 121-154.
8. Corbett, C. and Kirsch, D. A. 2001. International diffusion of ISO 14000 certification. *Production and Operations Management*, **10**(3): 327-342.
9. Daily, C. M., Certo, S. T., and Dalton, D. R. 2000. A decade of corporate women: Some progress in the board-room, none in the executive suite. *Strategic Management Journal*, **20**(1): 93-99.
10. Day, G. S. 1994. The capabilities of market-driven organizations. *Journal of Marketing*, **58**(4): 37-52.
11. Deramus, D. W. 1999. R&D, advertising, and profit: Economic theory, empirical evidence, and consequences for transfer pricing policy. Doctoral dissertation, University of Massachusetts.
12. Dess, G. G., and Beard, D. W. 1984. Dimensions of organizational task environments. *Administrative Science Quarterly*, **29**(1): 52-73.
13. Doyle, P., and Hooley, G. J. 1992. Strategic orientation and corporate performance. *International Journal of Research in Marketing*, **9**(1): 59-73.
14. Eisenhardt, K. M., and Martin, J. A. 2000. Dynamic capabilities: what are they?. *Strategic Management Journal*, **21**(10-11): 1105-1121.

15. Fama, E. F., and French, K. R. 1992. The cross-section of expected stock returns. *Journal of Finance*, **47**(2): 427-466.
16. Flynn, B., and Flynn, J. 2004. An exploratory study of the nature of cumulative capabilities. *Journal of Operations Management*, **22**(5): 439-457.
17. French, C. W. 2003. The Treynor capital asset pricing model. *Journal of Investment Management*, **1**(2): 60-72.
18. Gabriëlsson, M., Sasi, V., and Darling, J. 2004. Finance strategies of rapidly-growing Finnish SMEs: Born Internationals and Born Globals. *European Business Review*, **16**(6): 590-604.
19. Gibson, C. B., and Birkinshaw, J. 2004. The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal*, **47**(2): 209-226.
20. Grant, R. M. 1996. Prospering in dynamically-competitive environments: Organizational capability as knowledge integration. *Organization Science*, **7**(4): 375-387.
21. Greenley, G. E., and Foxall, G. R. 1998. External moderation of associations among stake holder orientations and company performance. *International Journal of Research in Marketing*, **15**(1): 51-69.
22. Griffin, M. and Boomgaardt, R. 1999. Enterprise risk and return management for financial institutions. *North American Actuarial Journal*, **3**(2): 48-56.
23. Hitt, M. A., and Ireland, R. D. 1985. Corporate distinctive competence, strategy, industry and performance. *Strategic Management Journal*, **6**(3): 273-293.
24. Hitt, M. A., Ireland, R. D., and Stadter, G. 1982. Functional importance and company performance: Moderating effects of grand strategy and industry type. *Strategic Management Journal*, **3**(4): 315-330.
25. Hitt, M. A., Bierman L., Shimizu K., and *et al.* 2001. Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management Journal*, **44**(1): 13-28.
26. Hooley, G. J., Fahy, J., Cox, T., and *et al.* 1999. Marketing capabilities and firm performance: A hierarchical model. *Journal of Market Focused Management*, **4**(3): 259-278.
27. Hough, J. R., and White, M. A. 2003. Environmental dynamism and strategic decision-making rationality: An examination at the decision level. *Strategic Management Journal*, **24**(5): 481-489.
28. Ireland, R. D., Hitt, M. A., and Skivington, J. 1990. Managing R&D in diversified companies. *Research Technology Management*, **33**(4): 37-42.

29. Ittner, C. D., Nagar, V., and Rajan, M. V. 2001. An empirical examination of quality-based learning models. *Management Science*, **47**(4): 563-578.
30. Kohli, J., and Jaworski, B. 1990. Market orientation: The construct, research propositions and managerial implications. *Journal of Marketing*, **54**(3): 1-18.
31. Krejcie, R. V., and Morgan, D. W. 1970. Determining sample size for research activities. *Educational and Psychological Measurement*, **30**(3): 607-610.
32. Lapre, M., Mukherjee, A., and van Wassenhove, L. 2000. Behind the learning curve: Linking learning activities to wasted reduction. *Management Science*, **46**(5): 597-611.
33. Lepak, D. P., and Snell, S. A. 1999. The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review*, **24**(1): 31-48.
34. Lumpkin, G. T., and Dess, G. G. 2006. The effect of Simplicity on the strategy-performance relationship: A note. *Journal of Management Studies*, **43**(7): 1583-1604.
35. Lynch, D. F. 1998. The integration of firm resources: The role of capabilities in strategy and firm performance. Doctoral dissertation, University of Arkansas.
36. Miller, D. 1988a. Relating Porter's business strategies to environment and structure: Analysis and performance implications. *Academy of Management Journal*, **31**(2): 280-308.
37. Miller, D. 1988b. Configurations of strategy and structure: Towards a synthesis. *Strategic Management Journal*, **7**(3): 233-249.
38. Mullins, D. W. 1982. Does the capital asset pricing model work? *Harvard Business Review*, **60**(1): 105-113.
39. Narver, J. C. and Slater, S. 1990. The effect of market orientation on business profitability. *Journal of Marketing*, **54**(4): 20-35.
40. Organization for Economic Co-operation and Development. 1996. Transfer pricing guidelines for multinational enterprises and tax administrations. OECD Publications, Paris.
41. Porter, M. E. 1980. *Competitive strategies*. The Free Press, New York.
42. Porter, M. E. 1996. What is strategy? *Harvard Business Review*, **74**(6): 61-78.
43. Rosenzweig, E. D., and Roth, A. V. 2004. Towards a theory of competitive progression: Evidence from high-tech manufacturing. *Production and Operations Management*, **13**(4): 354-368.

44. Schmenner, R., and Swink, M. 1998. On theory in operations management. *Journal of Operations Management*, **17**(1): 97-113.
45. Sharma, S., Durand, R. M., and Gur-Arie, O. 1981. Identification and analysis of moderator variables. *Journal of Marketing Research*, **18**(3): 291-300.
46. Shrum, W., and Wuthnow, R. 1988. Reputational status of organizations in technical systems. *American Journal of Sociology*, **93**(4): 882-912.
47. Slade, M. E. 2004. Competing models of firm profitability. *International Journal of Industrial Organization*, **22**(3): 289-308.
48. Spanos, Y. E., Zaralis, G., and Lioukas, S. 2004. Strategy and industry effects on profitability: Evidence from Greece. *Strategic Management Journal*, **25**(2): 139-165.
49. Szulanski, G. 1996. Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strategic Management Journal*, **17**(winter special issue): 27-43.
50. Ulrich, D., and Smallwood, N. 2004. Capitalizing on capabilities. *Harvard Business Review*, **82**(6): 119-127.
51. Wattanakul, T. 2002. Privatization and firm performance: The effects of private ownership and competition on the post-privatization performance of formerly state-owned enterprises. Doctoral dissertation, University of North Carolina at Chapel Hill.
52. Webster, F. E. 1992. The changing role of marketing in the corporation. *Journal of Marketing*, **56**(4): 1-17.
53. Zehir, C., Acar, A.Z., and Tanriverdi, H. 2006. Identifying organizational capabilities as predictors of growth and business performance. *The Business Review, Cambridge*, **5**(2): 109-116.
54. จีรวรรณ นวลเจริญ. 2543. ผลกระทบของการเปลี่ยนแปลงนโยบายทางเศรษฐกิจที่ไม่ได้คาดการณ์ที่มีต่อผลผลิต. วิทยานิพนธ์, มหาวิทยาลัยรามคำแหง.
55. ชีระพงษ์ วิจิตเสรษฐ์. 2546. พฤติกรรมผู้บริโภคและการตัดสินใจภายใต้สภาวะการณ์ที่มีความเสี่ยง : ในเอกสารการสอนชุดวิชาเศรษฐศาสตร์วิเคราะห์ (ฉบับปรับปรุงครั้งที่ 1, หน่วยที่ 2). มหาวิทยาลัยสุโขทัยธรรมาธิราช, นนทบุรี.