

Functional competencies and their effects on performance of manufacturing companies in Vietnam

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Abstract

The manufacturing industry plays a key role in Vietnam (due to its labour advantage), generating jobs, contributing to social and political stability, and adding high value exports to help the balance payment. As Vietnam becomes more and more active in its pursuit of global economic integration, the entry of many foreign giants into its own domestic market will surely intensify the competition. Recognizing the importance of functional competencies to the firm's performance will help the companies improve its competitiveness. In addition, many researchers had emphasized the importance of an integrative perspective study. Therefore, this study integrates four functions to investigate relationship between four functional competencies and firm performance of manufacturing companies in Vietnam.

To address these issues, a field survey of manufacturing companies in Vietnam was conducted with the use of structured questionnaires and mail survey. A total of 725 questionnaires were sent by mail to manufacturing companies. Consequently 125 questionnaires were mailed back at gross response rate of 17.24%. The sample composed of 63.6 per cent limited or joint-stock companies, 27.3 per cent state-owned enterprises and 9.1 per cent foreign capital organizations. Various data analysis procedures were applied including factor analysis, descriptive analysis, single regression and multiple regression in order to accomplish the objectives of the study.

The findings identified four set of items of functional competencies namely manufacturing, marketing, research & development (R&D), and human resource and two set of items of organizational performances called profitability and market performance. All of these factors had high loadings (all above 0.541) and high reliability (all above 0.794), indicating internal consistency. Although these dimensions retain a certain degree of similarity with others found in previous studies elsewhere, this collection of dimensions offers typical features of manufacturing companies in Vietnam.

It found that in general, manufacturing companies in Vietnam do not perform very well their four functions: manufacturing, marketing, research & development and human resource. This expected result came from a long period where production and consumption were all planned and distributed by the Government.

It was discovered that seven hypotheses out of eight were supported by the empirical research and there were no unexpected results. The study confirmed that those manufacturing companies in Vietnam putting more emphasis on

marketing, research & development and human resource competencies can expect to earn higher profitability and market performance. The study also found the positive and significant relationship between manufacturing competency and profitability. These findings are consistent with some previous studies.

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Table of contents

Abstract.....	iii
Acknowledgement.....	v
Table of contents	vii
List of figures.....	xiii
List of tables	xv
List of abbreviations	xvii
1 Introduction.....	1
1.1 Background	1
1.2 Objectives of the Study	2
1.3 Rational for the Study.....	3
1.4 Scope and Limitations of the Study	3
1.5 Structure of the Study.....	4
2 Literature review on functional competencies and their effects on performance	7
2.1 Chapter overview	7
2.2 The concept of strategy as frame.....	7
2.3 Conceptual framework underlying the literature review.....	9
2.4 Competitive advantages	10
2.4.1 Term of competitive advantage	10
2.4.2 Term of sustainable competitive advantage.....	12
2.4.3 Conditions for sustainable competitive advantage according to Hill and Jones.....	13
2.4.3.1 Barriers to imitation	13
2.4.3.2 Capability of competitors.....	14
2.4.3.3 Industry dynamism	14
2.5 Resources, capabilities and competencies.....	15
2.5.1 Term and categories of resources	15
2.5.2 Term and categories of capabilities	16
2.5.3 Term and categories of competencies.....	18
2.5.4 Summary	21
2.6 Sources of competitive advantages according to Hill and Jones	22
2.6.1 Four factors as direct sources of competitive advantages.....	22
2.6.1.1 Efficiency.....	22
2.6.1.2 Quality.....	23
2.6.1.3 Innovation	23

2.6.1.4	Customer responsiveness	24
2.6.1.5	Summary	24
2.6.2	Functional competencies as indirect sources of competitive advantages	24
2.6.2.1	General considerations	24
2.6.2.2	Functional competencies as sources of competitive advantages	26
2.6.2.3	Production competencies as source of competitive advantage	26
2.6.2.4	Marketing competencies as source of competitive advantage	27
2.6.2.5	Research & development competencies as source of competitive advantage	28
2.6.2.6	Human resource competencies as source of competitive advantage	29
2.6.2.7	The materials management competencies as source of competitive advantage	30
2.6.2.8	Information system competencies as source of competitive advantage	31
2.6.2.9	Company infrastructure competencies as source of competitive advantage	31
2.7	Company performance	32
2.8	Empirical findings about functional competencies and firm performance	34
2.8.1	Summary of the studies	34
2.8.2	Comparison of the studies	35
2.8.2.1	Functions to be included	35
2.8.2.2	Bundling approach	41
2.8.2.3	Types of model structure	41
2.8.2.4	Data collection approaches	41
2.8.2.5	Findings of previous studies	43
2.9	Conclusions for research	43
3	Conceptual framework, measurement instrument development and data collection.....	45
3.1	Chapter overview	45
3.2	Conceptual framework and hypothesis development.....	45
3.2.1	Conceptual framework.....	45
3.2.2	Hypotheses for the study.....	47
3.3	Measurement instrument development	49
3.3.1	Independent variables	49
3.3.2	Dependent variables	50
3.3.3	Expert opinion.....	50

3.3.4	Back translation.....	51
3.3.5	Pretest.....	52
3.3.6	Questionnaire instrument	52
3.4	Data collection and assessment	53
3.4.1	Data collection	53
3.4.1.1	Target population and sample design	53
3.4.1.2	The survey.....	54
3.4.2	Data assessment	54
3.4.2.1	Data examination and exploration	54
3.4.2.2	Adequacy assessment	54
3.4.2.3	Normality assessment	56
3.4.2.4	Data reliability	56
3.5	Chapter summary	59
4	Data analysis and hypotheses testing	61
4.1	Chapter overview	61
4.2	Sample profile	61
4.2.1	Position of respondents	61
4.2.2	Enterprise location	62
4.2.3	Enterprise ownership.....	63
4.2.4	Industry types	63
4.2.5	Enterprise age.....	64
4.2.6	Number of employees	65
4.2.7	Assets	65
4.2.8	Revenue.....	66
4.2.9	Profit.....	67
4.3	Factor analysis	67
4.3.1	Significance of the factor loadings	68
4.3.2	Appropriateness of factor analysis.....	69
4.3.3	Factor analysis of functional competencies	69
4.3.4	Factor analysis of perceived performance	77
4.4	Functional competency analysis.....	78
4.4.1	Descriptive analysis of human resource management	79
4.4.1.1	General description	79
4.4.1.2	Human resource management and company location	81
4.4.1.3	Human Resource Management and company ownership.....	81
4.4.1.4	Human resource management and type of industry	83
4.4.2	Descriptive analysis of marketing management	85
4.4.2.1	General description	85
4.4.2.2	Marketing management and company location	86
4.4.2.3	Marketing management and company ownership	87

4.4.2.4	Marketing management and industries	88
4.4.3	Descriptive analysis of manufacturing management	90
4.4.3.1	General description	90
4.4.3.2	Manufacturing management and company location	91
4.4.3.3	Manufacturing management and company ownership	92
4.4.3.4	Manufacturing management and type of company	94
4.4.4	Descriptive analysis of research and development	95
4.4.4.1	General description	95
4.4.4.2	Research & development and company location	96
4.4.4.3	Research & development and company ownership	97
4.4.4.4	Research & development and type of company	97
4.5	Organizational performance analysis	98
4.5.1	Descriptive analysis of profitability performance	98
4.5.1.1	General description	98
4.5.1.2	Profitability performance and company location	99
4.5.1.3	Profitability performance and company ownership	100
4.5.1.4	Profitability performance and industries	101
4.5.2	Descriptive analysis of market performance	102
4.5.2.1	General description	102
4.5.2.2	Market performance and company location	103
4.5.2.3	Market performance and company ownership	103
4.5.2.4	Market performance and company type	104
4.6	Hypothesis testing	105
4.6.1	Correlations among variables	105
4.6.2	Relationship between functional competencies and organizational performance	107
4.6.2.1	Single regressions	107
4.6.2.2	Multiple regressions	113
4.7	Discussion of the results	115
4.7.1	Discussion on findings from factor analysis	115
4.7.2	Discussion on findings from functional competencies analysis	117
4.7.3	Discussion on findings from hypothesis testing	119
4.8	Chapter summary	122
5	Summary of findings and recommendations	125
5.1	Chapter overview	125
5.2	Summary of findings	125
5.2.1	Functional factors	125
5.2.2	Management perception of four functional competencies	126
5.2.3	Relationship of functional competencies and firm performance	126

5.3 Contributions	127
5.4 Limitations.....	128
5.5 Recommendations for future research.....	129
Appendices.....	131
Appendix 1: Survey questionnaire - English version	131
Appendix 2: Survey questionnaire - Vietnamese version.....	135
Appendix 3: Reliability of functional competencies	139
Appendix 4: Reliability of organizational performance	141
Appendix 5: Demographic data of the sample	143
Appendix 6: Communalities of Sequential Runs of Factor Analysis Communalities.....	145
Appendix 7: Correlation between independent and dependent variables.....	147
References.....	149

List of figures

Figure 2.1: Conceptual framework underlying the literature review	9
Figure 2.2: The impact of efficiency, quality, customer responsiveness and innovation on unit costs and prices	25
Figure 3.1: A conceptual model of the relationship between functional competencies and firm performance	46
Figure 4.1: Positions of the respondents	62
Figure 4.2: Location of the surveyed organizations	62
Figure 4.3: Enterprise ownership of the surveyed organizations	63
Figure 4.4: Industry types of the surveyed enterprises	64
Figure 4.5: Age of companies	64
Figure 4.6: Number of employees in the surveyed organizations	65
Figure 4.7: Total assets of the surveyed organizations	66
Figure 4.8: Revenue of the surveyed enterprises	66
Figure 4.9: Profit of the surveyed enterprises	67
Figure 4.10: Human resource management	80
Figure 4.11 : Marketing management	86
Figure 4.12: Manufacturing management	91
Figure 4.13: Research & development	96
Figure 4.14 : Profitability performance	99
Figure 4.15: Market performance	102

List of tables

Table 2.1: The production roles in achieving competitive advantage	27
Table 2.2: The marketing roles in achieving competitive advantage	28
Table 2.3: The R&D roles in achieving competitive advantage	29
Table 2.4: The human resource roles in achieving competitive advantage	30
Table 2.5: The material management roles in achieving competitive advantage	30
Table 2.6: The information system roles of different value creation in achieving competitive advantage	31
Table 2.7: The infrastructure roles in achieving competitive advantage	32
Table 2.8: Performance measures used in empirical competitive advantage research	34
Table 2.9: A summary of findings of previous studies	36
Table 3.1: KMO and Barlett's test for functional competencies and performance	55
Table 3.2: Test of normality of the data set	56
Table 3.3: Reliability analysis of functional competencies and organizational performance	58
Table 4.1: Guidelines for identifying significant factor loadings based on sample size	68
Table 4.2: The first run of factor analysis (n=110)	70
Table 4.3: The second rotated factor solution (n=110)	72
Table 4.4: The third rotated factor solution (n=110)	74
Table 4.5: The fourth loaded factor solution (n=110)	75
Table 4.6: The first run of factor analysis (n=110)	78
Table 4.7: Human resource management	80
Table 4.8: Means of human resource activities in different locations	82
Table 4.9: Means of human resource activities and different types of ownership	83
Table 4.10: Mean scores of human resource activities in different types of industry	84
Table 4.11: Marketing management	85
Table 4.12: Means of marketing activities in different locations	87
Table 4.13: Means of human resource activities and different types of ownership	88
Table 4.14: Means of marketing activities in different industries	89
Table 4.15: Manufacturing management	90
Table 4.16: Means of manufacturing activities in different locations	92
Table 4.17: Means of manufacturing activities and different types of	

ownership	93
Table 4.18: Mean of manufacturing activities in different industries	94
Table 4.19: Research and development	95
Table 4.20: Means of research and development activities in different locations	96
Table 4.21: Means of research and development activities and different types of ownership	97
Table 4.22: Mean of research and development activities in different industries	98
Table 4.23: Mean of profitability performance	99
Table 4.24: Means of profitability performance in different locations	100
Table 4.25: Profitability performance and different types of ownership	101
Table 4.26: Mean of profitability performance in different industries	101
Table 4.27: Mean of market performance	102
Table 4.28: Means of market performance in different locations	103
Table 4.29: Market performance and different types of ownership	104
Table 4.30: Mean of market performance in different industries	104
Table 4.31: Correlations for functional competencies	105
Table 4.32: Correlation for performance measures	106
Table 4.33: Correlation for functional competencies and performance	106
Table 4.34: Single regression model summary	108
Table 4.35: Multiple regression model summary	114
Table 4.36: Rank by mean of competitive items of four functions	118
Table 4.37: Summary of hypothesis testing	120

List of abbreviations

APEC	Asian Pacific Economic Cooperation
ASEAN	Association of South-East Asian Nation
CA	Competitive Advantage
CEO	Chief Executive Officer
d.f.	Degree of Freedom
EPS	Earning Per Share
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
HRM	Human Resource Management
KMO	Kaiser-Meyer-Olkin
KS	Kolmolorov-Smirnov
MKT	Marketing
MNF	Manufacturing
PE	Price Earnings
R&D	Research and Development
ROA	Return on Asset
ROC	Return on Capital
ROE	Return on Equity
ROI	Return on Investment
ROS	Return on Sales
SCA	Sustainable Competitive Advantage
S.D.	Standard Deviation
SOE	State Owned Enterprise
TQM	Total Quality Management
USD	American Currency
VCCI	Vietnam Chamber of Commerce and Industry
WTO	World Trade Organization

1 Introduction

1.1 Background

Why do some companies perform well, while others do not? Do the functional competencies of the firm have any influence on the success or failure of the firm? To what extent do the different functions play a role in the growth and performance of a single manufacturing company? These are the major questions that will be addressed in this study.

Strategies are formulated to determine the way in which organizations can move from their current competitive position to a stronger one. This can only be achieved by improving specific functional competencies (Feurer et al, 1994).

A study conducted by Porter (1985) showed that companies that achieved international leadership employed strategies that took advantage of their distinctive competencies. These competencies included designing new products, installing new production technologies, adapting training programs, using quality control techniques, and improving supplier relationships (Li, 2000).

Vietnam has experienced significant economic progress since *doi moi* “economic renovation” in 1986. These achievements have been reflected in the strong average gross domestic product (GDP) growth rate of 8.5% from 1990 to 1997. Despite the impact of the regional financial and economic crisis, Vietnam still managed a growth rate of 4.7% (Statistical Yearbook of Vietnam, 1999, p. 20). The average growth rate from 2000 - 2005 was as high as 7.5% and last year, the growth rate of GDP reached 8.43% (Statistical Yearbook of Vietnam, 2005, p. 59). Imports and exports have increased since 1994, as has the trade balance. The export volume has risen from 11.5 billion USD in 1999 to 32 billion USD in 2005, with an average annual growth rate of 18.6% (<http://www.vietpartners.com/Statistic.htm>, August 15, 2006).

Since the introduction of *doi moi* in late 1986, Vietnam has become increasingly more integrated into the regional and world community. As the first step, Vietnam joined the league of the Association of South-East Asian Nation (ASEAN) in July 1995 and later became a member of the Asian Pacific Economic Cooperation (APEC) in November 1998. Currently, Vietnam is in the process of joining the World Trade Organization (WTO). So far, Vietnam has concluded relationships with over 100 countries and economic organizations worldwide. As Vietnam becomes more and more active in its pursuit of

global economic integration, the entry of many foreign giants into its own domestic market will surely intensify the competition. Officials astutely ask ‘what can Vietnamese companies do to compete with imported goods and services, while also becoming a successful exporter?’ The answer: Vietnamese companies will have to become more competitive (Quang, 2001).

The manufacturing industry plays a key role in Vietnam (due to its labour advantage), generating jobs, contributing to social and political stability, and adding high value exports to help the balance payment. According to the statistical yearbook 2005, the output value of manufacturing sector in Vietnam has grown phenomenally from 158 trillion VND in 2000 to 353 trillion VND in 2005, an average growth rate of 17.5%. Clearly, the manufacturing sector plays a dominant role in Vietnam’s economy, as its contribution increased from 79.72% in 2000 to 84.91% of total GDP in 2005 (Statistical Yearbook of Vietnam, 2005).

The literature indicates that there is a strong relationship between competitiveness sources and enterprise’s performance. Some studies also show that different competitiveness sources (such as manufacturing, research and development, and marketing) have different impacts on performance results (Droge et al, 1994; Li, 2000; Hitt and Ireland, 1985). However, most of these studies have been conducted in a developed countries context. Very few studies have been done for developing countries as well as none in Vietnam.

1.2 Objectives of the Study

The purpose of this study is to identify the relationship between four functional competencies and firm performance of manufacturing companies in Vietnam. It also provides a deeper understanding the role of these four functional competencies to improve the firm’s performance. The specific objectives of this study are:

- To identify the underlying dimensions of the four functional competencies “manufacturing, marketing, research & development, and human resource” in manufacturing companies in Vietnam.
- To assess the competency level of four functions: manufacturing, marketing, research & development, and human resource in manufacturing companies in Vietnam
- To empirically test the relationship between the dimensions of manufacturing competencies and the firm’s performance of manufacturing companies in Vietnam.

- To study the relationship of marketing competencies with the firm's performance in Vietnam's manufacturing sector.
- To examine the relationship of the research & development competencies with a firm's performance in Vietnam's manufacturing sector.
- To test the relationship between the human resource competencies and firm's performance in Vietnam's manufacturing sector.
- To provide the recommendations.

1.3 Rational for the Study

This research is meaningful for several reasons, given the problems and questions posed above.

First, several researchers have noted the need to empirically examine the relationship of functional competencies on the firm's performance.

Second, even though substantial research already exists in this field, most of it has been conducted in a developed country context; few studies have been conducted for developing countries.

Third, this study has been devoted to the whole manufacturing sector.

Fourth, the results of the study would provide practical evidence to the manufacturing industry, especially the manufacturing in Vietnam. This study would help the manufacturing companies to recognize the importance of functional competencies to their firm performance. Managers of the manufacturing companies can use the findings from this study to implement the appropriate functional strategies and manage their organizational practices effectively.

1.4 Scope and Limitations of the Study

This study aims to clarify the relationship between functional competencies seen as source of competitive advantages and performance of manufacturing companies in Vietnam. Other sources of competitive advantages are beyond the scope of this study.

The study exclusively focuses on the relationship of four functional competencies with organization performance: manufacturing, marketing, research & development, and human resource. Thus other functions and variables might

have potential impacts, those relationships were not included in the scope of the study.

Since this study was based on the measurement of managers' perception, a bias may occur in the survey. Therefore the results are observed as non-objective.

Due to limits of time and research funds, the survey reflects only the period of May to August, 2006.

Concerning the data collection, the research data concentrates on manufacturing firms provided by VCCI (Vietnam Chamber of Commerce and Industry) on their website <http://danhba.vdc.com.vn>. Companies participating in the study are mainly Vietnamese. Only a small number of joint venture and foreign companies participated in the survey, therefore the sample may not represent the whole of Vietnam's manufacturing companies.

1.5 Structure of the Study

The study is organized into five chapters as follows:

Chapter 1: Introduction

This chapter provides the background, objectives and rational of the study. The scope of the study and the structure of the study are also included.

Chapter 2: Literature review on functional competencies and their effects on performance

This chapter reviews the relevant literature on the research questions. It is divided into eight main sections. The first three sections review the strategy concept and the key terms: competitive advantage (CA). The fourth section reviews factors determining sustainability of CAs. The next section presents sources of CA, especially focusing on functional competencies. The sixth section describes the criteria used to measure the company performance. The seventh section summarises research about functional competencies and company performance. The last part is conclusions for the research.

Chapter 3: Conceptual framework, measurement instrument development and data collection

This chapter consists of two main components: the conceptual framework & hypothesis development, and measurement instrument development & data collection. The conceptual framework is proposed based on the literature review. Based on this framework, the hypothesis is presented. It then covers the measurement instruments, data collection, and data assessment.

Chapter 4: Data analysis and hypothesis testing

This chapter presents the data analysis and the statistical result from hypothesis testing in this study. At first, dimensions of functional competencies are identified through factor analysis. Then descriptive statistics are demonstrated. After that the hypotheses are tested and the results are then discussed and summarized at the end.

Chapter 5: Summary of findings and recommendations

This chapter provides the most important findings and contributions of the study. Limitations of the research are then discussed. Finally, ideas for future research are also proposed.

2 Literature review on functional competencies and their effects on performance

2.1 Chapter overview

The purpose of this chapter is to provide a theoretical foundation that is relevant to the development of a conceptual model and hypotheses for this study. It is organized into eight main sections: (1) the concept of strategy as frame; (2) conceptual framework underlying the literature review; (3) key terms concerning competitive advantages (CAs); (4) conditions for sustainable CAs according to Hill and Jones; (5) Source of competitive advantage according to Hill and Jones; (6) Company performance; (7) Empirical Findings about Functional Competencies and Firm Performance; and (8) conclusions for research. The first section introduces the concept of strategy as frame of the research. The second section presents the conceptual framework underlying the literature review. The third introduces the key concepts in CAs. In this section, the relationships of resources, capabilities, competencies and competitive advantage are also presented. The third section reviews factors determining sustainability of CAs. The next section identifies sources of CA, especially focusing on functional competencies. The fifth section covers the criteria used to measure the company performance. The following section covers the previous research works looking at the linkage between sources of CA and company performance. The last part is conclusion for the research.

2.2 The concept of strategy as frame

The word strategy comes from the Greek origin word “strategia” meaning “generalship” (Long and Vickers-Koch, 1995). In the 19th century, it was first used in reference to the science and art of employing political, economic, military and other forces to support the policies of a nation or group of nations. The word did not surface in management literature until the 1950s (Long and Vickers-Koch, 1995).

The amount of literature on strategy development is vast and growing at an accelerating rate. Despite the large amount of research on this subject there is no single approach for strategy development. As a result, a wide range of conceptual frameworks exists for the formulation and implementation of strategies (Feurer and Chaharbaghi, 1994).

Peter Drucker appears to be one of the first to talk about the strategy in a business context. In 1954 he spoke about it only in terms of answering the question: “what is our business? And what should it be?” (Long and Vickers-Koch, 1995).

Chandler was one of the first to offer an explicit definition of strategy (Long and Vickers-Koch, 1995). Chandler (1962) defined strategy as the determination of the basic long-term goals and objectives of an enterprise, and the adoption of course of action and the allocation of resources necessary for carrying out these goals (Decharin, 1999).

The first writers to focus on the concept of strategy in term of its development and implementation were Andrews and Ansoff (Long and Vickers-Koch, 1995). Andrews (1965) defined strategy as the pattern of objectives, purposes, goals, and major policies and plans for achieving the goals. Ansoff (1965) viewed strategy as a common thread for deciding on five components: market scope; growth vector (the direction in which scope was changing); competitive advantage (unique opportunities in term of product or market attributes); synergy internally generated by a combination of capabilities or competencies; and the decision to make or to buy.

Henderson (1979) proposed that the fundamental rule of strategy is to induce competitors not to invest in those products, markets, and services where firms expect to invest most. To achieve strategic victories, firms must use corporate resources to substantially outperform a competitor with superior strength. Strategy is a deliberate search for a plan of action that will develop a business’s competitive advantage and compound it.

Strategy is the direction and scope of an organization over the long term. It ideally matches its resources to its changing environment (Johnson and Scholes, 1993).

In summary, there is no unique definition of strategy. According to the author, the definition offered by Chandler in 1962 is seen as a holistic one. The author will based on Chandler understand a strategy as the determination of the basic long-term goals and objectives of an enterprise, and the adoption of course of action and the allocation of resources necessary for carrying out these goals.

2.3 Conceptual framework underlying the literature review

The **Figure 2.1** shows the framework which is underlying the literature research. The key points of this framework are highlighted as follow:

- The distinctive competencies of an organization arise from two complementary sources: its resources and capabilities.
- A distinctive competency is unique strength that allows one company to achieve superior efficiency, quality, innovation or customer responsiveness and thereby to attain a competitive advantage.
- The primary objective of company's strategy is to achieve a competitive advantage.
- Consequently, the company will earn a profit rate substantially above the industry average.

Details of these concepts and relationship are presented in the following sections.

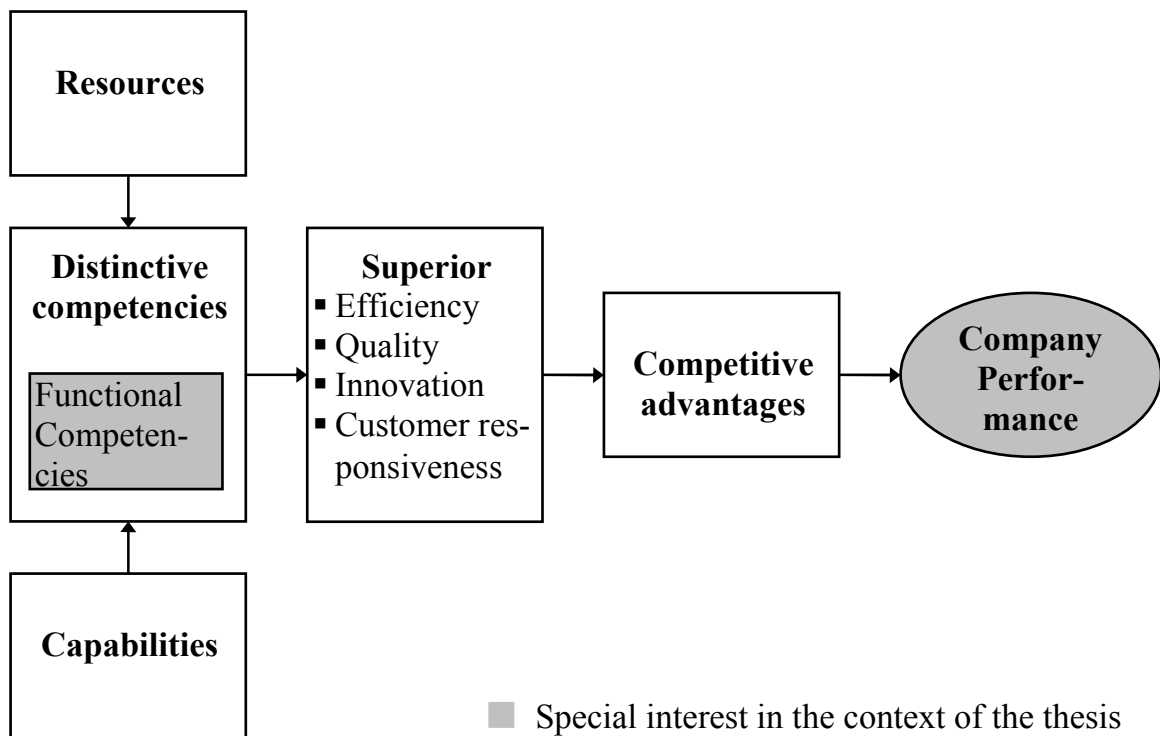


Figure 2.1: Conceptual framework underlying the literature review

(Source: Adapted from Hill and Jones, 2001, p.138)

2.4 Competitive advantages

2.4.1 Term of competitive advantage

A universal and exact definition for competitive advantage (CA) does not exist.

Alderson (1965) was one of the first to recognize that firms should strive for unique characteristics in order to distinguish themselves from competitors in the eyes of the customers. He argued that differential advantage might be achieved through lowering prices, selective advertising appeals, and/or product improvements and innovations (Hoffman, 2000).

Hall (1992) asserted that for a business to succeed in a hostile environment it ought to either achieve the lowest cost or most differentiated position.

Henderson (1983) emphasized that organizations that are able to adapt best or fastest will gain an advantage relative to their competitors. The message to managers is to respond to changes in the business environment by providing the best option in terms of product/service or be the quickest to respond to the needs of the market (Yamoah, 2004).

Caves (1984) was among the first introduced “competitive advantage” but without explicit definition. Caves focuses on the commitment of resources to establish entry barriers that would enhance the performance of a firm (Flint, 2000).

Day (1984) discusses how to determine the value of competitive advantage in the market by relating it to benefits which must be perceived by a customer group that willing to pay for those benefits and cannot easily obtain those benefits elsewhere. In contrast to the competitive advantage terminology by Caves, this conception of competitive advantage appears to be linked to a firm’s being more competence in the market than its competitors (Flint, 2000).

Porter (1985) asserted that competitive advantage comes from the value that firms create for their customers that exceeds the cost of producing that value. The key concern for a business is to capture that value which is greater than its cost. He also identified two types of competitive advantage, which were cost leadership and differentiation.

Coyne (1986) suggested that because the meaning of competitive advantage is self-evident, there is no apparent need to define its exact meaning. However, he believed that differentiation based on key buying attributes of a product is the foundation of an advantage. This difference must be due to some resource capability that the firm possesses and competitors do not possess. Three conditions must be met for competitive advantage to have meaning: 1) that customers perceive differences between one firm's product/service attributes and those of its competitors, 2) the difference is the result of a capability gap between the firm and its competitors and 3) that the aforementioned difference in attributes and the capability gap are expected to endure over time.

Hill and Jones (2001) suggested that competitive advantage means that a firm has gained an above-average return as compared to its competitors in its industry.

Barney (1991) tried to define competitive advantage with strategy view. He stated "a firm is said to have a competitive advantage when it is implementing a value-creating strategy not simultaneously being implemented by any current or potential competitors".

According to Flint (2000), the definition of Barney is useful because it incorporates the idea that creation of value, competition among firms, and the durability of that value are all fundamental to the conceptualization of sustainable competitive advantages. However, it does not explicitly link competitive advantages to the resulting financial performance of a firm.

In order to achieve competitive advantage, a company must implement a "value creating" strategy (Barney, 1991). Value creation is measured by the difference between value to consumer and cost of production (Hill and Jones, 2001, Porter, 1985).

In summary, for the author a competitive advantage is given, if a company has an above-average return as compared to competitors (Hill and Jones, 2001). This definition of competitive advantage given by Hill and Jones (2001) is appropriate as it accumulates some concepts in competitive advantage literature, links competitive advantage to the performance of a firm and provides freedom to use other terms.

2.4.2 Term of sustainable competitive advantage

The idea of a sustainable competitive advantage (SCA) surfaced in 1984, when Day suggested types of strategies that may help to “sustain the competitive advantage”. The actual term of “SCA” emerged in 1985, when Porter discussed the basic types of competitive strategies that a firm can possess in order to achieve a long-run SCA (Hoffman, 2000).

According to Barney (1991), a firm is said to have a sustained competitive advantage when it is implementing a value-creating strategy not simultaneously being implemented by any current or potential competitors and when these other firms are unable to duplicate the benefits of this strategy”. He asserted that “a competitive advantage is sustained only if it continues to exist after efforts to duplicate that advantage have ceased”.

Hill and Jones (2001) believed that a sustained competitive advantage is simply a competitive advantage that has been maintained for a number of years.

Flint (2000) suggests short-term and long-term competitive advantages. Short-term competitive advantages which would last through a business cycle and long-term competitive advantages which would last over more than one business cycle. If there were a competitive advantage which was or had the potential of being over the entire length of the foreseeable future, then one could label that as an “unthreatened competitive advantage” (Flint, 2000).

Hoffman (2000) defines “SCA is the prolonged benefit of implementing some unique value-creating strategy not simultaneously being implemented by any current or potential competitors along with the inability to duplicate the benefits of this strategy”.

In conclusion, SCA is simply a CA that has been maintained for a period of time. The durability of competitive advantage depends upon the maintenance of the advantage, the ability of competitors to duplicate the advantage, or the ability of competitors to somehow obtain the benefits of the advantage.

2.4.3 Conditions for sustainable competitive advantage according to Hill and Jones

According to Hill and Jones (2001), the durability of competitive advantage depends on three factors: barriers to imitation, the capability of competitors, and the general dynamism of the industry environment.

2.4.3.1 Barriers to imitation

A company with a competitive advantage will earn higher average profits. These profits send a signal to rivals that the company is in possession of some valuable distinctive competency that allows it to create superior value. How quickly will rivals imitate a company's distinctive competencies? This is an important question because the speed of imitation has a bearing upon the durability of a company's competitive advantage. The critical issue is time. The longer it takes competitors to imitate a distinctive competency, the greater the opportunity the company has to build a strong market position and reputation with consumers, which is then more difficult for competitors to attack.

Barriers to imitation are a primary determinant of the speed of imitation. Barriers to imitation are factors that make it difficult for a competitor to copy a company's distinctive competencies. The greater the barriers to such imitation, the more sustainable are a company's competitive advantage.

Imitating resources is the easiest distinctive competencies for prospective rivals to imitate tend to be those based on possession of unique and valuable tangible resources because these resources are visible to competitors and can often be purchased on the open market. Intangible resources can be more difficult to imitate. Brand names are important because they symbolize a company's reputation. Marketing and technological know-how are also important intangible resources. Technological know-how is protected from imitation by the patent system.

Imitating company's capabilities tends to be more difficult than imitating its tangible and intangible resources. Since capabilities are based on the way decisions are made and processes managed deep within a company, it is hard for outsiders to disconcert them.

To sum up, since resources are easier to imitate than capabilities, a distinctive competency based on a company's unique capabilities is probably more durable than one based on its resources.

2.4.3.2 Capability of competitors

According to work done by Ghemawat (1986), a major determinant of the capability of competitors to rapidly imitate a company's CA is the nature of the competitor's prior strategic commitments. When competitors already have long-established commitments to a particular way of doing business, they may be slow to imitate an innovating company's competitive advantage (Hill and Jones, 2001).

Another determinant of the ability of competitors to respond to a company's competitive advantage is their absorptive capacity – that is the ability of an enterprise to identify, value, assimilate and utilize new knowledge.

Taken together, factors such as existing strategic commitments and low absorptive capacity limit the ability of established competitors to imitate the CA of a rival, particularly when the CA derives from innovative products or processes.

2.4.3.3 Industry dynamism

A dynamic industry environment is one that is changing rapidly. The most dynamic industries tend to be those with a very high rate of production innovation. In dynamic industries, the rapid rate of innovation means that product life cycles are shortening and the CA can be very transitory.

In summary, the durability of a company's competitive advantage depends on three factors: the height of barriers to imitation, the capability of competitors to imitate its innovation, and the general level of dynamism in the industry environment. When barriers to imitation are low, capable competitors abound, and the environment is very dynamic, with innovations being developed all the time, then competitive advantage is likely to be transitory. On the other hand, even within such industries, companies can achieve a more enduring competitive advantage if they are able to make investments that build barriers to imitation (Hill and Jones, 2001).

2.5 Resources, capabilities and competencies

2.5.1 Term and categories of resources

The notion of resources was introduced into the strategic management field in the 1970s when Ansoff (1965) categorized skills and resources according to the major functional area, i.e. research & development (R&D), operations, marketing, general management and finance.

But until the mid 1980s did the concept of resources as a source of sustainable competitive become dominant in the strategic field. There has been resurgence of interest in the role of the firm's resources as the foundation for firm strategy.

The firm's resources can be defined as stocks of available factors that are owned or controlled by the firm. The final products or services are produced by using a wide range of other firm assets and bonding mechanisms such as technology, management information systems, incentive system, trust between management and labour, and more (Amit and Schoemaker, 1993).

Grant (1991) defined resources as the inputs into the production process, which are the basis of analysis. To identify resources, financial balance sheets are notoriously inadequate because they disregard intangible resources and people-based skills – probably the most strategically important resources of the firm (Grant, 1991).

Barney (1986, 1991) also suggested that not all aspects of a firm's physical capital, human capital, and organizational capital are strategically relevant resources. Some of these attributes do enable a firm to conceive of any implement strategies that improve its efficiency and effectiveness. Others may have no impact on a firm's strategizing processes or may even have a negative effect.

Porter (1991) confirmed that resources are not valuable in and of themselves, but because they allow firms to perform activities that create advantages in particular markets. Resources are only meaningful in the context of performing certain activities to achieve certain competitive advantages.

Several resource level categorizations have been presented in the literature. One of the most famous classifications of resources is that of tangible and intangible resources. Physical or tangible resources are normally obvious to

firms, competitors, and customers. Intangible are less apparent to competitors and customers, or even the firm itself. Intangible resources include brand names; technological know-how; organizational capabilities embedded in a company's routines, process, and culture; reputation; tacit design; production know-how; customer relationships; and organizational culture. (Collis and Montgomery, 1995; Goodman and Lawless, 1994).

In conclusion, resources can be defined as a firm's financial, physical, human, technological, and organizational capital. They can be divided into tangible resources (land, buildings, plant, and equipment) and intangible resources (brand names, reputation, patents, and technological or marketing know-how).

2.5.2 Term and categories of capabilities

Capability has been used by many researchers as an alternative and substitute for "soft" resources to explain the notion behind a firm's competitive advantage. Some researchers claim that resources cannot answer the question of sustainable competitive advantage caused by intra-firm factors, but that using capability as a unit of analysis can (Decharin, 1999).

Ansoff (1965) first used the term capabilities to describe a company's ability to deal with different combinations of competitive environments and levels of entrepreneurial turbulence. Strategic capability was defined by Ansoff (1979) as a measure of effectiveness of firms in supporting a particular thrust.

Capabilities can be thought of as intermediate goods generated by the firm to provide enhanced productivity of its hard resources (Amit and Schoemaker, 1993). Capabilities could also be defined as a set of strategic business. Capabilities are strategic only when they begin and end with the customer. Capabilities are also collective and cross-functional (Stalk et al., 1992).

Capabilities are what a firm can do as a result of resource teams working together. A firm's capabilities can be identified and appraised using a standard functional classification of the firm's activities. For most firms, however, the most important capabilities are likely to be those which arise from an integration of individual functional capabilities (Grant, 1991).

Collis (1994) defined organizational capability as the socially complex routines that determine the efficiency with which firms physically transform inputs into outputs. This definition contains two important elements. The first is

the notion that organizational capabilities embedded in the firm routines. The second important element of the definition is that it involves the transformation of physical inputs into output inside the “black box” of the firm. In this role, capabilities function as the organizational complement to the technological determinants of the efficiency of production.

Ulrich and Lake (1990) defined organizational capability by linking it to the personnel aspect of the firm. Organizational capability is the ability of a firm to manage people to gain a competitive advantage. Building organizational capability focuses internal organizational processes and systems on meeting customer needs and ensures that the skills and efforts of employees are directed toward achieving the goals of the organization as a whole. In this way, employees become a critical resource for competitiveness that will sustain itself over time.

Teece et al., (1994) introduced the concept of dynamic capabilities, which emphasizes the development of management capabilities and inimitable combinations of organizational, functional, and technological skills. This concept examines the sources of competitive advantage and how the combination of competencies and resources can be developed, deployed, and protected. The term “dynamic” refers to the shifting character of the environment while the term “capabilities” emphasizes the key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competencies in a changing environment. To be strategic, capabilities must meet the customer’s needs, be unique, and be difficult to replicate.

Collis (1994) suggested that not all capabilities are sources of sustainable competitive advantages. The position of competitive advantage based on organizational capabilities are vulnerable to competitive actions on a number of dimensions, particular to being superseded by better and higher-order capabilities.

Long and Vickery-Koch (1995) had classified capabilities into three types based on their importance to the firm. They are threshold, critical and cutting-edge capabilities. Threshold capabilities or capabilities that is necessary just to be in the game. These include services to support internal customers as well as those skills and system that are conditions for doing business in the company’s industry. This type of capability could also be divided into support and basic capabilities. Critical capabilities are skills and system that are critical to customers and provide firms with today’s competitive advantage. Cutting-

edge capabilities are skills and system that need to be nurtured and developed as sources of tomorrow's competitive advantage.

Collis (1994) classified three types of organizational capabilities based upon the influence of capabilities on the organization. First are those that reflect an ability to perform the basic functional activities of the firm more efficiently than competitors. Second are capabilities that express the common theme of dynamic improvement to the activities of the firm. Third are capabilities that comprise the strategic insights which enable firms to recognise the intrinsic value of other resources or to develop novel strategies before competitors. However Collis argued that it is difficult to make hard and fast distinctions among the three categories of capabilities since they all concern the ability of firms to perform an activity more effectively than competitors with otherwise similar resource endowments.

Leonard-Barton (1992) classified capabilities into four types: employee knowledge and skills; technical system; managerial system; and values and norms. Employee knowledge and skills are embodied in people, and are the most often related with core capabilities. Technical systems result from years of accumulating, codifying and structuring the tacit knowledge in people's heads. Managerial systems represent formal and informal ways of creating knowledge and controlling knowledge. Values and norms are the values assigned within the company to the contents and structure of knowledge and the means of collecting and controlling knowledge.

To sum up, capabilities refer to a company's skills at coordinating its resources and putting them to productive use. Capabilities are intangible. Unique capability is one that no competitor possesses.

2.5.3 Term and categories of competencies

Distinctive competence emerged in the 1960s as a desired end-result of business policies (Reed and Defillippi, 1990). The term distinctive competence, first used by Selznick (1957) to describe the character of an organization, refers to what a firm does especially well in relation to its competitors (Long and Vickers-Koch, 1995). Thus, distinctive competence is an aggregate of numerous specific activities that organizations tend to perform better than other organizations within a similar environment (Snow and Hrebiniak, 1980). Hofer and Schendel (1987) described distinctive competence as the patterns of resource and skill deployments that will help the firm achieve its goals and objectives.

Distinctive competency is defined fairly uniformly in management literature and textbooks. Hill and Jones (2001) and Thompson and Strickland (1996) textbooks for strategic management agree on the distinctive competency definition as centering around the uniqueness and comparative performance of something arising within an organization in the light of organization's competitors' efforts (Flint, 2000).

According to Prahalad and Hamel (1990) core competencies are the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies. If core competence is about harmonizing streams of technology, it is also about the organization of work and the delivery of value. The force of core competence is felt as decisively in services as in manufacturing. Core competence is communication, involvement, and a deep commitment to working across organizational boundaries. It involves many levels of people and all functions. Core competence does not diminish with use but is enhanced as they are applied and shared. However, competencies still need to be nurtured and protected. Knowledge fades if it is not used.

Thompson and Strickland (1996) suggested four traits of core competence. First, core competence rarely consists of narrow skills or the work efforts of a single department. Rather they are composites of skills and activities performed at different locations in the firm's value chain that, when linked, create unique organizational capability. Second, because core competence typically originates in the combined efforts of different work groups and departments, individual supervisors and department head cannot be expected to see building the overall corporation's core competence as their responsibility. Third, the key thing to leveraging a company's core competence into long-term competitive advantage is concentrating more effort and more talent than rivals on deepening and strengthening these competencies. Fourth, because customers' needs change in often unpredictable ways and the specific skills needed for competitive success cannot always be accurately forecast, a company's selected bases of competencies need to be broad and flexible enough to respond to an unknown future.

Even though the concept of distinctive competence has been very popular in recent years, there are some weaknesses in this concept (Decharin, 1999). Campbell et al. (1995) suggested that despite its powerful appeal, the core competence concept has not provided practical guidelines for developing and implementing strategy. Many companies have tried to define their core competence but lacking reliable analytical tools, few have achieved the clarity

they sought. Furthermore, the core competence model does not account for the success of companies whose businesses have limited or no overlap.

Competencies are classified into various types by using various criteria.

They can be classified by the production process (Lado and Wilson, 1994):

- Input-based competence encompasses the physical resources, organizational capital resources, human resources, knowledge, skills, and capabilities that enable a firm's transformational processes to create and deliver products and services that are valued by customers.
- Transformational competence describes organizational capabilities required to advantageously convert input into outputs. These capabilities include innovation and entrepreneurship, organizational culture, and organizational learning.
- Output-based competence includes all knowledge-based, invisible strategic assets, such as corporate reputation or image, product or service quality, and customer loyalty.

According to Malerba and Marengo (1995), competencies can also be classified by their nature. Competencies can be classified along a series of continua: tacit vs. articulable; not teachable vs. teachable; not articulated vs. articulated; not observable in use vs. observable in use; complex vs. simple; and an element of a system vs. independent.

Competencies can also be classified according to the sources which originate them. Competencies may derive from formal or informal sources. The formal encompasses all the resources which are invested with the main purpose of creating new competencies.

There is also a hierarchical classification of capabilities possible: strategic (or selective) capabilities; organizational (coordinating) capabilities; functional capabilities; and adaptive (learning) capabilities.

Hamel (1994) classified competencies by the impact that they have on the organization. Hamel distinguished three broad types of core competence:

- Market-access competence, or all those skills which help to put a firm in close proximity to its customers, such as management of brand development, sales and marketing, distribution and logistics, technical support, etc.
- Integrity-related competence, or competencies which allow a company to do things more quickly, flexibly or with a higher degree of reliability than

competitors, such as quality, cycle time management, just-in-time inventory management, etc.

- Functionality-related competence or skills which enable the company to endow its services or product with unique functionality, thus investing the product with distinctive customer benefits, rather than merely making it incrementally better.

It is believed that functionality-related competence is becoming more important as a source of competitive differentiation, relative to the two competence types. This is because companies are converging around universally high standards for product and service integrity and are moving through alliances, acquisitions and industry consolidation to build broadly matching global brand and distribution capabilities (Hamel, 1994).

2.5.4 Summary

The shift in the strategic paradigm from the traditional Industrial Organization concept to a resource-based view has caused confusion among researchers and practitioners (Decharin, 1999). This confusion is caused by the differences in terminology and definitions within the resource-based view. There are various terms and definitions that illustrate the resource-based view of the firm such as: resource-based view, competence-based view, capability-based view. So far discussion about the domain of the resource-based view is marked by divergence and disagreement since key concepts, propositions, and terminology are only slowly being defined. Even though there are differences in terminology and definitions, all of the concepts emphasize the internal factors within the firm that contribute to sustainable competitive advantage.

The resource-based view theory was originally devised by Wernerfelt (1984), but only came to attention in recent years. Some researchers consider the resource-based view as an umbrella theory that encompasses both capabilities and competencies, but some researchers disagree with this idea. They argue that resources, capabilities, and competencies are different and individually important.

Even though resources, capabilities and competencies have been described separately and individually, they are all closely related to one another. From previous review, it should be apparent that in some circumstances these three concepts could be used interchangeably.

The definitions and key characteristics of these terms are noted:

- Resources refer to a firm's financial, physical, human, technological, and organizational capital. They can be divided into tangible resources (land, buildings, plant, and equipment) and intangible resources (brand names, reputation, patents, and technological or marketing know-how). A unique resource is one that no other company has. It is valuable if it in some way help create strong demand for the company's products.
- Capabilities refer to a company's skills at coordinating its resources and putting them to productive use. Capabilities are intangible. Unique capability is one that no competitor possesses.
- A distinctive competency is unique strength that allows a company to achieve superior efficiency, quality, innovation, or customer responsiveness. The distinctive competencies of an organization arise from two complementary sources: its resources and capabilities.
- For a company to have a distinctive competency, it must at a minimum have either (1) a unique and valuable resource and the capabilities necessary to exploit that resource or (2) a unique capability to manage common resources. A company is strongest when it possesses both unique and valuable resources and unique capabilities to manage those resources. Competencies are main source of competitive advantage.

2.6 Sources of competitive advantages according to Hill and Jones

2.6.1 Four factors as direct sources of competitive advantages

Hill and Jones (2001) suggested that the four factors building competitive advantage are efficiency, quality, innovation, and customer responsiveness. And these factors are highly interrelated.

2.6.1.1 Efficiency

A business is simply a device for transforming inputs into outputs. Inputs are basic factors of production such as labour, land, capital, management, and technological know-how. Outputs are the goods and services that the business produces. Efficiency can be measured as ratio between outputs over inputs (efficiency = inputs/outputs). The more efficient a company, the fewer the in-

puts required to produce a given output. Thus efficiency helps a company attain a low-cost competitive advantage.

The most important component of efficiency for many companies is employee productivity, which is usually measured by output per employee. Holding all else constant, the company with the highest employee productivity in an industry will typically have the lowest costs of production. In other words, that company will have a cost-based competitive advantage.

2.6.1.2 Quality

Quality products are goods and services that are reliable in the sense that they do the job they were designed for and do it well. The impact of high product quality on competitive advantage is twofold. First, providing high quality products increases the value of those products in the eyes of consumers. In turn, this enhance perception of value allows the company to charge a higher price for its products. The second impact of high quality on competitive advantage comes from the greater efficiency and the lower unit costs it brings. Less employee time is wasted making defective products or providing sub-standard services and less time has to be spent fixing mistakes, which translated into higher employee productivity and lower unit costs. Thus, high product quality not only lets a company charge higher prices for its product, but also lower costs.

2.6.1.3 Innovation

Innovation is the single most important building block of competitive advantage. Innovation can be defined as anything new or novel about the way a company operates or the products it produces. Innovation includes advances in the kinds of products, production process, management systems, organizational structures and strategies development by a company. Successful innovation is about developing new products and/or managing the enterprise in a novel way that creates value for customers. Successful innovation of products or processes gives a company something unique that its competitors lack. By the time competitors succeeded in imitating the innovator, the innovating company had built up such strong brand loyalty and supporting management processes that its position proven difficult for imitators to attack. Uniqueness lets a company differentiate itself from its rivals and charge a premium price for its product, or reduce its unit costs far below those of competitors.

2.6.1.4 Customer responsiveness

To achieve superior customer responsiveness, a company must be able to do a better job than competitors of identifying and satisfying the needs of its customers. Consumers will then place more value on its products, creating a differentiation based competitive advantage. Improving the quality of a company's product offering is consistent with achieving responsiveness, as is developing new products with features that existing products lack. In other words, achieving superior quality and innovation are an integral part of achieving superior customer responsiveness. Customization of goods and services to the unique demand of individual customers or customer groups is another aspect of customer responsiveness. An aspect of customer responsiveness that has drawn increasing attention is customer response time, which is the time that it takes for a good to be delivered or a service to be performed. Beside best quality, customization, and response time, other sources of enhanced customer responsiveness are superior design, superior service, and superior after sales service and support. All these factors enhance customer responsiveness and allow a company to differentiate itself from its less responsive competitors. In turn, differentiation enables a company to build brand loyalty and to charge a premium price for its products.

2.6.1.5 Summary

As summarized in **Figure 2.2**, efficiency, quality, innovation, and customer responsiveness are all important elements in obtaining a competitive advantage. Superior efficiency enables a company to lower its cost; superior quality lets it both charge a higher price and lower its cost; superior customer responsiveness allows it to charge a higher price; and superior innovation can lead to higher price or lower unit costs. Together, these four factors help a company create more value by lowering costs or differentiating its products from those of competitors, which enables the company to outperform its competitors.

2.6.2 Functional competencies as indirect sources of competitive advantages

2.6.2.1 General considerations

Hill and Jones (2001) asserted that a distinctive competency is unique strength that allows a company to achieve superior efficiency, quality, innova-

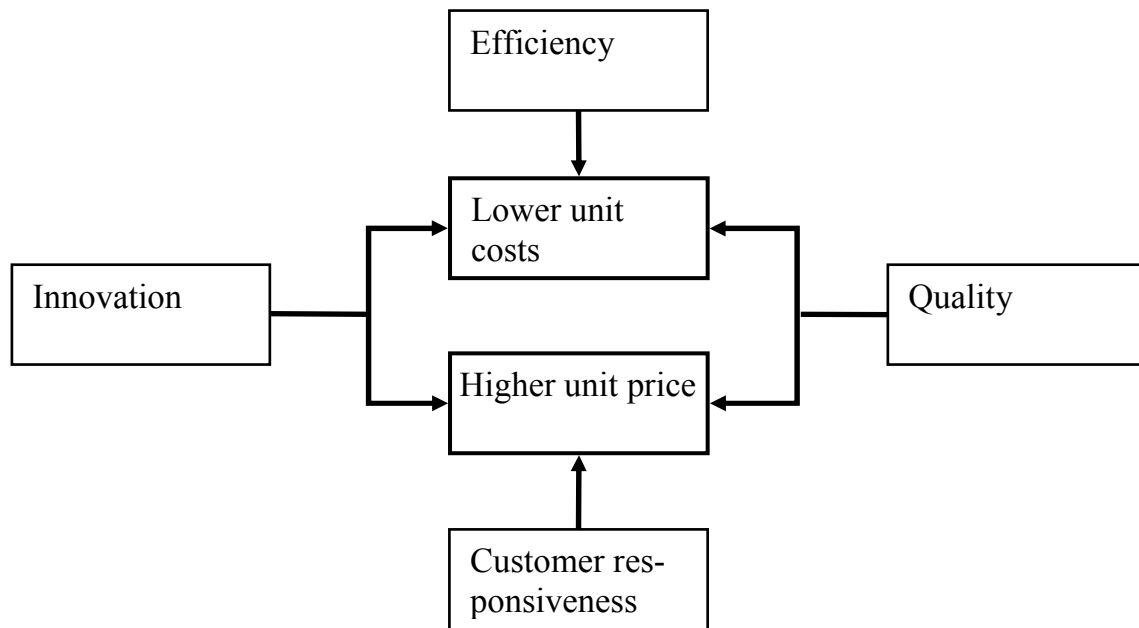


Figure 2.2: The impact of efficiency, quality, customer responsiveness and innovation on unit costs and prices

(Source: Adopted from Hill and Jones, 2001, p. 133)

tion, or customer responsiveness, and thereby to create superior value and attain a competitive advantage. A firm with a distinctive competency can differentiate its product or achieve substantially lower cost than its rivals. Consequently, it creates more value than its rivals and will earn a profit rate substantially above the industry average.

The distinctive competencies of an organization arise from two complementary sources: its resources and its capabilities (Hill and Jones, 2001; Decharin, 1999). To give rise to a distinctive competency, a company's resources must be both unique and valuable. A unique resource is one that no other company has. A resource is valuable if it in some way helps create strong demand for the company's products.

A company may have unique and valuable resources, but unless it has the capability to use those resources effectively, it may not be able to create or sustain a distinctive competency. It is also important to recognize that a company may not need unique and valuable resources to establish a distinctive competency so long as it has capabilities that no competitor possesses.

In summary, for a company to have a distinctive competency, it must at a minimum have either (1) a unique and valuable resource and the capabilities (skills) necessary to exploit that resource or (2) a unique capability to manage

common resources as they allow organization achieve superior efficiency, quality, innovation, or customer responsiveness, and thereby to create superior value and attain a competitive advantage. A company's distinctive competency is strongest when it possesses both unique and valuable resources and unique capabilities to manage those resources.

2.6.2.2 Functional competencies as sources of competitive advantages

Many authors focused their research on functional areas and confirmed that functional areas could be become core competencies of an organization through the combination of skills and resources. Snow and Hrebiniak (1980) pointed to functional areas of the firm as areas of competency. Hitt and Ireland (1985) listed 55 different distinctive competence activities within functional areas. Even though competency is defined here simply as being the particular skills and resources a firms possesses, and the superior way in which they are used. In the empirical studies of Droge (1994), Akimova (2000) and Li (2000), functional areas had been seen as source of competitive advantage. Core competencies of functional areas through the fusion of resources and capabilities are main source of SCA (Decharin, 1999).

Hill and Jones (2001) asserted that competencies at functional-level can be sources of CA through assessing the four factors of CA – efficiency, quality, innovation, and customer responsiveness. Functional-level strategies are strategies directed at improving the effectiveness of basic operations within a company. They include primary functions (e.g. production, marketing, research and development) and support functions (e.g. information system, human resources, and infrastructure).

2.6.2.3 Production competencies as source of competitive advantage

Production generally means manufacturing (Hill and Jones, 2001). Gaither and Frazier (1999) defined a production system as the process of taking inputs (raw materials, personnel, machines, buildings, technology, cash, information, and other resources) and converting them into outputs (products and services). This conversion process is the heart of what is called production and is the predominant activity of a production system. Production function of a company creates value by performing its activities efficiently so that lower cost result. Production can also create more value by performing its activities in a way that is consistent with high product quality, which leads to differentiation

and lower cost. Both of these increase the value created by a company **Table 2.1** shows how production function can achieve CA through superior efficiency, superior quality, superior innovation and superior customer responsiveness.

Table 2.1: The production roles in achieving competitive advantage

Value creation	Production competencies
Superior efficiency	<ul style="list-style-type: none"> ▪ Pursue economies of scale and learning economics (where appropriate) ▪ Implement flexible manufacturing system ▪ Implement just-in-time system
Superior quality	<ul style="list-style-type: none"> ▪ Shorten production run ▪ Trace defects back to source ▪ Rationalize suppliers ▪ Cooperate with R&D on designing products that are easy to manufacture ▪ Work with R&D to develop process innovations ▪ Help suppliers implement total quality management (TQM) ▪ Trace defect back to suppliers
Superior Innovation	<ul style="list-style-type: none"> ▪ Cooperate with R&D on designing products that are easy to manufacture ▪ Work with R&D to develop process innovations

(Source: Adopted from Hill and Jones, 2001)

2.6.2.4 Marketing competencies as source of competitive advantage

Marketing refers to the position that a company takes with regards to pricing, promotion, advertising, product design, and distribution. Marketing can improve efficiency by lowering customer defection rates, thus allows a company to achieve substantial cost economies.

There are several other ways in which marketing functions of a company can help create value. Through brand positioning and advertising, the marketing function can increase the value that consumers perceive to be contained in a company's product. Insofar as these activities help create a favourable impression of the company's product in the minds of consumers, they increase value. Marketing can also create value by discovering consumer needs and

communicating them back to the R&D function of the company, which can then design products that better match those needs. The role of service function of an enterprise is to provide after-sales service and support. This function can create a perception of superior value in the mind of consumers by solving customer problems and supporting customers after they have purchased the product.

The **Table 2.2** shows how marketing function can achieve CA through superior efficiency, superior quality, superior innovation and superior customer responsiveness.

Table 2.2: The marketing roles in achieving competitive advantage

Value creation	Marketing
Superior efficiency	<ul style="list-style-type: none">▪ Adopt aggressive marketing to ride down the experience curve (where appropriate)▪ Limit customer defection rates by building brand loyalty
Superior quality	<ul style="list-style-type: none">▪ Focus on the customers▪ Provide customer feedback on quality
Superior Innovation	<ul style="list-style-type: none">▪ Provide market information to R&D▪ Work with R&D to develop new products
Superior customer responsiveness	<ul style="list-style-type: none">▪ Know the customers▪ Communicate customer feedback to appropriate functions

(Source: Adopted from Hill and Jones, 2001)

2.6.2.5 Research & development competencies as source of competitive advantage

R&D is concerned with the design products and production processes. By superior product design, R&D can increase the functionality of products, which makes them more attractive to consumers. Alternatively, the work of R&D may also result in more efficient production processes, thereby lowering production costs. Either way, the R&D function of an enterprise can create value (Hill and Jones, 2001). **Table 2.3** presents primary roles of R&D function required in order to achieve four sources of competitive advantage.

Table 2.3: The R&D roles in achieving competitive advantage

Value creation	R&D primary roles
Superior efficiency	<ul style="list-style-type: none"> ▪ Design products for ease of manufacture ▪ Seek process innovations
Superior quality	<ul style="list-style-type: none"> ▪ Design products that are easy to manufacture
Superior Innovation	<ul style="list-style-type: none"> ▪ Develop new products and processes ▪ Cooperate with other functions, particularly marketing and manufacturing, in the development process
Superior customer responsiveness	<ul style="list-style-type: none"> ▪ Bring customers into the product development process
Superior customer responsiveness	<ul style="list-style-type: none"> ▪ Achieve customization in implementing flexible manufacturing ▪ Achieve rapid response through flexible manufacturing ▪ Develop logistics system capable of responding quickly to unanticipated customer demand

(Source: Adopted from Hill and Jones, 2001)

2.6.2.6 Human resource competencies as source of competitive advantage

There are a number of ways in which the human resource function can help an enterprise create more value. The human resource function ensures that the company has the right mix of skilled people to perform its value creation activities effectively. It also the join of the human resource function to ensure that people are adequately trained, motivated, and compensated to perform their value creation tasks. **Table 2.4** indicates how to achieve the CA through human resource.

According to Hill and Jones (2001), supportive activities allow the primary activities to take place. Supportive activities include materials management, human resource, information system and company infrastructure.

Table 2.4: The human resource roles in achieving competitive advantage

Value creation	Human Resource
Superior efficiency	<ul style="list-style-type: none">▪ Institute training program to build skills▪ Implement self-managing teams▪ Implement pay for performance
Superior quality	<ul style="list-style-type: none">▪ Institute TQM training programs▪ Organize employees into quality teams
Superior Innovation	<ul style="list-style-type: none">▪ Hire talent scientist and engineers
Superior customer responsiveness	<ul style="list-style-type: none">▪ Develop training programs that get employees to think like customers

(Source: Adopted from Hill and Jones, 2001)

2.6.2.7 The materials management competencies as source of competitive advantage

This function controls the transmission of physical materials from procurement through production and into distribution. The efficiency with which this is carried out can significantly lower costs, thereby creating more value (Hill and Jones, 2001). **Table 2.5** shows how materials management function can achieve CA through superior efficiency, superior quality, and superior customer responsiveness.

Table 2.5: The material management roles in achieving competitive advantage

Value creation	Materials Management
Superior efficiency	<ul style="list-style-type: none">▪ Implement Just in time system
Superior quality	<ul style="list-style-type: none">▪ Rationalize suppliers▪ Help suppliers implement TQM▪ Trade defects back to suppliers
Superior customer responsiveness	<ul style="list-style-type: none">▪ Develop logistic systems capable of responding quickly to anticipated customer demands

(Source: Adopted from Hill and Jones, 2001)

2.6.2.8 Information system competencies as source of competitive advantage

It refers to the electronic systems for managing inventory, tracking sales, pricing products, selling products, dealing with customer service inquiries, and so on. Information systems, when coupled with the communications features of the Internet, are holding out the promise of being able to alter the efficiency and effectiveness with which a company manages its other value creation activities (Hill and Jones, 2001). **Table 2.6** shows how information system function can achieve CA through superior efficiency, superior quality, superior innovation and superior customer responsiveness.

Table 2.6: The information system roles of different value creation in achieving competitive advantage

Value creation	Information system
Superior efficiency	<ul style="list-style-type: none">▪ Use information systems to automate processes▪ Use information systems to reduce costs of coordination
Superior quality	Use information system to monitor defect rates
Superior Innovation	Use information systems to coordinate cross-functional and cross-company product development work
Superior customer responsiveness	Use web-based information system to increase customer responsiveness

(Source: Adopted from Hill and Jones, 2001)

2.6.2.9 Company infrastructure competencies as source of competitive advantage

According to Hill and Jones (2001) infrastructure means the companywide context within which all the other value creation activities take place. The infrastructure includes the organizational structure, control systems, and culture of the company. Since top management should also be viewed as part of a company's infrastructure. Indeed, through strong leadership, top management can consciously shape a company's infrastructure, and through it, the performance of all other value creation activities within the company. **Table 2.7** shows how company infrastructure function can achieve CA through superior efficiency, superior quality, superior innovation and superior customer responsiveness.

Table 2.7: The infrastructure roles in achieving competitive advantage

Value creation	Company infrastructure
Superior efficiency	<ul style="list-style-type: none">▪ Provide companywide commitment to efficiency▪ Facilitate cooperation among functions
Superior quality	<ul style="list-style-type: none">▪ Provide leadership and commitment to quality▪ Find ways to measure quality▪ Set goals and create incentives
Superior Innovation	<ul style="list-style-type: none">▪ Manage overall project▪ Facilitate cross-functional cooperation
Superior customer responsiveness	Through leadership by example, building a companywide commitment to customer responsiveness

(Source: Adopted from Hill and Jones, 2001)

2.7 Company performance

Many of the perspectives that nominated the early thinking concerning firm performance have their roots in traditional economic theory with an emphasis on market power and industry structure as determinants of firm performance (Chadwick 1999; Chandler, 1994; Knight, 1997; Wiklund, 1999). These studies emphasize economies of scale and scope, the optimization of transactions costs across the subsidiaries and critical market characteristics to explain different firm-level strategies of performance.

Traditionally, performance measurement is defined as the process of quantifying effectiveness and efficiency of action. In other words, measuring performance means transferring the complex reality of performance into a sequence of limited symbols that can be communicated and reported under similar circumstances (Neely et al., 1995).

In modern business management, performance measurement assumes a far more significant role than quantification and accounting (Chan and Qi, 2003). Performance measurement can provide important feedback information to enable managers to monitor performance, reveal progress, enhance motivation and communication, and diagnose problems (Rolstandas, 1998; Waggoner et al., 1999).

According to Venkataraman and Vansudevan (1986), there are two major issues associated with the operationalization of organizational performance. First, what constitutes the construct of the firm performance?. In other words, how researchers can define the performance of the organizations. Second, there are still several questions such as what are the data sources that should be used in measurement of this construct. Should archival (or secondary) measures be used or can respondent (or primary) data be used as reliable. Organizational performance or effectiveness is a multifaceted phenomenon that is difficult to comprehend and measure (Goodman and Pennings, 1977). Venkataraman (1990) also emphasizes that it is impossible to obtain any consensus on developing measure of organizational effectiveness since there is no universal theory of organizations. Researcher have argued that no one single measure is inherently superior to another and the definition that a researcher adopts is based on the disciplinary framework adopted for the study (George, 1997). Performance may vary according to whose viewpoint is taken (e.g., customers or stockholders), the time period observed, criteria used, and so on. According to Hitt and Ireland (1985) different fields of study should use different measures of organizational performance because of the difference in their research questions.

For measuring a firm's performance, objective and subjective measures have been used. The objective measures include measures such as return on assets, market share, sales, export proportion, growth rates in domestic and export sales growth. Similar measures are used by previous researcher (e.g. Hitt et al., 1982, 1985). Similarly, the subjective measures of performance include management's perceptions of productivity, profitability, market share, and customer satisfaction relative to competitors. The possibility of using subjective performance measures (the management perceptions) was suggested by Dess and Robinson (1984) if the accurate objective measures are unavailable. Subjective measures of performance have been used by several researchers (e.g. Li, 2000, Akimova, 2000).

The **Table 2.8** provides the review of performance measures that have been used in competitive advantage research.

Table 2.8: Performance measures used in empirical competitive advantage research

Author	Performance measures used in research
Snow, Charles.C and Hrebiniak, Lawrence.G (1980)	Ratio of total income to total assets
Hitt, M.C, Ireland, D.R and Stadter, G (1982)	Price earning; return on equity (ROE); return on capital (ROC); sales volumes and earning per share
Hitt, M.C and Ireland, D.R (1985)	Market return (Derived from geometric mean annual stock return; geometric mean annual risk free rate and beta measure of systematic risk)
Droge, C. and Vickery, S. (1994)	<ul style="list-style-type: none"> ▪ Return on Investment (ROI) and ROI growth; ▪ Market share and market share growth ▪ Return on Sales (ROS) and ROS growth
Sharma, Bishnu. and Fisher, Tom. (1997)	<ul style="list-style-type: none"> ▪ Sales per employee; Return on Asset (ROA); Market share; Sales; Export proportion, growth rates in domestic; Export sales growth; ▪ Perceived performance: productivity, profitability; customer satisfaction; market share)
Li, Ling. X. (2000)	<ul style="list-style-type: none"> ▪ Sales volume; ▪ Profit after tax ▪ Market share ▪ Return on Investment (ROI)
Akimova, Irina. (2000)	<ul style="list-style-type: none"> ▪ Return on Investment (ROI) ▪ Profit ▪ Sales volume; Market share; cash flow

(Source: Author)

2.8 Empirical findings about functional competencies and firm performance

2.8.1 Summary of the studies

The central interest of mainstream research is whether functional competencies can authentically provide better company performance and what significance of the relationship between functional competencies and company per-

formance. According to many researchers (e.g. Droge and Vickery, 1994; Hitt and Ireland, 1985; Li, 2000, Snow and Hrebiniak, 1980) and especially through examining the four criteria of superior efficiency, superior quality, superior innovation and superior customer responsiveness done by Hill and Jones (2001), functional competencies can serve competitive advantage. This research area had drawn attention of many scholars since 1980s (Snow and Hrebiniak) till present (Thang 2004).

Following this growing area of research, this dissertation reviewed the previous empirical studies regarding this question. The below **Table 2.9** presents summary of key studies in this field. In general, while scholars held common interest in finding supporting evidences for the linkage, they differed remarkably in their perspectives and approaches of how to investigate the relationship. The differences ranged from the bundling approach, the type of models, the composition of practices, and data collection approaches, to results that were found. These are the topics of detailed discussion in the following section.

2.8.2 Comparison of the studies

2.8.2.1 Functions to be included

Previous work was seriously lacking consensus with regard to precisely which functions should be included. This becomes apparent with the review of numerous articles in highly recognized scholarly journals published from as early as 1980 to as recently as 2004. The functions included in these studies and their impacts on organizational performance vary significantly. The functions analyzed were ranging from 3 (Droge and Vickery, 1994) to 10 (Snow and Hrebiniak, 1980) across these studies, covering such manufacturing, marketing, research and development, financial, human resource, administration and others. Only four showed up in majority of studies including manufacturing, marketing, research & development and human resource management. Items used in each function also varied significantly made number of variables employed in these studies ranging from 31 (Droge and Vickery, 1994) to 55 (Hitt and Ireland, 1982).

Table 2.9: A summary of findings of previous studies

Descriptions	Methodology	Findings	Limitations
<p>Snow and Hrebiniak (1980)</p> <p>Sample: 88 firms & 236 usable questionnaire from four selected industries (automotive, air transportation, plastics and semiconductors)</p> <p>Cover ten functions: general management, financial management, marketing, market research, R&D, engineering, production, distribution, legal affairs, and personnel</p>	<ul style="list-style-type: none"> ▪ Data collected from mailing questionnaires to top managers. ▪ Dependent variables: objective measure of profitability, ration of total income to total assets and obtained from Moody's Industrial Manual (1976), Moody's OTC industrial manual (1976), and Moody's transportation Manual (1976) ▪ Factor analysis was used to test the reliability of functional competency measures 	<ul style="list-style-type: none"> ▪ General management, financial management, production & engineering were perceived as strengths of defender organization. ▪ Prospector organizations perceived general management as a strength in all four industries, engineering in three industries, R&D in two and market research in none. ▪ General management & production perceived as strength of analyzer organizations in three industries, engineering in two and marketing in one. ▪ Production & financial management were perceived as strength of reactor organization in all four industries, engineering in three and general management in only one (air transportation) ▪ Defenders, prospectors, and analyzers perform better than reactors in plastics, semiconductor, and automotive industries ▪ Reactors in air transportation industry outperform both defenders and prospectors 	<ul style="list-style-type: none"> ▪ Potential problem of bias sample ▪ The reliability of some functional competency measures was low ▪ Financial data was only available for 66 of 88 companies.

Table 2.9: A summary of findings of previous studies (cont.)

Descriptions	Methodology	Findings	Limitations
<p>Hitt, Ireland and Stadter (1982)</p> <p>Sample: 117 manufacturing firms from one thousand largest manufacturing firms listed in Fortune directory. 249 usable responses.</p> <p>Cover seven functions: general administration, production, engineering, R&D, marketing, finance, personnel, public and governmental relations</p>	<ul style="list-style-type: none"> ▪ Data collected from mailing questionnaires to Chief Executive Officer (CEO) ▪ Dependent variable: price earnings ratio (PE), ROE, ROC (return on capital), sales, EPS (earning per share) obtained from “Standard and Poor’s Compustat data files”. ▪ Regression was used for analysis 	<ul style="list-style-type: none"> ▪ Dominant functional mix predictive of company performance varies with the type of industry in which the firm operates ▪ In the firms pursued internal growth strategy and offered consumer non-durable goods, production had strongest relationship with company performance variables (positive with the PE ratio, ROE & ROC & a negative with sales). Engineering R&D, and personnel had negative relationship with sales. ▪ In the firms pursued internal growth strategy and offered capital goods, administration, production, and personnel were positively related to the PE ratio. Production, personnel and public & governmental relations were positively related to both ROE and ROC. Production, engineering R&D, personnel & public and governmental relations were negatively related to EPS ▪ In the firms pursued internal growth strategy and offered producer goods, production, marketing, finance, personnel & public & governmental relation were all positively related to the PE ratio. Marketing was negatively related to ROE, sales, and EPS. ▪ No strong consistent relationships for firms in a consumer non-durable goods industry. 	<p>The reliability of each measures was not shown in the study</p>

Table 2.9: A summary of findings of previous studies (cont.)

Descriptions	Methodology	Findings	Limitations
<p>Hitt and Ireland (1985)</p> <p>Sample: 185 firms from Fortune 1000 industrial firms Cover seven functions: general administration, operation, engineering and R&D, Marketing, Finance, personnel and Public & government relations</p>	<ul style="list-style-type: none"> ▪ Data collected from mailing questionnaires to Chief Executive Officer (CEO) ▪ Factor analysis was used to test measure's reliability ▪ Dependent variable: ROI, ROE, ROA, EPS (earning per share) obtained from Center for Research in security prices, Value line investment survey, Federal reserve Bulletins. 	<ul style="list-style-type: none"> ▪ Operation and marketing activities positively related to performance in firms implementing a stability-grand strategy ▪ Operation and finance activities positively related to performance in firms implementing an internal-grand strategy ▪ For firms implementing an acquisitive-growth strategy, operation and public & government relations activities had positive relationships with performance ▪ Performance had negative correlation with general administration, production, marketing and personnel activities in retrenchment strategy firms ▪ For firms operating in consumer non-durable goods industry, finance activities were related positively to performance while engineering, R&D activities negatively related to performance. ▪ Production activities were related positively to performance for firms in capital goods industry ▪ Marketing activities were related negatively to performance whereas production showed positive relationship. 	<ul style="list-style-type: none"> ▪ Common method bias ▪ Firm performance measures

Table 2.9: A summary of findings of previous studies (cont.)

Descriptions	Methodology	Findings	Limitations
<p>Droge and Vickery (1994)</p> <p>Sample: 65 firms from residential furniture industry Response rate: 20% Cover three functions: manufacturing, marketing and product design & development</p>	<ul style="list-style-type: none"> ▪ Data collected from mailing questionnaires to CEO (mailings were followed by at least three phone calls) ▪ Taxonomy of functional competencies derived by weighting factors ▪ Dependent variable: subjective rating of ROI; ROI growth; Market share; Market share growth, ROS; ROS growth ▪ Simply & stepwise regression were used to analyze relationship of functional competencies & firm performance 	<ul style="list-style-type: none"> ▪ Product design & development is a key determinant of business performance ▪ Marketing & product design & development are positively related to every measure of performance ▪ Manufacturing is positively related to ROI & ROI growth. 	<ul style="list-style-type: none"> ▪ The reliability of each measures was not showed ▪ Perceptual firm performance ▪ Focusing on one industry limits generalizability of results

Table 2.9: A summary of findings of previous studies (cont.)

Descriptions	Methodology	Findings	Limitations
<p>Li (2000)</p> <p>Sample: 72 Chinese manufacturing firms Response rate: 24% Cover four functions: manufacturing, marketing, product design and development and human resource</p>	<ul style="list-style-type: none"> ▪ Data collected from contacting to Chinese managers ▪ Taxonomy of functional competencies derived from compiling competency items given in literature ▪ Construct measured by sum up all elements of the construct ▪ Dependent variable: subjective rating of sales revenues; profit after tax; Market share; and return on investment (ROI) 	<ul style="list-style-type: none"> ▪ Marketing competencies have positive impact on all four performance measures ▪ Product innovation is related to sales volume and ROI but not significantly related to profit after tax or market share growth performance ▪ Manufacturing is strongly correlated with sales volume, market share growth, and ROI, but does not have a significant predictive relationship with profit after tax. ▪ Human resource is significantly correlated with all four performance indicators 	<ul style="list-style-type: none"> ▪ Not clear on how to collect the data ▪ The reliability of each dimensions and measures was not shown ▪ Firm performance was self-reported changes by respondents

2.8.2.2 Bundling approach

Despite the ascendancy of the bundle approach, there still is room for differences among scholars in selecting how to bundle the practices in each functional competency. In the main, two approaches are widely seen in the literature, even though there remains limited theory specifying how practices in each functional competency should be grouped together. One approach examines the total items in each function by integrating all practices in that function into a single index to measure the extent a company utilize these functional practices (e.g. Droge and Vickery, 1994; Hitt and Ireland, 1985; Snow and Hrebiniak, 1980), while the others develop and empirically verify key dimensions of each function (Li, 2000; Akimova, 2000; Thang, 2004) through methods such as factor analysis.

In the selection of approach, author reasoned that the need to identify the underlying dimensions of each functional competency, which are related to each other in certain ways, makes the use of factor analysis more appropriate. This approach is also advantageous in providing a more insightful picture of the structure of the aggregation of each functional competency rather than the black-box composite index.

2.8.2.3 Types of model structure

Other differences can be seen in how researchers established the linkage between functional competencies and organizational performance. Generally, two structures of models can be found in literature. One of which known as direct linkage, established a direct linkage between functional competencies and firm performance (e.g. Droge and Vickery, 1994; Akimova, 2000; Li, 2000). The other namely moderating linkage, added between functional competencies and firm performance a moderating constructs, e.g. grand strategy (e.g. Hitt et.al, 1982; Hitt and Ireland, 1985) in hope to shed more explanatory light on the direct linkage.

2.8.2.4 Data collection approaches

The sampling frames were defined differently across the previous studies. Scholars tended to use firm success (in terms of sales) as a selection criterion. It seems that previous research lacked consensus on how large a firm should be quality for selection.

On a whole, previous work was rather consistent in the methods for data collection. Data were collected by surveying senior managers in all of the studies. Most of the studies used cross-sectional data. The simultaneous collecting of data on functional competencies and firm performance may cause the potential problem of simultaneity; that is causality between functional competencies and organizational performance cannot be definitively determined. It is certainly possible that firms experiencing higher firm performance are better performing functional competencies.

Sampling procedures followed clearly seen patterns. Sampling either focused on a narrow setting of one industry (e.g. Conant et. al, 1990; Droge and Vickery, 1994) or broadly covered across industries (e.g. Hitt and Ireland, 1982; Li, 2000; Snow and Hrebiniak, 1980).

The final issue regarding data collection in previous studies is the magnitude of the sample size. Studies varied considerably in the sample size, from the low of 65 firms (Droge and Vickery, 1994) to the high of 185 firms (Hitt and Ireland, 1985) organizations. The average sample size was 105 firms. In addition, the typical range of response rates was between 20 per cent (Droge and Vickery, 1994) and 24 per cent (Li, 2000).

It is worth noting that a great variety of measures to gauge organizational performance was in previous studies. Firm's measurement indicators are ranging from a low of 4 (e.g. Li, 2000) to 6 (Droge and Vickery, 1994). The current review also witnessed a similar set of variant measures including organizational outcomes, financial outcomes and stock market performance. In general, for measuring a firm's performance, objective and subjective measures have been used in these studies. The objective measures include measures (e.g. Hitt et. al, 1982, 1985) such as return on assets, market share, sales, and growth in sales. This measure is more accurate but requires availability and accuracy of the firm's measures like financial indicators, market share. Similarly, the subjective measures of performance include management's perceptions of these measurements relative to competitors. This type of measurement was suggested by Dess and Robison (1984) if the accurate objective measures are unavailable. Subjective measures of performance have been used by several researchers. This type of measure was not only used by Western scholars (e.g. Droge and Vickery, 1994) but also widely used in particular in a significant number of studies of the non-US setting (e.g. Li, 2000; Akimova, 2000) due to difficulties in collecting reliable objective performance data.

2.8.2.5 Findings of previous studies

Given the diversity of methodologies used in previous studies, it should be expected that the findings in prior work are highly diverse. However, the common feature across these outcomes is that the authors consistently found significant relationship between functional competencies and various indicators of organizational performance. Majority of previous research looked at the impact on return on investment (ROI), return on equity (ROE), market share and sales. The findings are synthesized by type of performance measures and type of model structure as described below.

It was reported that ROI was positively related to competencies in marketing, manufacturing, and product design and development (Droge and Vickery, 1994; Li, 2000) and human resource competencies (Li, 2000). In addition, ROE was positively associated with production in the internal growth/consumer no-durable cell, but negative with marketing (Hitt et al., 1982).

There were positive relationship between market share and sales with marketing, manufacturing, human resource (Li, 2000). Product innovation was not significantly related to market share but with sales volume (Li, 2000). Droge and Vickery (1994) found positive relation only between market share and return on sales with marketing and product innovation but not with manufacturing.

Hitt and Ireland (1985) and Hitt et. al. (1982) reported that type of strategy and industry moderates the relationship between functional competencies and organizational performance. For example, no main effects on the relationship exist between production/operation and performance for stability strategy firms, nor those firms in a consumer non-durable goods industry were found. However a strong relationship exists between production and performance for firms using a stability strategy and in a consumer non-durable goods industry. They found strong negative relationship between research and development and performance for firm implementing a stability strategy in a producer goods industry (Hitt and Ireland, 1985).

2.9 Conclusions for research

Theoretical and empirical studies provide reasonable level of support for the positive relationship between functional competencies and various indicators of organizational performance. In the main, the evidence is supportive a direct

relationship yet tends to be mixed in results regarding the significance of this relationship. In addition, although there is a growing volume of research of this kind in Western and non-Western context, there is limited, if any, research in the context of developing countries. These underline the opportunities to extend research into this yet to be exploited area.

There is a methodological diversity in research examining the multiple functional competencies at the organizational performance. One of the possible sources that were responsible for this variation is the influence of contextual factors. This is illustrated by the use of different performance measures and the heterogeneity of practices of each function included in the prior studies. While financial data such ROE and ROA are more available in Western countries, they are difficult to be obtained in other countries such China (Li, 2000) and Ukraine (Akimova, 2000), making it more appropriate to use subjective (perceptual) measure of firm performance. An implication is needs to tailor the methodology to the context.

Under the systemic view, prior studies either examine predetermined combinations of functional competencies (some even narrow it down to a single index to represent a whole function) or develop and empirically verify key dimensions of each function by factor analysis. The latter approach is more appropriate to capture variations in the formation of dimensions of each functional competency due to contextual influences.

Remarkably, previous research relying on factor analysis did not render uniform dimensions of the same functions, in part due to the inclusion of different practices to reflect the context under study. This emphasizes the need for identifying the dimensions of each functional competency in context. As result, this study adopts some key functions from the literature and then conducting an exploratory factor analysis to pinpoint precisely the dimensions of each function arising in companies currently operating in Vietnam.

3 Conceptual framework, measurement instrument development and data collection

3.1 Chapter overview

The previous chapter provided insights into key theoretical concepts and principles relating to the field of competitive advantage and performance.

This chapter covers two sections. First section summarizes the inter-relationships between those theoretical concepts and principles in a conceptual framework. Hypothesis development is also presented in this chapter.

Second section of this chapter presents the measurement instrument development used to collect the data in the research. The nature of collected data, and the main tools utilized in assessing the reliability and validity of the data set are also presented. A survey resulted in 110 useable questionnaires as the database for analysis.

3.2 Conceptual framework and hypothesis development

3.2.1 Conceptual framework

Previous research has tended to study the impact of one functional area competence on a firm's overall performance (Capon et al., 1990; Drucker, 1973; Ettlie, 1997; Hayes and Wheelwright, 1984; Tunaly, 1992). Recent studies show that only when a firm can concert its functional area competencies can be more competitive on the market place (Evans and Lindsay, 1996; Hill and Jones, 2001; Porter, 1990; Droge and Vickery, 1994; Li, 2000). Many researchers have concluded that desired level of performance cannot be achieved in organizations which fail to respond effectively to relevant environmental demand (e.g., Lawrence and Lorsch, 1967; Dill, 1976; Pfeffer and Salancik, 1978; Ansoff, 1979; Poter, 1980; Hitt et. al., 1982). Since environmental demands vary across organizations, different firms may have to emphasize the development of different mixes (or combinations) of key functional area competencies (Corbert and Wassenhove, 1993, Hitt et al., 1982, Li, 2000). In addition, many researchers had emphasized the importance of an integrative perspective (Berry, Hill, Klompmaker and McLaughlin, 1991; Droge and Vikery, 1994; Hitt et al., 1982, 1985, Li, 2000). Therefore, this study integrates several functional competencies to examine the relationship between sources of competitive advantage and organizational performance.

On the basis of the preceding discussion and the synthesis of the existing literature, a proposed conceptual framework for the current research is designed as shown in **Figure 3.1**. The two main components that constitute the conceptual framework include the sources of competitive advantage covering functional competencies in manufacturing, marketing, research & development, and human resource, and the firm performances which include both profitability and market performance.

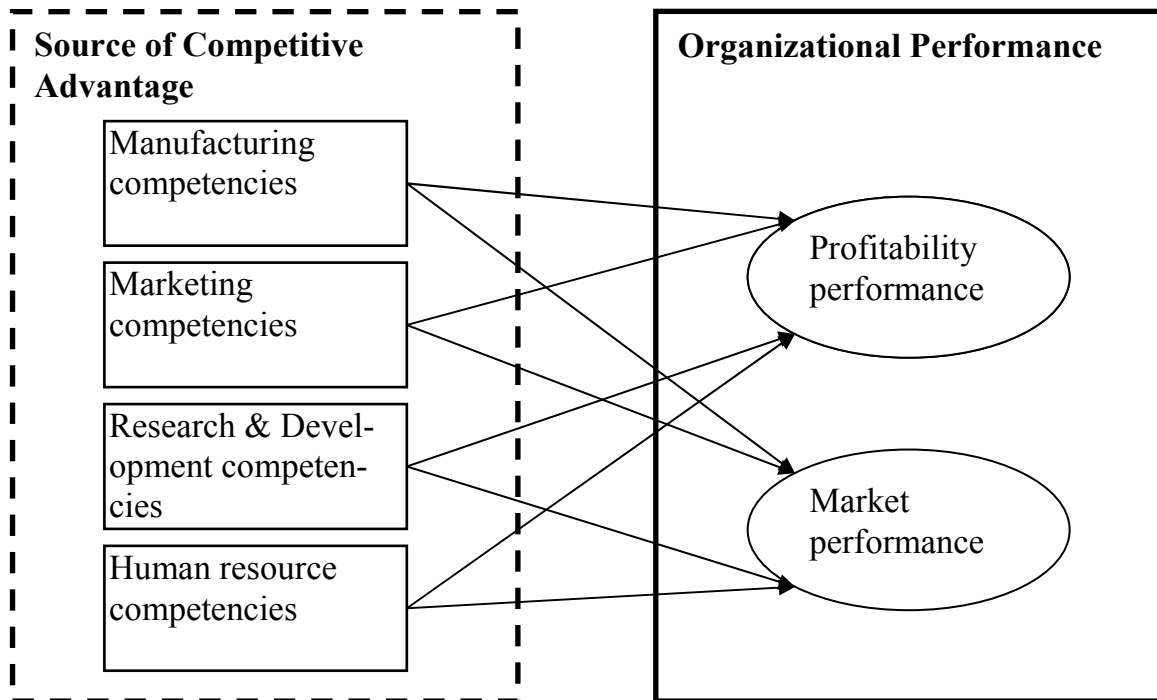


Figure 3.1: A conceptual model of the relationship between functional competencies and firm performance

First the four functional competencies in manufacturing, marketing, human resource and R&D are chosen as critical sources of competitive advantage for manufacturing companies. The relative importance of functional areas to various measures of company performance has been specified previously (e.g. Lawrence and Lorsch, 1967; Miles and Snow, 1978; Snow and Hrebiniak, 1980; Hitt et al., 1982, 1985; Droge and Vickery, 1994; Li, 2000). According to Droge et al. (1994) these four functional area competencies have long been hypothesized to be vital factors that positively contribute to the manufacturing firm performance (Li, 2000). For example, Drucker (1973) argued that marketing and R&D were essential competencies of a firm (Li, 2000). Capon et al. (1990) suggested that a firm's profitability was particularly sensitive to product innovation and market development (Li, 2000). Researchers (Hayes and Wheelwright, 1984; Skinner, 1969, 1985; Tunaly, 1992) have either hypothesized or used field data to illustrate the importance of manufacturing

competency of a firm (Li, 2000). Recently, human resource has been recognized as a key competency to serve customers and increase market share (Deming, 1986; Evans and Lindsay, 1996; Simerly, 1997, Thang, 2004).

Second, to measure the performance both financial and non-financial will be used. Financial indicators are sales volume, profit, return on total assets, return on equity, and non-financial measure is market share. These measures have been widely used in published literature (Clark, 1982; Hill and Jones, 2001; Nobel, 1995). Five point liker scale used to obtain the perception and satisfaction of the organization owners concerning the profitability and market performance, which should be constituted via factor analysis. To measure firm performance, subjective measures will be used. The use of financial indicators such as return on asset or equity pose a problem since financial information is not easily available, except when the company is listed on a stock exchange (Geringer and Hebert, 1991). The concern with sensitive information is the major deterrent to making such data available to outsiders. In some cases when the data is available, it is often incomplete and biased (Baker et. al, 1993). Further, an accounting measure like return on investment is short-term oriented (Troberg, 1994). The difficulty in collecting data on the firm performance indicates the need to use more qualitative measures (Anderson, 1990). Previous studies have shown a strong and positive correlation between objective and subjective measures of performance. It is possible to substitute subjective measures of performance when more objective data is not available (Barker et. al, 1993).

This conceptual model for the study is constructed in order to investigate the effect of the four critical functional competencies on firm performance. The research model has been adapted from researchers (Hitt et al., 1982, 1985; Droge and Vickery, 1994; Li, 2000) who pioneered the conceptual framework for empirical studies in competitive advantage. This model has addressed the importance of integrative perspective by including the four critical functional areas. To address the inconcensus of item allocation to each functional competency, principal components factor analysis will be used to determine the underlying functions. The result of this analysis will be presented in the next chapter. Therefore the “functional competencies” construct in this model, which is also considered as a special feature of this research model.

3.2.2 Hypotheses for the study

The hypotheses to be tested in this study are developed on the basis of the research objectives and questions. At the same time, the conceptual framework

also serves as a basis for hypothesis development. The overall research hypothesis is that there is a positive association of manufacturing, marketing, R&D and human resource competencies and the firm performance. This hypothesis is strongly supported by many studies both theoretically and empirically in a variety of fields (Droge and Vickery, 1994). For example, a review by Anderson, Cleveland and Schroeder (1989) concluded that manufacturing is key to business performance. Capon, Farley and Hoenig (1990) showed that profitability is particularly sensitive to product and market development. Ramanujam and Venkatraman (1984) found the effect of advertising and product quality on market share or ROI. In many empirical studies, researchers found the positive relationship of manufacturing, marketing, research and development (Droge and Vickery 1994, Li 2000, Hitt et al, 1982) and human resource (Li, 2000) with company performance.

The specific hypotheses are presented as follows:

Hypothesis 1: There is a positive relationship between the manufacturing competency and profitability performance.

Hypothesis 2: There is a positive relationship between the marketing competency and profitability performance.

Hypothesis 3: There is a positive relationship between the research & development and profitability performance.

Hypothesis 4: There is a positive relationship between the human resource management and profitability performance.

Hypothesis 5: There is a positive relationship between the manufacturing competency and market performance.

Hypothesis 6: There is a positive relationship between the marketing competency and market performance.

Hypothesis 7: There is a positive relationship between the research & development and market performance.

Hypothesis 8: There is a positive relationship between the human resource management and market performance.

3.3 Measurement instrument development

To do survey research, a survey instrument for this study is to be scientifically developed. To begin with, a review of the extensive literature on the four main concepts - including manufacturing, marketing, research & development and human resource and firm performance - were done to identify the key issues and a draft of measurement instrument borrowed from those of other researchers. This was followed by expert interviews, which was performed to develop the valid survey instrument for the research. Thereafter, pre-test were to be carried out in order to consolidate the measurement instrument. At the end, questionnaires needed to be finalized, or so called “questionnaire refinement” for conducting field surveys.

A comprehensive review of literature on the subjects relating to four functional competencies and on firm performance was done. This review of extensive literature brought about understanding clearly on theories and concepts, which are pertinent to the thesis, as proved by other researchers. However, there was only a limited number of relevant researches conducted in developing country, like Vietnam against a number of works on developed countries. This study, therefore, had to review these concept studies abroad, especially the ones in developed countries with a view to apply such literature to the contexts of Vietnam.

3.3.1 Independent variables

Independent variables were identified in the conceptual framework presented in the previous section. They include the manufacturing, marketing, research & development, and human resource competencies.

The items used to operationalize these four functional competencies in this study were adopted from several studies of Clark, 1982; Conant et al., 1990; Craig and Douglas, 1982; Droge et al., 1994; Evans and Lindsay, 1996; Ha, 2002; Hayes and Wheelwright, 1984; Hitt and Ireland, 1985; Li, 2000. Porter, 1980, 1985; Simerly, 1997; Tunalı, 1992. By adopting the items to operationalize the functional competencies, the validation and the generalizability of the construct could be assured. In total, a pool of 28 questionnaire items was identified. 10 items are used to measure manufacturing, 7 items for marketing, 5 items for R&D, and 8 for human resource. To operationalize these four functional competencies, respondents were asked to indicate the degree to which their firms would employ the practices commonly seen in the four functional areas. The choice of respondents could be anchored on one end at

“very weak” (1) and on the other at “very good” (5). Due to inconcensus of item allocation in each function found in the previous studies, therefore the author did not assume any specific practice in any functional area. This will be determined by using principal components factor analysis. The result of this analysis will be presented in the next chapter.

3.3.2 Dependent variables

Previous studies show that there is no standard measure of the firm’s performance (Droge et al, 1994; Hitt and Ireland, 1985; Li, 2000); Sharma and Fisher, 1997; Snow and Hrebiniak, 1980). Commonly used approaches include: market based indicators and financial based indicators. However, getting Asian companies to disclose their financial data is often difficult and the data are not comparable across firms (Bae and Lawler, 2000). Subjective measures of firm performance have been shown to correlate well with objective measures (Geringer and Hebert, 1991; Powell, 1992). Hence, analogous to many prior studies, this study used perceived measurement of firm’s performance.

In this study, perceived performance was measured in both financial and non-financial. Financial indicators are sales volume, return on total assets and return on equity. As non-financial measure the market share was used. These measures have been widely used in published literature (Clark, 1982; Hill and Jones, 2001; Nobel, 1995).

Following this measurement approach, respondents were asked to compare how their firm have been performing regarding profitability, return on total asset and return on equity, sales growth and market share in benchmarking with other organizations that do the same kind of work. Respondents were asked to rate on a five-point likert scale (where 1=very weak, and 5=very good). The first three measures were used for perceived financial performance while the last two were used for perceived market performance.

3.3.3 Expert opinion

In conducting the research, the survey questionnaire is important to the quality of data. To ensure that complete and correct constructs, expert opinion was conducted to decide which items from among those adopted from previous studies were most suitable for the survey questionnaire. The purpose of doing

it here was to assess the validity of questions for each concept included in the questionnaire.

Total eight experts were invited to refine and validate measures for each concept. They are four academic faculties from economics and management department of Hanoi University of technology, who specialize in the four functional areas and four managing directors of manufacturing companies. The four companies are operating in four different industries including food processing; textile and garment, shoes & leather, and printing. The experts asked to provide their opinion on items used to measure each concept.

The results of the experts are consensus and high level of agreement. The major comments related to adjusting the details of wording (reworded or shortened) in some questionnaire items to be clearer, more concise, and eliminating some overlap in items. Three items had been eliminated 1) improving the product quality; 2) provide information for and work closely with R&D to develop new product/services and 3) reduce production rework rate. There is no new added item. Expert opinion resulted in 25 items for measuring four functional competencies and 5 items for measuring firm's performance. These items all had consensus of at least 75 percent of the experts. The final draft of the questionnaire was developed based on the aforementioned work, both literature review and expert opinion.

3.3.4 Back translation

Because most of instrument is designed in the West, therefore, a major concern is the ability to effectively transfer the intent of U.S. based measurements to other cultures and languages (Ha, 2002). Items and concepts may not be easily translated between cultures, because they occasionally trigger different effectiveness or conceptual responses. The meanings of the exactly similar word might be culturally embarrassing due to negative psychological connotation for Vietnamese respondents. Therefore, back translation methods provide a widely accepted way to overcome these differences in cross-cultural connotations (Brislin, 1970).

The author is lecturer of the Faculty of Economics and Management in Hanoi University of Technology where there are many lecturers graduated from abroad at both master and PhD qualification. These lecturers directly involved in perfecting the Vietnamese version of the questionnaire. First, the English version was prepared. Two Vietnamese lecturers were then invited to make comments and to fill in so that the technical wordings could be detected and

replaced with the different meaningful wordings. Second, another two Vietnamese lecturers were invited to translate the English questionnaire version into Vietnamese language. To verify the accuracy and quality of the translation, another two lecturers were asked to translate back the Vietnamese version of questionnaire into English in order to ensure the consistency throughout the translation. Throughout this process, ambiguities in Vietnamese version of questionnaire or inconsistencies were noted and corrected.

In summary, due to the combined effect of careful translation, and independent back-translation it is believed that the Vietnamese version of questionnaire is equivalent to the English version.

3.3.5 Pretest

In order to test the reliability and validity of the measurement instrument, a pretest needs to be conducted with the final draft of the questionnaire. The notion of reliability of the measurement instrument is based on two concepts: accuracy and precision (Hair et al., 1998). These concepts deal with how much the measurement instrument is accurate in measuring the variables which is supposed to measure and how precise it is in doing so.

Specifically to this study, the purpose of the pilot test was to investigate the potential problems in the research due to the clarity, the wording, and the format of questionnaires. In addition, the time respondents spent on filling in the questionnaires was measured.

Pretest were tried out with 5 directors of 5 manufacturing companies in Hanoi including 2 textile and garment companies, one food processing, one shoes and leather, and one printing enterprise. The five directors were asked to response the questionnaire and were free to give comments. As a result questionnaire was well designed, clearly understood and the length of questionnaire was appropriate. And the result showed that no modification was required for the questionnaire. In summary, questionnaire was ready for data collection.

3.3.6 Questionnaire instrument

Resulting from the intensive measurement instrument development process, the questionnaire for respondents was finally consolidated into three sections: personal and business details, firm performance and functional competencies.

The first section asks general information about the respondent and the enterprise including company's name, job title of respondent, ownership, operating areas, years of operation, number of employees, revenue and profit.

In the second part were questions related to the performance of the enterprise. The respondents were asked to indicate their level of firm performance in comparison to other organizations that do the same kind of work.

The third part was related to the functional competencies. In this section, a total of twenty-five statements were used to measure the four functional competencies. The respondents were asked to indicate the degree to which their firms would employ the practices commonly seen in the four functional areas.

The final English and Vietnamese version of survey questionnaire are presented in **Appendix 1** and **Appendix 2** respectively.

3.4 Data collection and assessment

3.4.1 Data collection

There is no collected data source from previous research conducted on the same content and context as those of this study. Primary data is therefore imperative for the study.

Primary data for this study was gathered from manufacturing companies located in Vietnam. Important decisions of this study are to identify the population and to design the sample appropriate for the survey, and to make sure that responses are free from bias by using reliable sampling. How data were scientifically gathered for the study is demonstrated in the next sections in detail.

3.4.1.1 Target population and sample design

This study focused on the manufacturing companies in Vietnam. The manufacturing companies in Vietnam were identified through a web-site <http://danhba.vdc.com.vn> published by Vietnam Chamber of Commerce and Industry. This web-site complies a majority of the enterprises in Vietnam and makes available for public use. It provides the list of companies operating in Vietnam, their contact address, their type of business, and their type of ownership. A total of 1,110,557 companies were found in the web-site, of which

5,437 reported as manufacturing companies. Among the manufacturing companies, there were 1,359 enterprises with unclear contact address, making a working population of 4114 companies. Of which a sample of 725 companies was randomly chosen to send the questionnaires.

3.4.1.2 The survey

A mail survey was conducted during May and July 2006. Data collection proceeded by calling randomly the targeted respondents in order to confirm their mail-address, inform them about the study and to encourage them to respond. A total of 725 questionnaires were then sent by mail to the 725 manufacturing companies. Each mail includes a letter of introduction, a questionnaire and a mailed back written address envelop with a stamp for respondent to mail back when they complete the questionnaire. Consequently 125 questionnaires were mailed back at gross response rate of 17.24%. Total number of used questionnaire is 110 achieving respondent rate of 15.17%.

3.4.2 Data assessment

3.4.2.1 Data examination and exploration

Data entry started with the development of a coding plan for the question items in the questionnaire. This plan was used to define variables in SPSS. The next step was the key-in of questionnaire responses in the defined SPSS data spreadsheet. With the dataset built, examination and exploratory procedures were conducted to screen the data for possible outliers. The database was examined and had indicated that the missing values were distributed at random. According to Hair et al., (1999), this situation of missing data was acceptable for multivariate data analysis.

3.4.2.2 Adequacy assessment

Hair et. al (1999) suggested that factor analysis technique was suitable for multivariate analysis in the form of “data reduction”. However, to perform such a data condensing technique, the size of the sample has to be large enough. According to Hair et. al (1999) the number of responses should be 50 considered as the minimum level for conducting factor analysis technique. In this research, the total number of 110 questionnaires was fully completed and

usable, exceeding more than double of the minimum level. This indicated the adequacy of the sample.

Another method of evaluating the suitability of the database for factor analysis was the use of the statistical tests, which should be available in the SPSS software package. These were the Kaiser-Meyer-Olkin (KMO) and Bartlett's test (Kaiser, 1958).

The KMO measure is an indicator of how well suited the sample data are for factor analysis. Kaiser (1958) suggested that values of KMO of 0.9 or higher are great and values below 0.5 are unacceptable. The KMO's test were determined for the whole sample and presented in the table 3.1. KMO test was 0.876 for functional competencies and 0.834 for performance. This calculation indicated that the KMO test values for functional competencies and firm performance measurements fell into the acceptable range of 0.5 and 0.9 as suggested by Hair et. al. (1999). It could be concluded confidently that database are suitable for factor analysis which should be performed to condense the data and to identify the desired and underlying factors related to functional competencies and organizational performance.

Bartlett's test of Sphericity evaluates the null hypothesis that the correlation matrix is an identity matrix, which would indicate no relationships among the variables, and thus no basis on which to proceed with factor analysis. Bartlett's test should be significant (i.e., a significance value of less than 0.05); this means that the variables are correlated highly enough to provide a reasonable basis for factor analysis (Leech et. al., 2005). The significance value was 0.000 for both functional competencies and organizational performance and shown in **Table 3.1**. This indicated that the data are suitable for factor analysis.

Table 3.1: KMO and Bartlett's test for functional competencies and performance

KMO and Bartlett's test		Functional competencies	Organizational performance
KMO Measure of Sampling Adequacy		0.876	0.834
Bartlett's test of Sphericity	Approx Chi-Square	1425.366	453.526
	d.f	231	10
	Significance	.000	.000

3.4.2.3 Normality assessment

Kolmogorov-Smirnov (KS) tests of normality was performed to explore the normal nature of the error term distribution of the main variables in the regression analysis. **Table 3.2** provides the KS tests of normality for the four functional competencies and the two organizational performances. The results show that variables are normal because KS significant values are all greater than 0.05.

Table 3.2: Test of normality of the data set

Variables	Kolmogorov-Smirnov	
	Statistic	Significance
Human resource management	0.617	0.841
Marketing	0.636	0.814
Manufacturing	0.661	0.775
Research & development	0.648	0.796
Profitability performance	0.937	0.344
Market performance	1.284	0.074

3.4.2.4 Data reliability

According to Hair (1995), reliability of a variable reflects the extent to which a variable or a set of variables is consistent in what it is intended to measure. If multiple measurements are taken, reliable measures will be very consistent in their values. Validity of the variable reflects the extent that differences in scores among objectives reflect the objects' true differences related to the construct that is sought to be measured (Hair *et. al.*, 1999). The reliability of a variable is a necessary but not a sufficient condition for its validity. Validity can never be established unequivocally, but can only be inferred either by direct assessment or indirectly by assessing reliability.

Reliability applies to a measure when similar results are obtained overtime and across situations. Broadly defined, reliability is the degree to which measures are free from error, and therefore yielding consistent results. Imperfection in the measuring process that affect the assignment of scores or number in different ways each time a measure is taken, such as a respondent who

misunderstands a question, are the cause of low reliability (Hair *et. al.*, 1999). There are two dimensions that underline the concept of reliability. The first dimension is concerned with repeatability which requires the use of test-retest method to administer the same scale or measure to the same respondents at two separate times in order to test for stability (Haire *et. al.*, 1999). The second dimension of reliability is concerned with the homogeneity of the measure. To measure the internal consistency of a multiple-item measure, scores on subsets of the items within the scale are correlated (Hair *et. al.*, 1999).

Wiklund (1999) also points out that the reliability of a measure is established by testing for both stability and consistency. Consistency indicates how well the items measuring a concept hang together as a set and Cronbach's Alpha is a reliability coefficient indicating how well the items in a set are positively correlated to one another. Cronbach's Alpha is computed in terms of the average inter-correlations among the items measuring the concept. The closer Cronbach's Alpha is to 1, the higher the internal consistency reliability (Green and Mulaik, 1977; Hair *et. al.*, 1999).

According to Hair *et al.* (1999), no single item is a perfect measure of a concept. Researchers must rely on a series of diagnostic measures to assess the internal consistency. First, there are several measures relating to each separate item, including the item-to-total correlation (the correlation among items). Rules of thumb suggest that the item-to-total correlations exceed 0.5 and that the inter-item correlations exceed 0.3. For the second type of diagnostic measure, the generally agreed upon lower limit for Cronbach's Alpha is 0.7, although may decrease to 0.6 in exploratory research (Hair *et. al.*, 1999; Nunnally, 1978).

In order to assess the reliability of the measures in this study, item-to-total correlations and Cronbach's were employed. And as suggested by Nunnally (1978), the criteria for retaining a scale item includes an item-to-total correlation of at least 0.35 (Nunnally, 1978) and a Cronbach's Alpha for the scale of at least 0.7. The results of these item-to-total correlations for the manufacturing, marketing, research and development and human resource competencies as well as profitability and market performance are presented in the **Appendix 3** and **Appendix 4**. The Cronbach's Alpha was calculated for each functional and performance construct and shown in **Table 3.3**.

Appendix 3 presents item-to-total correlations for four functional constructs (manufacturing, marketing, research and development and human resource). All the items in these functional constructs exceeded the item-to-total correlation criteria of 0.35. At the same time, the Cronbach's Alpha for these con-

structs was 0.858 (manufacturing); 0.87 (marketing); 0.803 (research and development) and 0.909 (human resource) respectively, which indicates that they highly met the requirement by Nunnally (1978).

Table 3.3: Reliability analysis of functional competencies and organizational performance

	Loading factor	Cronbach's alpha	Cronbach's alpha if item deleted
Functional competencies			
<i>Human resource management ($\alpha=0.909$)</i>		<i>0.909</i>	
Involving the employees in the decision making process	0.835		0.889
Providing job training for workers	0.800		0.897
Providing professional training for managers	0.790		0.888
Encouraging the constructive criticism from employees	0.776		0.893
Stimulating employee motivation, job satisfaction, and moral	0.752		0.891
Creating effective personnel policies	0.693		0.898
Developing compensation and recognition based on performance	0.541		0.908
<i>Marketing ($\alpha=0.870$)</i>		<i>0.870</i>	
Conducting marketing research & information	0.820		0.826
Conducting effective sales promotion & advertising	0.797		0.841
Developing the distribution net-work	0.688		0.866
Improving post-sale services	0.652		0.852
Maintaining highly trained, motivated sales team	0.648		0.849
Providing information to R&D	0.632		0.850
<i>Manufacturing management ($\alpha=0.858$)</i>		<i>0.858</i>	
Providing an on going plant modernization program	0.758		0.830
Using capacity utilization	0.757		0.829
Controlling manufacturing process quality control	0.728		0.818
Controlling material and inventory	0.656		0.834
Providing an effective equipment maintenance & replacement	0.633		0.845
Managing production, material & overhead cost	0.628		0.839
<i>Research and development ($\alpha=0.803$)</i>		<i>0.803</i>	
Improving research capabilities	0.865		0.671
Matching R&D objective & strategy objectives	0.736		0.746
Improve existing products and services	0.670		0.737

Table 3.3: Reliability analysis of functional competencies and organizational performance (cont.)

	Loading factor	Cronbach's alpha	Cronbach's alpha if item deleted
Organizational performance			
<i>Profitability performance ($\alpha=0.942$)</i>		0.942	
ROA	0.910		0.913
ROE	0.893		0.892
Profit before tax	0.785		0.939
<i>Market performance ($\alpha=0.759$)</i>		0.759	
Market share	0.864		
Sales growth	0.788		

The assessment of the item-to-total correlation concerning profitability and market performance is presented in **Appendix 4**. It is also noted that all the items of these two performance constructs also exceeded the item-to-total correlation criteria of 0.35. The Cronbach's Alpha value for the profitability and market performance was computed to be at 0.942 and 0.759 respectively. This indicates that the reliability for those items satisfied the Nunnally's requirement.

In summary, the values of item-to-total correlation and Cronbach's Alpha found for each construct indicated that each construct was strongly reliable measure.

3.5 Chapter summary

This chapter presents the conceptual framework, measurement instrument development and data collection through which this study was to be carried out in the context of Vietnam. It first covers the rationale for the research approach and based on that conceptual framework and eight main hypotheses had been developed and proposed. It then describes in detail the development of measurement instrument, data collection and data assessment. Measurement instrument is developed through the scientific process: literature review, expert opinion, pretest, and questionnaire refinement, resulting in a questionnaire instrument for data collection. A survey design is configured to chart out how data are collected. Under this plan, 725 manufacturing companies are identified and sent questionnaires to seek responses. Finally, the process of

data preparation and data assessment is presented. The next chapter focuses on the procedures used for analyzing the data and testing the hypotheses.

4 Data analysis and hypotheses testing

4.1 Chapter overview

The previous chapter has presented the conceptual framework and research methodology through which this study was to be carried out in the context of Vietnam. This chapter explains the data analysis and the statistical result from hypothesis testing in this study. In the beginning, sample profile is discussed and then dimensions of functional competencies are identified through factor analysis. After that descriptive analysis are demonstrated, following with the data analysis of hypothesis from 1 to 8 of the study. At the end, the results are then discussed and summarized.

4.2 Sample profile

In this study, 725 companies were randomly chosen to send the questionnaires. A total of 110 properly filled questionnaires were received, achieving respondent rate of 15.17%. This part provides general information of the surveyed manufacturing enterprises such as positions of the people filled in questionnaire, locations, ownership, industry types, ages, number of employees, assets, revenues and profits. Such information comes from the questions in the part of personal and business details in the questionnaires (**Appendix 1** and **Appendix 2**). This information was analyzed by using frequency and percent statistics and presented in the **Appendix 5**.

4.2.1 Position of respondents

The **Figure 4.1** presents the positions of the respondents in the surveyed organizations. The majority (51.82%) of the respondents were directors or vice directors in their enterprises. 13.64% of them were head of either marketing or business department. The rest (34.55%) held other positions in their companies such as head of manufacturing, financing or human resource departments.

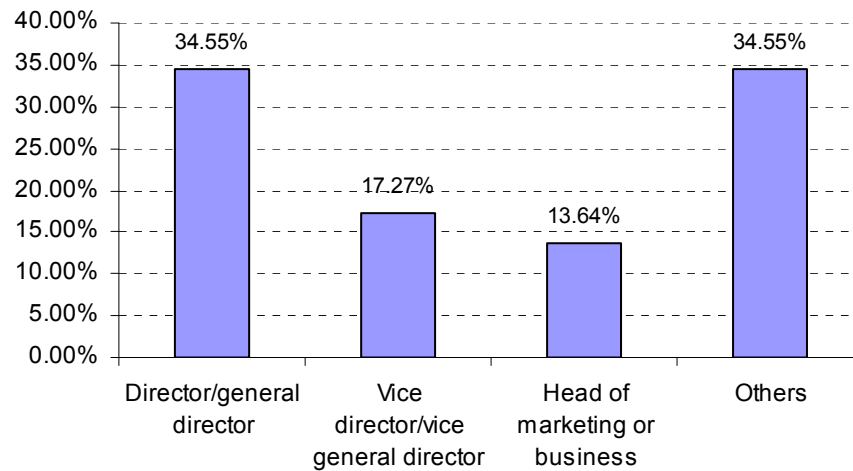


Figure 4.1: Positions of the respondents

4.2.2 Enterprise location

Majority of the respondents (56.4%) reported that they were located in the North, while 35.5% in the South (**Figure 4.2**). And the rest (8.1%) were in Central of Vietnam.

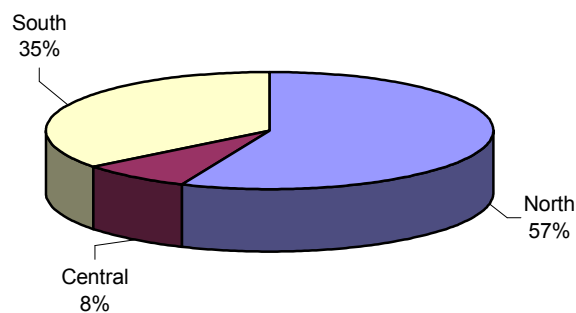


Figure 4.2: Location of the surveyed organizations

4.2.3 Enterprise ownership

In terms of ownership, 63.6% of respondents are limited or joint-stock organizations (**Figure 4.3**), followed by state-owned companies (27.3%) and foreign capital organizations (9.1%).

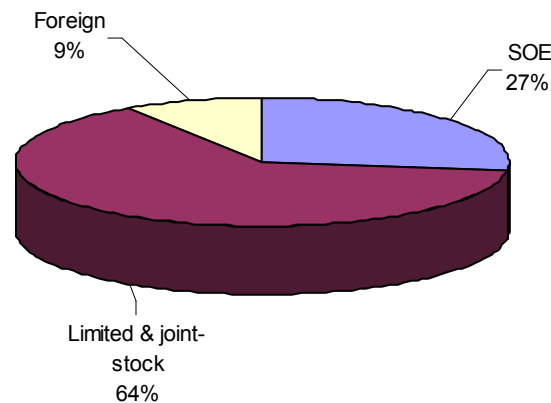


Figure 4.3: Enterprise ownership of the surveyed organizations

4.2.4 Industry types

Figure 4.4 provides the industry types of the surveyed enterprises. Companies operating in the textile and garment industry have the largest portion, accounting for 24.5% of the total sample, while metal product companies are only 10%. The organizations in food processing industry occupied about 19.1% of the total sample. Rubber and plastic companies were accounted for 10.9%. The rest 35.5% of total sample were companies operating in other industries including glass & porcelain, electrical & electronic, shoes & leather; chemical, wood & furniture, paper, printing...

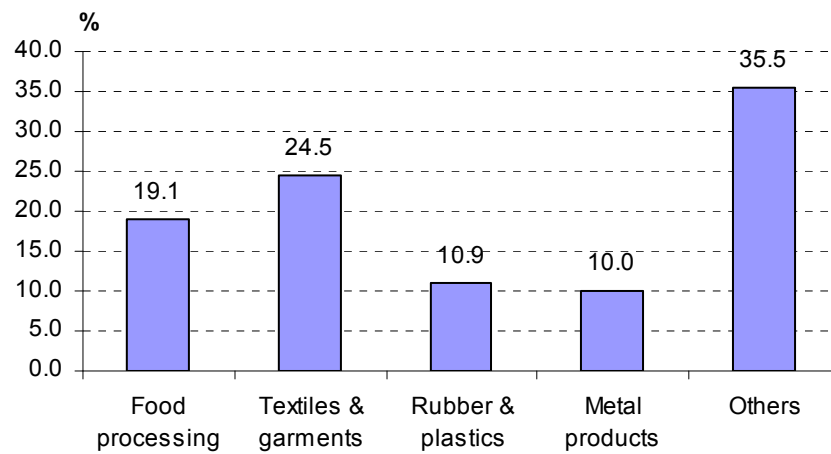


Figure 4.4: Industry types of the surveyed enterprises

4.2.5 Enterprise age

According to **Figure 4.5**, the majority of the surveyed organizations had been established for quite long time. 75.5% had been set up for more than 10 years, 17.3% from 5 – 10 years, and only 7.2% were established within 5 years.

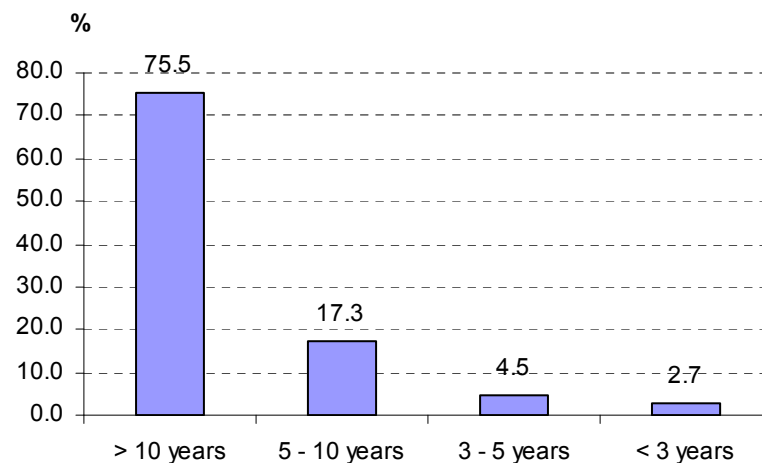


Figure 4.5: Age of companies

4.2.6 Number of employees

Figure 4.6 shows the number of employees in the total organizations surveyed. 30% of the enterprises were categorized as small companies with less than 300 employees while the medium sized enterprises (between 301 – 500 employees) represent only 17.3%. The large organizations are 23.6% and the very large ones are accounted for 29.1% of total respondents. In general, the average number of employees in a manufacturing enterprise is about 860 with the smallest one having only 40 employees and the largest one having more than 7000 employees.

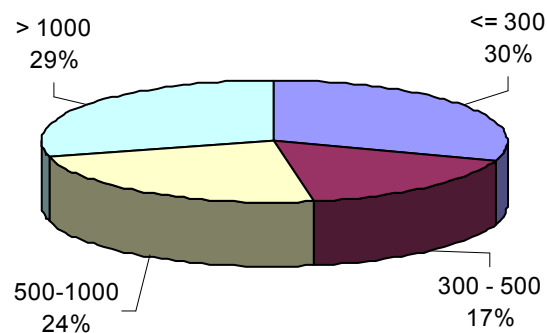


Figure 4.6: Number of employees in the surveyed organizations

4.2.7 Assets

Figure 4.7 shows that the majority (55%) of the surveyed enterprises had total asset of more than VND 50 billion, about 27% had VND 10-50 billion, and the rest of about 18% had their assets of less than VND 10 billion.

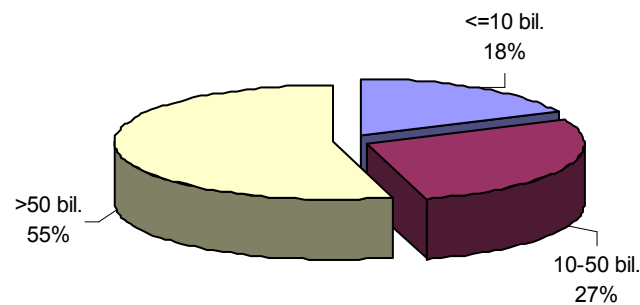


Figure 4.7: Total assets of the surveyed organizations

4.2.8 Revenue

Figure 4.8 shows that nearly half (40.9) of the total sample had VND 100-500 billion in revenue, 18.2% had VND 5-50 billion, 20% had VND 50-100 billion, about 11.8% had less than VND 5 billion, and the remaining (9.1%) organizations had more than VND 500 billion.

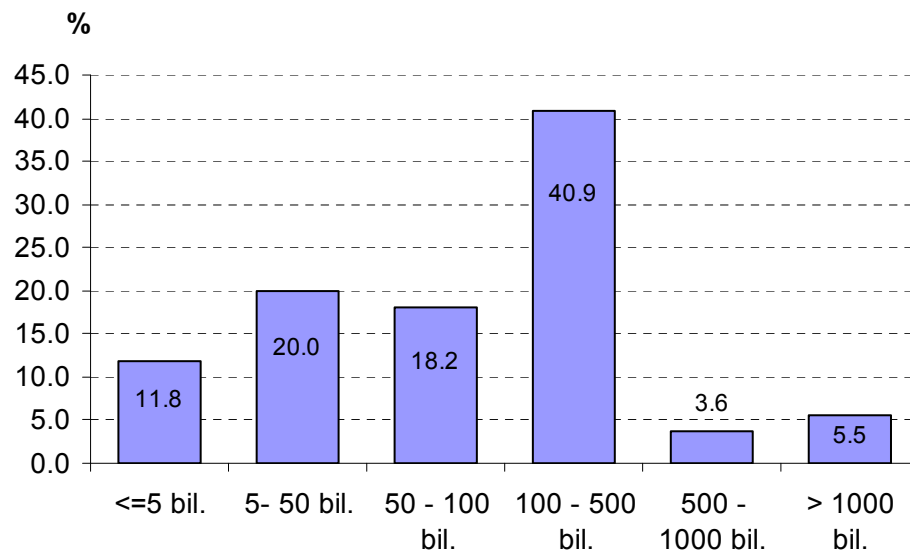


Figure 4.8: Revenue of the surveyed enterprises

4.2.9 Profit

Figure 4.9 presents reported profit of the surveyed organizations. The majority of respondents (62.8%) made less than VND 5 billion, 31.8% had VND 5-50 billion and only 5.5% achieved more than VND 50 billion.

4.3 Factor analysis

In this research, a total twenty-five variables of functional competencies and five variables of organizational performance were identified from the literature. As suggested by Hair et. al., (1999) factor analysis should be used to analyze and create a new set of variables.

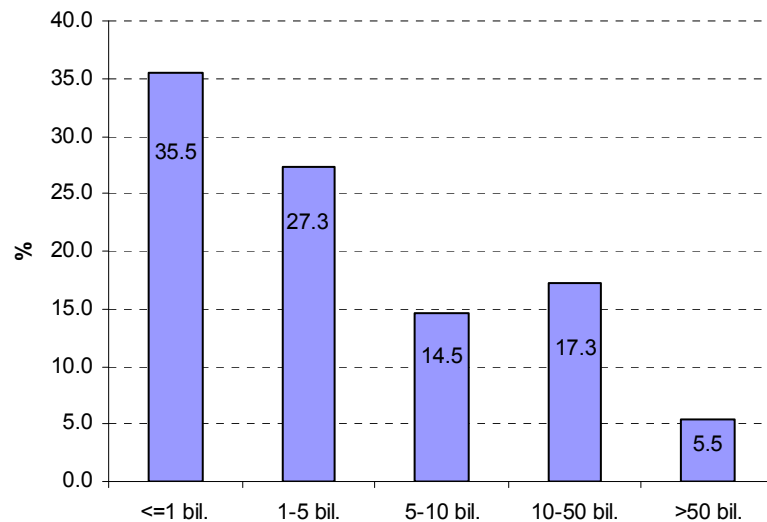


Figure 4.9: Profit of the surveyed enterprises

Exploratory factor analysis method was applied to identify the dimensions of functional competencies and company performance. In this approach, a step-by-step repetitious process of principal component factor analyses with varimax rotation was carried out with the aim to arrive at the most interpretable and significant factor solution. The process resumed with all variables included in the factor analysis. In this step, factor structures were identified on the basis of the significance and clarity of the factor loadings, the communalities, and most importantly, the interpretability and meaningfulness of the factors within the theoretical framework of functional competencies. Variables that did not fit well with others in the structures were identified and excluded gradually, one variable at a time, from the list of variables. Factor analysis

was re-performed at each of the exclusions to explore new factor solutions. The process ended when a clear, interpretable, and meaningful factor solution was found.

The application of factor analysis requires several statistical conditions at a satisfactory level for results to be reliable. These requirements entail the significance of the factor loadings, and the correlation appropriateness of factor analysis. An examination of these aspects was made subsequently before proceeding to the process of identifying the latent dimensions of functional competencies and company performance.

4.3.1 Significance of the factor loadings

In interpreting the factor analysis solution, a decision must be made regarding which factor loadings are worth considering. Factor loading are the correlations between original variables and the factors. The magnitude at which the factor loadings are significant depends on the sample size and the tolerance of two types of errors. With an aim of obtaining a power level of 80 per cent, we need .05 significance level. **Table 4.1** contains the sample size necessary for each level of factor loadings to be considered significant.

Table 4.1: Guidelines for identifying significant factor loadings based on sample size

No	Factor loading	Sample size needed
1	.30	350
2	.35	250
3	.40	200
4	.45	150
5	.50	120
6	.55	100
7	.60	85
8	.65	70
9	.70	60
10	.75	50

Note: Significance is base on a .05 significant level (α) and a power level of $\beta=0.80$
Source: Hair et al., 1998, p.112

As shown in Table 4.1, for significance, a sample size of 100 requires a loading value of at least 0.55. Similarly, a loading of 0.50 demands a larger sample size of 120. Obviously, no entry is available for the sample size of 110.

The associated value of significant loading for this size could be interpolated between 0.50 and 0.55. As an exploratory decision rule, any value falling short of 0.50 was considered not significant at the size of 110.

4.3.2 Appropriateness of factor analysis

Since the objective of factor analysis is to identify interrelated sets of variables, the key requirement for the appropriateness of its application, from the statistical viewpoint, is the presence of correlations among the variables (Haire et. al., 1998). In this study, two statistical procedures were conducted to examine the appropriateness of factor analysis. The first one was the Bartlett test of sphericity for the presence of correlations among variables. Table 3.1 shows the significance value was 0.000 (<0.05) for both functional competencies and organizational performance. This means that the variables are correlated highly enough to provide a reasonable basis for factor analysis (Leech et. al., 2005).

The second one was the KMO measure of sampling adequacy to quantify the degree of inter-correlations among the variables and the appropriateness of factor analysis. This measure is an index taking value from 0 to 1 and can be constructed with the following guidelines: 0.80 or above, meritorious; 0.70 or above middling; 0.60 or above, mediocre; 0.5 or above, miserable; and below 0.50, unacceptable (Hair et al., 1998). In this study, the KMO measures was 0.867 for functional competencies and 0.834 for performance (Table 3.1), falling right on the mark of the meritorious range. In conclusion, all of the statistical indications provided a very sound support for the appropriateness of the factor analysis.

The next part delves into the search for meaningful factor solution for functional competencies and organizational performance.

4.3.3 Factor analysis of functional competencies

At the onset, all twenty-five functional variables went into the first factor analysis, resulting in five factors (**Table 4.2**). These factors accounted for about sixty eight per cent of the variances. All of the twenty-five variables had significant loadings of greater than 0.479.

The results show that four variable unambiguously loaded significantly on more than two factors and emerged as a candidate for deletion to refine the

factor structure. They were variable ‘developing compensation and recognition based on performance’ on factor 1, 2 and 3, variable ‘Coordinating between R&D, operation & marketing’, variable ‘Providing computerization & decentralization of production control system’ on factor 1, 2 and 5, and variable ‘developing an efficient & effective product-line policy for product additions & deletions’ on factor 2, 3 and 4.

Table 4.2: The first run of factor analysis (n=110)

	Factor loading				
	1	2	3	4	5
Involving the employees in the decision making process	0.836	0.169	0.125	0.079	0.004
Encouraging the constructive criticism from employees	0.802	0.194	0.117	0.178	-0.136
Stimulating employee motivation, job satisfaction, and moral	0.777	0.292	0.154	0.136	-0.143
Providing professional training for managers	0.745	0.232	0.251	0.072	0.347
Providing job training for workers	0.741	0.184	0.058	0.053	0.424
Creating effective personnel policies	0.661	0.289	0.219	0.117	0.223
Creating a compensation and recognition system based on performance	0.572	0.381	0.300	-0.055	-0.254
Providing an on going plant modernization programme	0.193	0.753	0.041	0.226	-0.237
Using capacity utilization	0.220	0.751	0.186	-0.071	-0.123
Controlling manufacturing process quality	0.220	0.745	0.266	0.129	0.155
Controlling material and inventory	0.351	0.652	0.056	0.121	0.106
Managing production, material & overhead cost	0.193	0.624	0.319	0.078	0.150
Providing an effective equipment maintenance & replacement	0.155	0.609	0.068	0.208	0.367
Coordinating between R&D, operation & marketing	0.239	0.573	0.060	0.541	0.128
Providing computerization & decentralization of production control system	0.366	0.542	0.250	0.202	0.443
Developing an efficient & effective product-line policy for additions & deletions	0.189	0.479	0.384	0.313	-0.067
Conducting marketing research & information	0.146	0.238	0.808	0.155	-0.057
Conducting effective sales promotion & advertising	0.284	0.019	0.799	0.070	0.100
Developing the distribution net-work	0.066	0.237	0.680	0.016	0.247
Maintaining highly trained, motivated sales team	0.175	0.082	0.659	0.390	0.188

Table 4.2: The first run of factor analysis (n=110) (cont.)

	Factor loading				
	1	2	3	4	5
Providing post-sale services	0.094	0.262	0.654	0.280	-0.142
Providing information to R&D	0.236	0.112	0.627	0.399	-0.236
Improving research capabilities	0.127	0.056	0.196	0.838	0.047
Matching R&D objective and strategy objectives	-0.051	0.077	0.445	0.717	-0.012
Improving existing products or services	0.188	0.395	0.161	0.715	0.057
Variance explained by factor (%)	18.460	18.220	15.829	11.182	4.500
Cumulative variance explained (%)	18.460	36.680	52.510	63.691	68.191

Note: bold type indicates the factor to which functional practices best loaded

KMO= 0.874 Bartlett's test of Sphericity: $\chi^2=1750.434$ p-value=0.000

Of the four variables 'developing compensation and recognition based on performance' meshed very well with other six variables comprising of 'Involving the employees in the decision making process', 'Encouraging the constructive criticism from employees', 'Stimulating employee motivation and job satisfaction', 'Providing professional training for managers', 'Providing job training for workers', and 'Creating an effective personnel policies' in what could be perceived as a 'human resource competency' construct.

Other two variable named 'Coordinating between R&D, operation & marketing' and 'Providing computerization & decentralization of production control system' had the highest loadings of 0.573 and 0.542 respectively, and were greater than the required factor loading of 0.525 (for sample size of 110 according to Table 4.1). While the maximum loadings of other variable 'developing more efficient & effective product-line policy for product additions & deletions' was only 0.470 and less than 0.525 on factor 2. In addition, this variable was less interpretable when it interconnected with other eight variables in factor 2. Further more, the communality of 'developing compensation and recognition based on performance', 'Coordinating between R&D, operation & marketing', and 'Providing computerization & decentralization of production control system' were higher than that of 'developing an efficient & effective product-line policy for product additions & deletions', 0.630, 0.698, 0.727 and 0.515 respectively (**Appendix 6**). Thus the variable 'Developing an efficient & effective product-line policy for product additions & deletions' was less competitive in the elimination test and was subject to elimination. Another factor analysis was re-specified with the exclusion of this variable.

The second factor analysis reduced the number of factors from five to four (**Table 4.3**). This more compact factor solution explained about 65 per cent of the total variance. All of the twenty-five variables had significant loadings of greater than 0.538.

Table 4.3: The second rotated factor solution (n=110)

	Factor loading			
	1	2	3	4
Involving the employees in the decision making process	0.834	0.158	0.123	0.068
Providing job training for workers	0.793	0.209	0.032	0.060
Providing professional training for managers	0.787	0.252	0.233	0.074
Encouraging the constructive criticism from employees	0.775	0.185	0.131	0.164
Stimulating employee motivation, job satisfaction and moral	0.747	0.283	0.170	0.117
Creating effective personnel policies	0.685	0.303	0.211	0.111
Creating a compensation and recognition system based on performance	0.538	0.345	0.316	-0.084
Controlling manufacturing process quality	0.246	0.740	0.263	0.105
Providing an on going plant modernization programme	0.156	0.735	0.072	0.192
Using capacity utilization	0.203	0.729	0.203	-0.102
Controlling material and inventory	0.353	0.669	0.068	0.106
Managing production, material & overhead cost	0.204	0.640	0.327	0.061
Providing an effective equipment maintenance & replacement	0.206	0.632	0.056	0.203
Coordinating between R&D, operation & marketing	0.243	0.604	0.076	0.528
Providing computerization & decentralization of production control system	0.417	0.581	0.238	0.199
Conducting marketing research & information	0.140	0.231	0.820	0.137
Conducting effective sales promotion & advertising	0.300	0.021	0.795	0.064
Developing the distribution net-work	0.095	0.260	0.676	0.013
Providing post-sale services	0.082	0.244	0.667	0.256
Maintaining highly trained, motivated sales team	0.202	0.101	0.655	0.387
Providing information to R&D	0.212	0.089	0.644	0.376
Improving research capabilities	0.134	0.076	0.204	0.834
Matching R&D objective and strategy objectives	-0.043	0.080	0.451	0.706
Improving existing products or services	0.180	0.433	0.185	0.705
Variance explained by factor (%)	19.550	18.478	16.174	10.736
Cumulative variance explained (%)	19.550	38.029	54.203	64.939

Note: bold type indicates the factor to which functional practices best loaded

KMO= 0.879 Bartlett's test of Sphericity: $\chi^2=1657.568$ p-value=0.000

The structure of factors was stable and the same as previous. All variable held one significant factor loading with one factor by the standard of greater than 0.525. However there were some changes in the factor loadings. Two variables spreaded their significant loadings across two factors: 'increase computerization & decentralization of production control system' and 'Coordinating between R&D, operation & marketing'. The variable 'Providing computerization & decentralization of production control system' proved to be most appropriate for deletion because it had the lowest value of communalities (**Appendix 6**). Thus 'Providing computerization & decentralization of production control system' became an excluded variable in the next run of factor analysis.

The third factor analysis generated a solution with identical number of factors as above which accounted for about 65 per cent of the variance (**Table 4.4**). All the twenty-three variables had significant loadings of greater than 0.540.

The factor structure remained unchanged. However there was a consistent problem of factor loadings of variable 'Coordinating between R&D, operation & marketing'. This variable was loaded highly in both factors 1 and 4 (Table 4.4), like in the previous run. This indicated the need to explore for possibility to refine the factor solution further by throwing out this variable. Again the factor analysis was performed in the absence of this variable.

The result of factor analysis is shown in **Table 4.5**. The fourth run also produced a four-factor solution liked the two previous runs with about 65 percent of the variance explained. The structure of all four factors was stable. All four factors were greater than 1 and satisfied the Kaiser criterion that their Eigenvalue be equal or greater than 1 (Kaiser, 1958). All variables held one significant factor loading with one factor by the standard of greater than 0.525 (Table 4.5). No case of blurred significant loadings across factor was found. Further more, all four factors contained variables which were apparently interpretable. The solution was viable. Consequently, the exploring process stopped here with the four-factor solution suggesting four functional competencies used by manufacturing in Vietnam.

Once this four-factor solution was obtained in which all variables have significant loadings on a factor, an attempt should be made to give some meanings to the patterns of factor loadings. Variables with higher loadings were considered more important and have greater influence on the name or label selected to present a factor (Hair et al. 1999). Therefore, examining all the underlined variables for a particular factor and placing greater emphasis on those variables with higher loadings will attempt to assign a name or label to a

factor that accurately reflects the variables loading on that factor. Based on the nature of the items that loaded on four factors, they could be named as follows:

Table 4.4: The third rotated factor solution (n=110)

	Factor loading			
	1	2	3	4
Involving the employees in the decision making process	0.836	0.163	0.123	0.070
Providing job training for workers	0.797	0.186	0.036	0.065
Providing professional training for managers	0.790	0.230	0.238	0.078
Encouraging the constructive criticism from employees	0.775	0.179	0.133	0.165
Stimulating employee motivation, job satisfaction, and moral	0.749	0.288	0.170	0.120
Creating effective personnel policies	0.689	0.291	0.213	0.116
Creating a compensation and recognition system based on performance	0.540	0.355	0.315	-0.081
Providing an on going plant modernization programme	0.163	0.752	0.070	0.200
Using capacity utilization	0.210	0.738	0.203	-0.093
Controlling manufacturing process quality	0.255	0.733	0.265	0.116
Controlling material and inventory	0.359	0.660	0.071	0.115
Managing production, material & overhead cost	0.211	0.640	0.329	0.070
Providing an effective equipment maintenance & replacement	0.213	0.612	0.060	0.213
Coordinating between R&D, operation & marketing	0.249	0.592	0.079	0.536
Conducting marketing research & information	0.139	0.222	0.821	0.139
Conducting effective sales promotion & advertising	0.298	0.008	0.797	0.064
Developing the distribution net-work	0.098	0.251	0.678	0.017
Providing post-sale services	0.083	0.243	0.667	0.259
Maintaining highly trained, motivated sales team	0.202	0.077	0.658	0.389
Providing information to R&D	0.211	0.103	0.641	0.376
Improving research capabilities	0.135	0.063	0.204	0.834
Improving existing products or services	0.183	0.418	0.187	0.710
Matching R&D objective and strategy objectives	-0.042	0.079	0.450	0.707
Variance explained by factor (%)	19.846	17.528	16.702	11.194
Cumulative variance explained (%)	19.846	37.374	54.076	65.270

Note: bold type indicates the factor to which functional practices best loaded
KMO= 0.870 Bartlett's test of Sphericity: $\chi^2=1550.569$ p-value=0.000

Table 4.5: The fourth loaded factor solution (n=110)

	Factor loading			
	1	2	3	4
Human resource management ($\alpha=0.909$)				
Involving the employees in the decision making process	0.835	0.105	0.173	0.093
Providing job training for workers	0.800	0.047	0.173	0.043
Providing professional training for managers	0.790	0.233	0.231	0.084
Encouraging the constructive criticism from employees	0.776	0.120	0.184	0.176
Stimulating employee motivation, job satisfaction	0.752	0.178	0.276	0.103
Creating effective personnel policies	0.693	0.235	0.274	0.082
Creating a compensation and recognition system based on performance	0.541	0.333	0.341	-0.099
Marketing management ($\alpha=0.870$)				
Conducting marketing research & information	0.139	0.820	0.215	0.154
Conducting effective sales promotion & advertising	0.296	0.797	-0.002	0.078
Developing the distribution net-work	0.098	0.688	0.241	0.019
Providing post-sale services	0.083	0.652	0.250	0.287
Maintaining highly trained, motivated sales team	0.204	0.648	0.075	0.405
Providing information to R&D	0.213	0.632	0.102	0.389
Manufacturing management ($\alpha=0.857$)				
Providing an on going plant modernization programme	0.170	0.063	0.758	0.205
Using capacity utilization	0.208	0.182	0.757	-0.054
Controlling manufacturing process quality	0.261	0.273	0.728	0.106
Controlling material and inventory	0.365	0.077	0.656	0.101
Providing an effective equipment maintenance & replacement	0.216	0.029	0.633	0.251
Managing production, material & overhead cost	0.216	0.346	0.628	0.050
Research and development ($\alpha=0.794$)				
Improving research capabilities	0.141	0.167	0.086	0.865
Matching R&D objective and strategy objectives	-0.036	0.421	0.091	0.736
Improving existing products and services	0.197	0.200	0.402	0.670
Variance explained by factor (%)	20.643	17.226	16.720	10.795
Cumulative variance explained (%)	20.643	37.869	54.589	65.384
Eigenvalue	8.784	2.630	1.681	1.289
Cronbach Alpha	0.909	0.870	0.857	0.794

Note: bold type indicates the factor to which functional practices best loaded

KMO= 0.876 Bartlett's test of Sphericity: $\chi^2=1425.366$ p-value=0.000

Factor 1, on the basis of the nature of question-items asked to the respondents, this factor was labelled as Human Resource Management with seven items loaded highly on this. Factor 1 was used to measure the competencies in human resource activities of an organization. It includes: 'Involving the employees in the decision making process'; 'Providing job training for workers'; 'Providing professional training for managers'; 'Encouraging the constructive criticism from employees'; 'Stimulating employee motivation, job satisfaction, and moral'; 'Creating an effective personnel policies'; and 'Creating compensation and recognition based on performance'. The Table 4.5 also reveals that the internal consistency of this factor was assured with the Cronbach Alpha value of 0.909, exceeding the Nunnally (1978) threshold of 0.7. The 'Human resource management' factor had a mean score of 3.49 on five-point Likert-scale and standard deviation of 0.72.

Factor 2, on the basis of the nature of question-items asked to the respondents, this factor was labelled as Marketing management with six items loaded highly on this. Factor 2 was used to measure the competencies in marketing activities of an organization. It includes: 'Conducting marketing research & information'; 'Conducting effective sales promotion & advertising'; 'Developing the distribution net-work'; 'Providing post-sale services'; 'Maintaining highly trained, motivated sales team'; and 'Providing information to R&D'. The Table 4.5 shows that all six items possess high loading coefficients ranging 0.632 of 'Providing information to R&D' to 0.820 of 'Conducting marketing research & information' which all exceeded the requirement (0.525) suggested by Hair et al., (1998). The Cronbach Alpha for this factor was satisfactory at the value of 0.870, indicating the internal consistency was satisfactorily assured. The mean score of this factor was calculated at the value of 3.12 on five-point Likert-scale and its standard deviation was 0.83.

Factor 3, on the basis of the nature of question-items asked to the respondents, this factor was labelled as Manufacturing management with six items loaded highly on this. Factor 3 was used to measure the competencies in operation activities of an organization. It includes: 'Providing an on going plant modernization programme'; 'Using capacity utilization'; 'Controlling manufacturing process quality'; 'Controlling material and inventory'; 'Providing an effective equipment maintenance & replacement'; and 'Managing production, material & overhead cost'. The Table 4.5 also indicates all six items have high loading coefficients varied from 0.628 of item 'Managing production, material & overhead cost' to 0.758 of item 'On going plant modernization programme' and satisfy the requirement suggested by Hair (1998). The Cronbach Alpha of this factor was computed at the value of 0.857, exceeding

the Nunnally (1978) threshold of 0.7. The ‘Manufacturing management’ factor had a mean score of 4.01 on five-point Likert-scale and standard deviation of 1.59.

Factor 4, on the basis of the nature of question-items asked to the respondents, this factor was labelled as Research and development with three items. Factor 4 was used to measure the competencies in research and development activities of an organization. It includes: ‘Improving research capabilities’; ‘Matching R&D objective and strategy objectives’; and ‘Improving existing products and services’. These three items possessed the loading coefficients of 0.865; 0.736 and 0.67 respectively (Table 4.5), indicating that they did exceedingly meet the requirement of 0.525 suggested by Hair et al., (1998). The Cronbach Alpha value of 0.794 satisfactorily met the Nunnally’s (1978) acceptable threshold of 0.7. The ‘Research and development’ factor had a mean score of 3.49 on five-point Likert-scale and standard deviation of 0.81.

4.3.4 Factor analysis of perceived performance

Table 4.6 shows the results of factor analysis. Two-factor solution was obtained which satisfactorily met the requirements of Eigenvalue larger than 1. The accumulative explained variance reached 86.86 per cent. All variables held one significant factor loading with one factor by the standard of greater than 0.525 (Table 4.5). No case of blurred significant loadings across factor was found. The solution was viable. Based on the nature of the items that loaded on two factors, they could be named as follows:

Factor 1: Three items had high loading coefficients on this factor, which was used to assess the performance of an organization with regard to its profitability. These three items had the loading coefficients of 0.91, 0.893 and 0.785 respectively (Table 4.6), indicating that they did exceedingly meet the requirement suggested by Hair (1998) of 0.525. Thus, on the basis of the nature of question-items asked to the respondents, this factor could be labelled as Profitability. The internal consistency for the factor “profitability” was assured as it reached the acceptable value Cronbach Alpha of 0.942. This factor had a mean score of 2.83 and a standard deviation of 1.00.

Factor 2: Two remaining items loaded highly on the second factor, which was then labelled as Market performance. This factor tended to reflect the performance of an organization in achieving market share and revenues. These two items attained high loading coefficients of 0.864 and 0.788 (Table 4.6) and all exceeding the Hair’s requirement with the sample of 110. The

factor ‘market performance’ also satisfied Nunnally’s (1978) standard with Cronbach Alpha of 0.759. The average score of those two items would create a new variable “market performance” and it could be used for hypothesis testing purpose. It had a mean of 3.09 and standard deviation of 0.85.

Table 4.6: The first run of factor analysis (n=110)

	Factor loading	
	1	2
Profitability performance ($\alpha=0.942$)		
Return on assets	0.910	0.297
Return on equity	0.893	0.360
Profit growth	0.785	0.509
Market performance ($\alpha=0.759$)		
Market share	0.284	0.864
Sales growth	0.409	0.788
Variance explained by factor (%)	49.800	36.882
Cumulative variance explained (%)	49.800	86.862
Eigenvalue	2.490	1.844
Cronbach Alpha	0.942	0.759

Note: bold type indicates the factor to which functional practices best loaded

KMO= 0.833 Bartlett’s test of Sphericity: $\chi^2=453.526$ p-value=0.000

4.4 Functional competency analysis

A five-point Likert scale was used in this study to measure the competencies of different functional activities, from ‘1’ indicating very weak, to ‘5’ indicating very good. Four functional activities of manufacturing companies was analysed including human resource, marketing, manufacturing and research & development. For each function, frequencies, percentages, means, and standard deviations were calculated to show the perceived performance of these activities. Beside that, some referential statistics were also employed to analyse differences by groups as well as relationship among variables. ANOVA test were used to analyse differences of variables between groups of companies by locations, ownerships, and types of industry. Ranking was also employed for the competencies of these activities to see how relatively well among activities, and strengths and weakness of manufacturing companies in these competencies.

4.4.1 Descriptive analysis of human resource management

4.4.1.1 General description

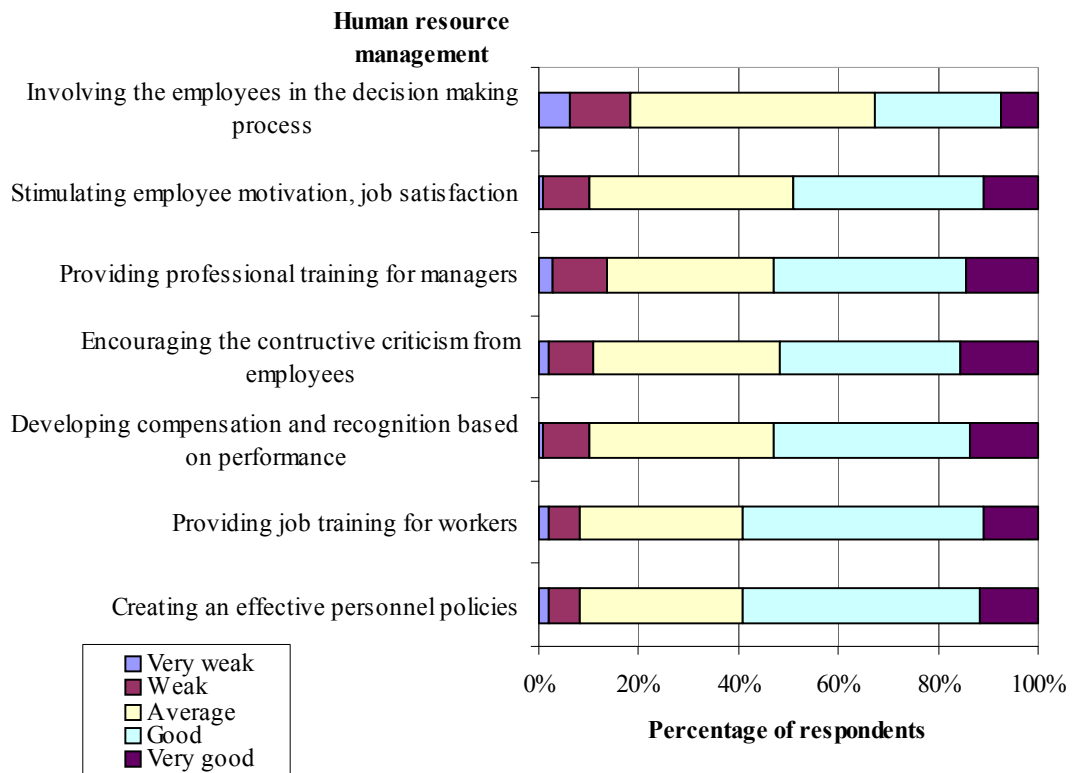
Human resource is one important factor for organization to achieve long-term benefits and development. In this study, the respondents have evaluated the performance of human resource management activities. The responses are presented in **Table 4.7** and **Figure 4.10**. The overall means of all seven activities were not particularly impressive and ranked only at an average level, ranging from 3.15 to 3.61. This indicates that managers in Vietnam pay less attention to this function and human resource activities are only in the novice level of proficiency. This result is consistent with similar findings of Lam (2003).

Respondents perceived that they were relatively better in ‘Creating effective personnel policies’ (mean = 3.61) and ‘Providing job training for workers’ (mean = 3.60) and relatively weak in ‘Involving the employees in the decision making process’ (mean = 3.15) and ‘Stimulating employee motivation, job satisfaction’ (mean = 3.49). The percentage of respondents perceived their human resource performance as good and very good were varied only from 32.73% to 59.09% (Table 4.7). “Creating effective personnel policies” and “Providing job training for workers” had the highest percentages (59.09%) of responses ranked in good and very good. In fact the managers of some organizations recognized the important role of personnel policies but they did not know exactly how to do it properly. Furthermore to many managers ‘creating effective personnel policies’ was not an urgent issue in comparing to sale or production, therefore it was given relatively low priority and support in the company. Some organizations emphasized training to provide knowledge and skills to their employees. However, many managers said that they had too many employees to consider. Training was costly and adversely affected production. The activities received score under 50% were “Involving the employees in the decision making process” (32.73%) and “Stimulating employee motivation, job satisfaction” (49.09%). This is the consequence of less top management attention to their employees. It is easy to understand. Under a centrally-planned economic system, almost all decisions were guided by the Government or Ministries or high level organizations. Decision making was often taken by a group of leaders not by the manager or employees. That is why ‘involving the employees in the decision making process’ was given relatively low support. Many Vietnamese organizations emphasize a task-oriented management style rather than a people-oriented style. These organizations emphasize tasks that have to be done. The achievement of goals is

Table 4.7: Human resource management

Items (*)	N	Means	Good & Very good (%)
Creating an effective personnel policies	110	3.61	59.09
Providing job training for workers	110	3.60	59.09
Developing compensation and recognition based on performance	110	3.55	52.73
Encouraging the constructive criticism from employees	110	3.55	51.82
Providing professional training for managers	110	3.51	52.73
Stimulating employee motivation, job satisfaction	110	3.49	49.09
Involving the employees in the decision making process	110	3.15	32.73

(*) Highest score is 5


Figure 4.10: Human resource management

rewarded and it is the glue that holds the company together. Manufacturers often define success by the efficiency of operations and the low-cost. Thus, the managers of these organizations have not really yet concerned themselves with the motivation and job satisfaction of employees. Furthermore, many managers think that it is not difficult and costly to find new employee for a vacant position in Vietnam. It is the reason why the item ‘Stimulating employee motivation, job satisfaction’ was considered to have the lowest emphasis.

4.4.1.2 Human resource management and company location

Table 4.8 presents means, standard deviation (S.D) and the significant differences in score of human resource activities among three groups of companies located in three different locations: North, South and Central of Vietnam. Mean score of organizations in all locations were relatively low, ranging from 3.10 (‘involving the employees in the decision making process’ of organizations in the North) to 3.78 (‘developing compensation and recognition based on performance of companies located in the Central). There are minor differences of mean score in all items among locations. ‘Involving the employees in the decision making process’ had the lowest score in all three locations. Companies in the Central perceived themselves better than companies in the North and South in stimulating employee motivation, job satisfaction (mean = 3.56), developing compensation and recognition based on performance (mean = 3.78), and encouraging the constructive criticism from employees (mean = 3.67). However these organizations were less competitive to organizations in the North and the South in all the rest items. Companies located in the South were best at ‘Providing professional training for managers’ (mean = 3.64), ‘Providing job training for workers’ (mean = 3.67), and ‘Involving the employees in the decision making process’ (mean = 3.26) while organizations in the North was only best at ‘creating an effective personnel policies’.

Even though, there were different mean across all items, however, there was not enough statistical evidence (significance) for this difference (Table 4.8). On the other word, there was no difference of human resource competence of organizations in all three locations in Vietnam.

4.4.1.3 Human Resource Management and company ownership

Performance of human resource management by company ownership is

Table 4.8: Means of human resource activities in different locations

Items (*)	Overall		Company location			Significance (**)
	Mean	S.D	North	South	Central	
Creating an effective personnel policies	3.61	0.85	3.65	3.62	3.33	0.590
Providing professional training for managers	3.55	0.96	3.45	3.64	3.33	0.540
Providing job training for workers	3.60	0.84	3.58	3.67	3.44	0.748
Involving the employees in the decision making process	3.15	0.95	3.10	3.26	3.11	0.710
Stimulating employee motivation, job satisfaction	3.49	0.84	3.50	3.46	3.56	0.949
Developing compensation and recognition based on performance	3.55	0.87	3.53	3.54	3.78	0.729
Encouraging the constructive criticism from employees	3.55	0.93	3.56	3.49	3.67	0.848

(*) Highest score is 5

(**) Significance at $p < 0.05$

presented in **Table 4.9**. In general, joint-stock companies had done human resource activities better than state owned enterprise and private. This was an expected result. Surprisingly, joint-venture and foreign direct investment (FDI) organizations were only better than others only at ‘Providing job training for workers’ while the rest had relatively low mean score in comparing to other type of ownership. This could be explained by two reasons. Firstly, the number of respondents from this type of ownership were too small, only 10 (9.1%) thus it may not be representative for this type of company in Vietnam. And secondly, managers in this type of companies could be stricter in evaluating themselves.

However, there are not statistically differences for all items. These findings suggest that there is no evidence to confirm which type of ownership is better than others in managing human resource.

Table 4.9: Means of human resource activities and different types of ownership

Items (*)	SOE	Private	Joint-stock	Joint-venture & FDI	Significance (**)
Creating an effective personnel policies	3.53	3.67	3.65	3.50	0.831
Providing professional training for managers	3.57	3.27	3.58	3.30	0.753
Providing job training for workers	3.50	3.53	3.65	3.70	0.879
Involving the employees in the decision making process	3.20	3.13	3.22	2.70	0.588
Stimulating employee motivation, job satisfaction	3.33	3.67	3.58	3.20	0.433
Developing compensation and recognition based on performance	3.60	3.80	3.58	2.90	0.136
Encouraging the constructive criticism from employees	3.57	3.33	3.69	3.00	0.228

(*) Highest score is 5

(**) Significance at $p < 0.05$

4.4.1.4 Human resource management and type of industry

Table 4.10 presents means and the significant differences in score of different types of industry: food-processing, textile & garment, rubber & plastic, metal products, glass & porcelain, and electronic. The mean score of textile & garment, rubber & plastic and electronic were relatively lower than those of food-processing and metal products. Food-processing companies had highest mean scores in involving the employees in the decision making process (mean = 3.29) and developing compensation and recognition based on performance (mean = 3.76). Organizations in glass & porcelain performed best at ‘Providing job training for workers’ (mean = 4.00), and ‘Stimulating employee motivation, job satisfaction’ (mean = 3.78). Both companies (food-processing and glass & porcelain) were best at creating an effective personnel policies (mean = 3.67).

The ANOVA test was used to assess the statistical significance of the differences among industries in the practices of the seven HRM activities. The results show that (Table 4.10) there are not statistically significant differences for all items in human resource management.

Table 4.10: Mean scores of human resource activities in different types of industry

Items (*)	Food-processing	Textile & Garment	Rubber & Plastic	Metal products	Glass & Porcelain	Electronic	Significance (**)
Creating an effective personnel policies	3.67	3.52	3.58	3.55	3.67	3.57	0.993
Providing professional training for managers	3.52	3.48	3.25	3.55	3.56	3.57	0.973
Providing job training for workers	3.57	3.63	3.58	3.55	4.00	3.00	0.336
Involving the employees in the decision making process	3.29	3.15	3.00	3.27	3.22	2.71	0.784
Stimulating employee motivation, job satisfaction	3.67	3.33	3.42	3.55	3.78	3.29	0.592
Developing compensation and recognition based on performance	3.76	3.67	3.33	3.64	3.22	3.57	0.650
Encouraging the constructive criticism from employees	3.57	3.56	3.25	3.73	3.56	3.57	0.899

(*) Highest score is 5

(**) Significance at $p < 0.05$

4.4.2 Descriptive analysis of marketing management

4.4.2.1 General description

In this study, the respondents have evaluated the performance of marketing management activities. The responses are shown in **Table 4.11** and **Figure 4.11**. The overall means of all six activities were only at an average level, and some even below the average. The mean scores were ranging from 2.65 to 3.37 (Table 4.11). This indicates that marketing activities were not performed well in Vietnam. This result might stem a long period of closed and centrally planned economy of Vietnam in which everything, including production and sales, was planned by the government. The whole concept of marketing management was not understood by Vietnamese managers. It is therefore they lack focus in marketing activities.

Respondents perceived that they were relatively better in ‘Developing the distribution net-work’ (mean = 3.37) and ‘Providing post-sale services’ (mean = 3.33) and relatively weak in ‘Conducting effective sales promotion & advertising’ (mean = 2.65) and ‘Conducting marketing research & information’ (mean = 2.93). The percentage of respondents perceived their marketing performance in all activities as good and very good was less than 50% and varied only from 28.18% to 46.36% (Table 4.11). ‘Developing the distribution net-work’ had the highest percentages (46.36%) of responses ranked in good and very good. Organizing, designing, controlling the distribution system in Vietnam is difficult (Hai, 1997). In Vietnam, there is no single local distributor who can shift goods throughout the country, and most local distributors only operate within a small region or city and on low margins, low labour cost and low cost of storage .

Table 4.11: Marketing management

Items (*)	N	Means	Good & very good (%)
Developing the distribution net-work	110	3.37	46.36
Providing post-sale services	110	3.33	45.45
Providing information to R&D	110	3.25	44.55
Maintaining highly trained, motivated sales team	110	3.20	42.73
Conducting marketing research & information	110	2.93	32.73
Conducting effective sales promotion & advertising	110	2.65	28.18

(*) Highest score is 5

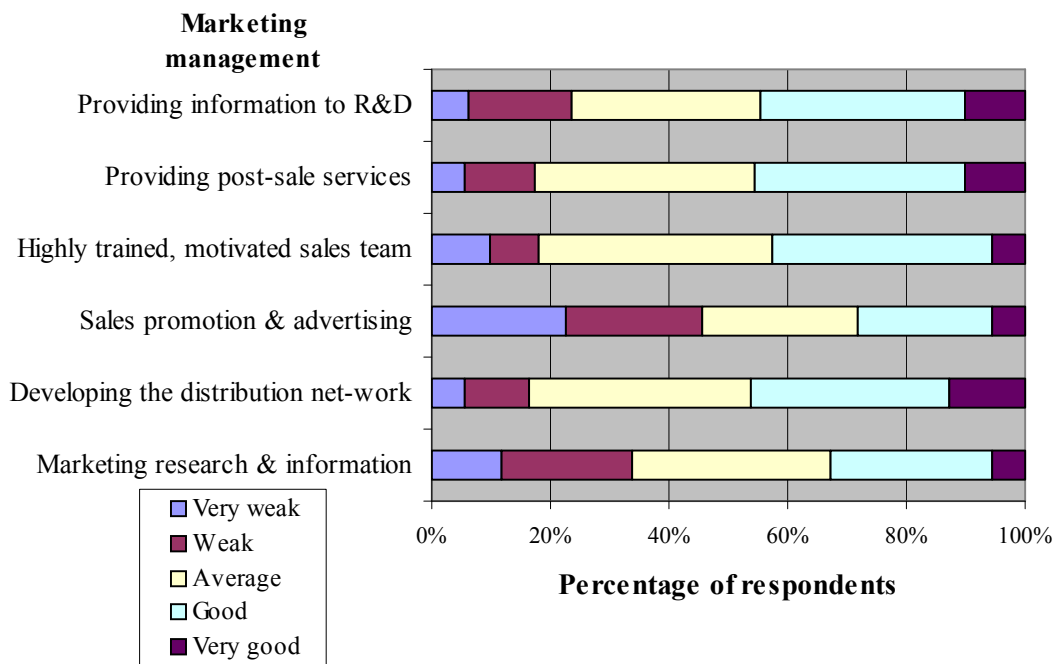


Figure 4.11 : Marketing management

Only 32.73% and 28.18% of respondents said that they had done good and very good ‘Conducting marketing research & information’ and ‘Conducting effective sales promotion & advertising’ respectively.

In the past, distribution and selling were planned by the State without any use of market research. Therefore, many managers did not recognize the important role of marketing research & information as well as not have enough experience in conducting marketing research. Many managers indicated that promotion and advertising is very complex, costly and inefficient. A lot of them said that it is very hard to assess the efficiency of this activity. Further more many managers still not believed in sales promotion and advertising.

4.4.2.2 Marketing management and company location

Table 4.12 presents means and the significant differences in score of marketing activities among three groups of companies located in three different locations: North, South and Central of Vietnam. In general, there are minor differences of mean score in all items among locations. However, companies in the Central perceived themselves better than companies in the North and the South. They had highest score in five items (out of six): ‘developing the distribution net-work’ (mean = 3.44); ‘Conducting effective sales promotion &

advertising' (mean = 3.44); 'maintaining highly trained, motivated sales team' (mean = 3.44); 'providing information to R&D'; and 'conducting marketing research & information' (mean = 3.22). Among three markets, the Central one had lowest competition and the companies here could find themselves rather well. This could be the reason explained why they perceived themselves better in comparison with companies in other regions. Companies located in the South were best at only 'providing post-sale services' (mean = 3.54). The South had been seen as the most demanding and fierce competition market. This could be the reason why companies there provide post-sale services best.

The ANOVA test indicates that there is only statistically significant for 'Conducting effective sales promotion & advertising'. The remaining items are not significantly different between the three groups of companies (Table 4.12).

Table 4.12: Means of marketing activities in different locations

Items (*)	Overall		Company location			Significance (**)
	Mean	S.D	North	South	Central	
Conducting marketing research & information	2.93	1.09	2.81	3.05	3.22	0.385
Developing the distribution net-work	3.37	1.02	3.34	3.41	3.44	0.922
Conducting effective sales promotion & advertising	2.65	1.21	2.42	2.85	3.44	0.027**
Maintaining highly trained, motivated sales team	3.20	1.02	3.21	3.13	3.44	0.703
Providing post-sale services	3.33	1.00	3.18	3.54	3.44	0.195
Providing information to R&D	3.25	1.06	3.13	3.38	3.44	0.423

(*) Highest score is 5

(**) Significance at $p < 0.05$

4.4.2.3 Marketing management and company ownership

The significant differences in score of marketing activities among different types of ownership are presented in **Table 4.13**. However, there is no signifi-

cant difference for all items of marketing management among these ownerships. There are not many differences of mean score in all items among industries. In general, SOE companies performed marketing activities worse than other three kinds of ownership (private, joint-stock and joint-venture & FDI). This was an expected result and caused by support of government to SOE in producing and selling products for such long centrally planned period of time. Joint-stock companies performed better than others at ‘Conducting marketing research & information’ (mean = 3.05), ‘Conducting effective sales promotion & advertising’ (mean = 2.71), and ‘Maintaining highly trained, motivated sales team’ (mean = 3.27). Joint-stock, joint-venture & FDI and private companies had the same level of performance at ‘Providing post-sale services’ (mean = 3.40).

Table 4.13: Means of human resource activities and different types of ownership

Items (*)	SOE	Private	Joint-stock	Joint-venture & FDI	Significance (**)
Conducting marketing research & information	2.77	2.87	3.05	2.80	0.332
Developing the distribution net-work	3.20	3.73	3.35	3.50	0.481
Conducting effective sales promotion & advertising	2.63	2.60	2.71	2.50	0.394
Maintaining highly trained, motivated sales team	3.20	2.93	3.27	3.20	0.593
Providing post-sale services	3.13	3.40	3.40	3.40	0.657
Providing information to R&D	2.97	3.47	3.33	3.30	0.536

(*) Highest score is 5

(**) Significance at $p < 0.05$

4.4.2.4 Marketing management and industries

Table 4.14 presents means and the significant differences in score of marketing activities in different types of industry: food-processing, textile & garment, rubber & plastic, metal products, glass & porcelain, and electronic. In general the electronic industry had better marketing performance than all

other industries. They had highest mean score in all marketing activities. While the textile & garment had lowest mean score in most of items ('Conducting marketing research & information', 'Developing the distribution network', 'Maintaining highly trained, motivated sales team', 'Providing post-sale services'). This could be explained by the characteristic of each industry. In the electronic industry, sales team should be well trained in order to be able to sell electronic products. This requires deeply understand products and relatively more time, efforts than other types of products. Post-sales service is very important to this kind of products as well as good and tight relationship with its distributors. It is therefore, managers in this kind of industry had given priority and support to marketing activities.

Table 4.14: Means of marketing activities in different industries

Items (*)	Food-proce ssing	Tex- tile & Gar- ment	Rub- ber & Plas- tic	Metal prod- ucts	Glass & Por- celain	Elec- tronic	Signi- ficance (**)
Conducting mar- keting research & information	3.05	2.48	2.67	3.09	2.67	4.29	0.001**
Developing the dis- tribution net-work	3.62	2.96	3.33	3.00	4.00	4.57	0.000**
Conducting effec- tive sales promo- tion & advertising	3.05	2.22	2.17	2.27	2.78	3.43	0.037**
Maintaining highly trained, motivated sales team	3.56	2.93	3.00	3.09	3.22	3.57	0.219
Providing post-sale services	3.33	2.93	3.00	3.45	3.56	4.29	0.033**
Providing informa- tion to R&D	3.48	3.11	2.92	3.27	3.33	3.86	0.426

(*) Highest score is 5

(**) Significance at $p < 0.05$

The ANOVA test was used to assess the statistical significance of the differences among industries in the practices of the six marketing activities. Most items had statistically significant differences ('Conducting marketing research & information', 'Developing the distribution net-work', 'Conducting effective

sales promotion & advertising’, and ‘Providing post-sale services’). Only two item ‘Maintaining highly trained, motivated sales team’ and ‘Providing information to R&D’ showed no significant difference among these industries.

4.4.3 Descriptive analysis of manufacturing management

4.4.3.1 General description

In general, the respondents have evaluated the activities of manufacturing management well (**Table 4.15** and **Figure 4.12**). The overall means of all six items were varied from 3.68 to 4.07. They have much emphasized ‘providing an on going plant modernization programme’ (mean = 4.07). They have also done rather well ‘controlling manufacturing process quality’ (mean = 3.90), ‘managing production, material & overhead cost’ (3.88), and ‘using capacity utilization’ (mean = 3.87). However the two remaining items ‘creating an effective equipment maintenance & replacement’ (mean = 3.79) and ‘controlling material and inventory’ (3.68) were assessed relatively lower.

Table 4.15: Manufacturing management

Items (*)	N	Means	Good & very good (%)
Providing an on going plant modernization programme	110	4.07	83.64
Using capacity utilization	110	3.87	70.91
Controlling manufacturing process quality	110	3.90	70.00
Managing production, material & overhead cost	109	3.88	69.72
Creating an effective equipment maintenance & replacement	110	3.79	65.45
Controlling material and inventory	110	3.68	60.91

(*) Highest score is 5

The percentages of respondents perceived their manufacturing performance as good and very good were high and varied from 60.91% to 83.64% (Table 4.15). ‘Providing an on going plant modernization programme’ had the highest percentage (83.64%) of responses ranked in good and very good. Many organizations said that their equipments are very old and over depreciated it is therefore, modernization is very important to them in order to improve productivity and quality of the products, hence improve competitiveness of the

company. While ‘controlling material and inventory’ got lowest percentage (60.91%) of responses rated as good and very good. Some organizations have done rather good at controlling material and inventory with using computerized system, but other organizations said that they have met with difficulties in doing it when there are so many different types of material, and especially for imported material.

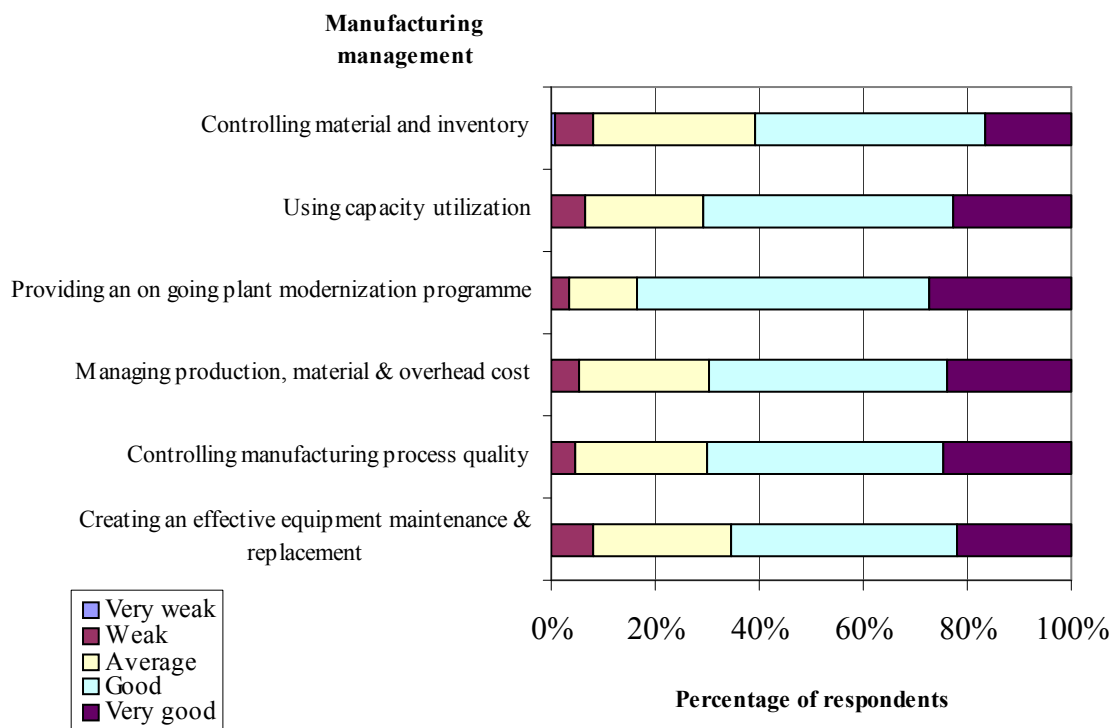


Figure 4.12: Manufacturing management

4.4.3.2 Manufacturing management and company location

Table 4.16 presents means and the significant differences in score of manufacturing activities among three groups of companies located in three different locations: North, South and Central of Vietnam. Mean score of organizations in all locations were relatively high ranging from 3.46 (‘Controlling material and inventory’ of organizations in the South) to 4.15 (‘Providing an on going plant modernization programme’ of companies located in the South). There are minor differences of mean score in all items among locations. ‘Controlling material and inventory’ had the lowest score in all three locations. Companies in the South perceived themselves better than companies in the North and

Central in ‘Controlling manufacturing process quality’ (mean = 4.03), ‘Managing production, material & overhead cost’ (mean = 3.97), ‘Providing an on going plant modernization programme’ (mean = 4.15), and ‘Using capacity utilization’ (mean = 3.90). However these organizations were less competitive to organizations in the North and the Central in ‘Controlling material and inventory’ (mean = 3.46). Companies located in the Central were best at ‘Creating an effective equipment maintenance & replacement’ (mean = 4.00), while organizations in the North was best at ‘Controlling material and inventory’ (mean = 3.82).

Even though, there were different mean across all items, however, there was not enough statistical evidence (significance) for this difference (Table 4.16). On the other word, there was no difference of manufacturing competence of organizations in all three locations in Vietnam.

Table 4.16: Means of manufacturing activities in different locations

Items (*)	Overall		Company location			Significance (**)
	Mean	S.D	North	South	Central	
Creating an effective equipment maintenance & replacement	3.79	0.88	3.73	3.85	4.00	0.610
Controlling manufacturing process quality	3.90	0.82	3.82	4.03	3.89	0.487
Managing production, material & overhead cost	3.88	0.84	3.87	3.97	3.56	0.397
Providing an on going plant modernization programme	4.07	0.74	4.08	4.15	3.67	0.203
Using capacity utilization	3.87	0.84	3.85	3.90	3.89	0.968
Controlling material and inventory	3.68	0.87	3.82	3.46	3.67	0.125

(*) Highest score is 5

(**) Significance at $p < .05$

4.4.3.3 Manufacturing management and company ownership

The significant differences in score of manufacturing activities among different types of ownership are presented in **Table 4.17**. However, there is no sig-

nificant difference for all items of manufacturing management among these ownerships.

There are not many differences of mean score in all items among industries. In general, SOE companies performed activities of ‘Creating an effective equipment maintenance & replacement’ (mean = 3.57) and ‘Controlling manufacturing process quality’ (mean = 3.73) worse than other three kinds of ownership (private, joint-stock and joint-venture & FDI). Private companies performed better than others at ‘Managing production, material & overhead cost’ (mean = 4.07), ‘Providing an on going plant modernization programme’ (mean = 4.20), ‘Using capacity utilization’ (mean = 4.27), and ‘Controlling material and inventory’ (mean = 3.87). Joint-stock companies were best only at ‘Creating an effective equipment maintenance & replacement’ (mean = 3.98) while Joint-venture & FDI were at ‘Controlling manufacturing process quality’ (mean = 4.00). Surprisingly, joint-venture & FDI performed worse at four following activities: ‘Managing production, material & overhead cost’ (mean = 3.60); ‘Providing an on going plant modernization programme’ (mean = 3.80); ‘Using capacity utilization’ (mean = 3.60); and ‘Controlling material and inventory’ (mean = 3.40).

Table 4.17: Means of manufacturing activities and different types of ownership

Items (*)	SOE	Private	Joint-stock	Joint-venture & FDI	Significance (**)
Creating an effective equipment maintenance & replacement	3.57	3.67	3.98	3.60	0.091
Controlling manufacturing process quality	3.73	3.93	3.96	4.00	0.248
Managing production, material & overhead cost	3.80	4.07	3.93	3.60	0.051
Providing an on going plant modernization programme	3.93	4.20	4.16	3.80	0.425
Using capacity utilization	3.70	4.27	3.91	3.60	0.067
Controlling material and inventory	3.57	3.87	3.75	3.40	0.634

(*) Highest score is 5

(**) Significance at $p < .05$

4.4.3.4 Manufacturing management and type of company

Table 4.18 presents means and the significant differences in score of different types of industry: food-processing, textile & garment, rubber & plastic, metal products, glass & porcelain, and electronic. The mean score of metal-product industry was relatively lower than other industries while electronic and glass-porcelain was relatively higher than others. Electronic companies had highest mean scores in ‘Creating an effective equipment maintenance & replacement’ (mean = 4.14), ‘Managing production, material & overhead cost’ (mean = 4.43), and ‘Providing an on going plant modernization programme’ (mean = 4.43). Organizations in glass & porcelain performed best at ‘Controlling manufacturing process quality’ (mean = 4.11), ‘Using capacity utilization’ (mean = 4.11), and ‘Controlling material and inventory’ (mean = 4.22).

Table 4.18: Mean of manufacturing activities in different industries

Items (*)	Food- proces sing	Tex- tile & Gar- ment	Rub- ber & Plas- tic	Metal prod- ucts	Glass & Porce- lain	Elec- tronic	Signi- fic- ance (**)
Creating an effective equipment maintenance & replacement	3.95	3.70	3.67	3.36	3.89	4.14	0.394
Controlling manufacturing process quality	4.00	3.85	3.67	3.64	4.11	4.00	0.690
Managing production, material & overhead cost	3.90	3.81	3.73	3.55	3.78	4.43	0.398
Providing an on going plant modernization programme	3.95	4.04	4.08	4.00	4.33	4.43	0.696
Using capacity utilization	3.86	3.74	4.00	3.64	4.11	3.57	0.690
Controlling material and inventory	3.81	3.70	3.25	3.73	4.22	3.57	0.165

(*) Highest score is 5

(**) Significance at $p < .05$

The ANOVA test was used to assess the statistical significance of the differences among industries in the practices of the six manufacturing activities. The results show that (Table 4.18) there are not statistically significant differences for all items in manufacturing management.

4.4.4 Descriptive analysis of research and development

4.4.4.1 General description

In this study, the respondents have evaluated the performance of research and development activities. The responses are presented in **Table 4.19** and **Figure 4.13**. The overall means of all three activities were only at an average level and ranging from 3.34 to 3.69 (Table 4.19). This indicates that research and development activities were not performed well in manufacturing companies in Vietnam.

Respondents perceived that they were relatively better in ‘Improving existing products’ (mean = 3.69) and relatively weak in ‘Improving research capabilities’ (mean = 3.43) and ‘Matching R&D objective and strategy objectives’ (mean = 3.34). About half of respondents perceived their marketing performance in all activities as good and very good and this percentage was varied from 48.18% to 61.82% (Table 4.19). ‘Improving existing products’ had the highest percentages (61.82%) of responses ranked in good and very good. Only 48.18% of respondents said that they had done good and very good ‘Matching R&D objective and strategy objectives’.

Table 4.19: Research and development

Items (*)	N	Means	Good & very good (%)
Improving existing products	110	3.69	61.82
Improving research capabilities	110	3.43	51.82
Matching R&D objective and strategy objectives	110	3.34	48.18

(*) Highest score is 5

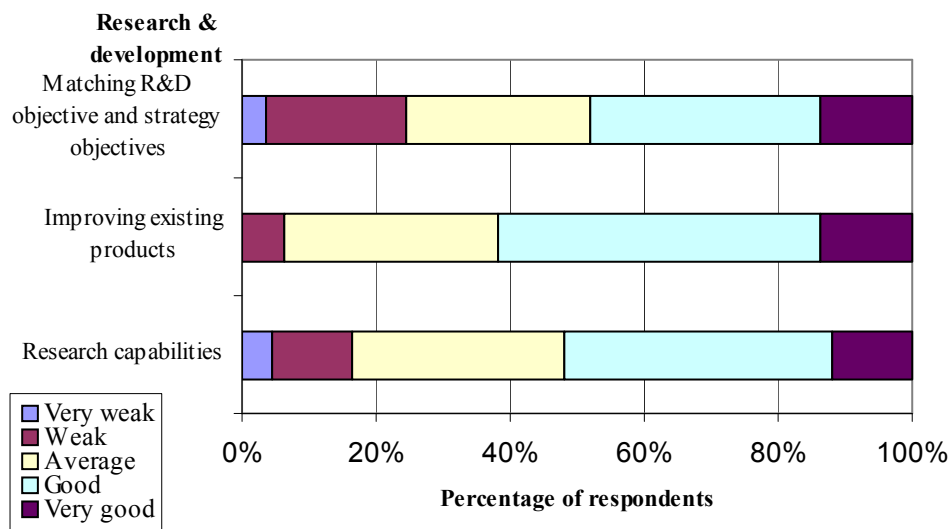


Figure 4.13: Research & development

4.4.4.2 Research & development and company location

Table 4.20 presents means and the significant differences in score of research and development activities among three groups of companies located in three different locations: North, South and Central of Vietnam. In general, there are minor differences of mean score in all items among locations. However, companies in the South perceived themselves better than companies in the North and the South. They had highest score in two items (out of three): ‘Improving existing products’ (mean = 3.77) and ‘Improving research capabilities’ (mean = 3.49). Companies located in the Central were best at only ‘Matching R&D objective and strategy objectives’ (mean = 3.78). However, there are not statistically differences for all items (Table 4.20).

Table 4.20: Means of research and development activities in different locations

Items (*)	Overall		Company location			Significance (**)
	Mean	S.D	North	South	Central	
Improving research capabilities	3.43	1.00	3.42	3.49	3.22	0.773
Improving existing products	3.69	0.79	3.68	3.77	3.44	0.530
Matching R&D objective and strategy objectives	3.34	1.07	3.21	3.44	3.78	0.256

(*) Highest score is 5

(**) Significance at $p < .05$

4.4.4.3 Research & development and company ownership

The significant differences in score of research and development activities among different types of ownership are presented in **Table 4.21**. However, there is no significant difference for all items of research and development among these ownerships. Table 4.21 shows that there are not many differences of mean score in all items among industries. In general, Joint-stock companies performed this activity relatively better than other three kinds of ownership (SOE, private, and joint-venture & FDI). This types of companies had the highest mean score at ‘Improving research capabilities’ (mean = 3.51) and ‘Matching R&D objective and strategy objectives’ (mean = 3.55). SOE companies performed ‘Matching R&D objective and strategy objectives’ (mean = 2.97) worst in comparing to others.

Table 4.21: Means of research and development activities and different types of ownership

Items (*)	SOE	Private	Joint-stock	Joint-venture & FDI	Significance (**)
Improving research capabilities	3.40	3.47	3.51	3.00	0.588
Improving existing products	3.53	3.93	3.75	3.50	0.348
Matching R&D objective and strategy objectives	2.97	3.20	3.55	3.50	0.150

(*) Highest score is 5

(**) Significance at $p < .05$

4.4.4.4 Research & development and type of company

Table 4.22 presents means and the significant differences in score of research and development activities in different types of industry: food-processing, textile & garment, rubber & plastic, metal products, glass & porcelain, and electronic. In general the electronic industry had better research and development performance than all other industries. They had highest mean score in two activities (out of three): ‘Improving research capabilities’ (mean = 4.00) and ‘Improving existing products’ (mean = 4.14). While the industry of metal product; rubber & plastic and textile & garment had lowest mean score at ‘Matching R&D objective and strategy objectives’ (mean = 3.09); ‘Improving

research capabilities’ (mean = 3.25) and ‘Improving existing products’ (mean = 3.52) respectively.

The ANOVA test was used to assess the statistical significance of the differences among industries in the practices of the three research and development activities. Even though there are differences in mean among different industries but only one item had statistically significant differences (‘Improving research capabilities’) while the rest showed no significant difference among these industries.

Table 4.22: Mean of research and development activities in different industries

Items (*)	Food- proce- ssing	Tex- tile & Gar- ment	Rub- ber & Plas- tic	Metal prod ucts	Glass & Por- celain	Elec- tronic	Signific- ance (**)
Improving re- search capabilities	3.71	3.07	3.25	3.91	3.56	4.00	0.046**
Improving exist- ing products	3.71	3.52	3.75	3.82	3.78	4.14	0.563
Matching R&D objective and strategy objec- tives	3.76	3.11	3.17	3.09	3.78	3.71	0.141

(*) Highest score is 5

(**) Significance at $p < .05$

4.5 Organizational performance analysis

4.5.1 Descriptive analysis of profitability performance

4.5.1.1 General description

The profitability performance of manufacturing companies in Vietnam is presented in **Table 4.23**. The overall means of three profit indicator were relatively low and ranked at a below average level, ranging from 2.76 to 2.89 only. This indicates that manufacturing companies perform not very well in term of profit making.

Only 26.36% of respondents were satisfied with their profit and perceived it as good and very good. Even less respondents perceived their ROE and ROA as good and very good. They are only 24.55% and 22.73% respectively. This means that more than 70% of respondents thought that their profitability performance were bad.

Table 4.23: Mean of profitability performance

Items (*)	N	Means	Perception as Good & very good (%)
Profit before tax	110	2.89	26.36
ROE	110	2.83	24.55
ROA	110	2.76	22.73

(*) Highest score is 5

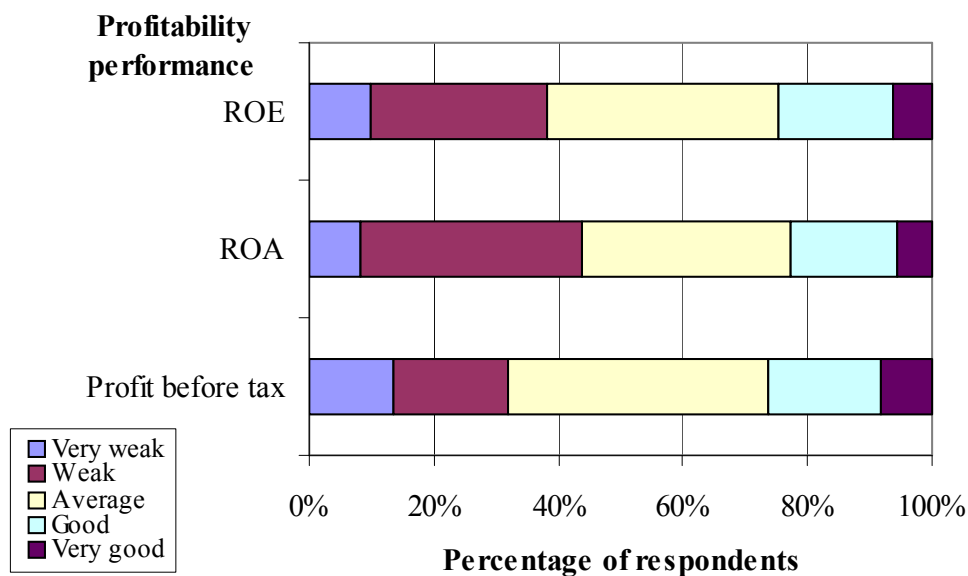


Figure 4.14 : Profitability performance

4.5.1.2 Profitability performance and company location

Table 4.24 presents means and the significant differences in score of profitability performance among three groups of companies located in three differ-

ent locations: North, South and Central of Vietnam. In general, there are minor differences of mean score in all indicators among locations. However, companies in the South perceived themselves better than companies in the North and the Central. They had highest mean score at all indicators: profit (mean = 3.00); ROA (mean = 3.92); and ROE (mean = 2.90). The manufacturing companies in the Central had lowest mean score of ROA (2.67) and ROE (mean = 2.67) while the companies in the North had lowest mean score of profit (2.81). But ANOVA test indicates that there is no statistically significant different for all three profitability indicators between the three groups of companies (Table 4.24).

Table 4.24: Means of profitability performance in different locations

Items (*)	Overall		Company location			Sig. (**)
	Mean	S.D	North	South	Central	
Profit before tax	2.89	1.11	2.81	3.00	3.00	0.668
ROA	2.76	1.01	2.68	2.92	2.67	0.477
ROE	2.83	1.05	2.81	2.90	2.67	0.817

(*) Highest score is 5

(**) Significance at $p < .05$

4.5.1.3 Profitability performance and company ownership

The significant differences in mean score of profitability performance among different types of ownership are presented in **Table 4.25**. However, there is no significant difference for all indicators (profit, ROA and ROE) among these ownerships.

In general, Joint-stock companies had profitability performance better than other type of ownerships. These type of companies were best at both 'ROA' (mean = 2.93) and 'ROE' (mean = 3.04). While Joint-venture and FDI had lowest mean score at all three indicators 'profit' (2.04), ROA (2.50) and 'ROE' (2.40).

Table 4.25: Profitability performance and different types of ownership

Items (*)	SOE	Private	Joint-stock	Joint-venture & FDI	Sig. (**)
Profit before tax	3.00	2.67	2.98	2.40	0.419
ROA	2.63	2.60	2.93	2.50	0.467
ROE	2.70	2.60	3.04	2.40	0.213

(*) Highest score is 5

(**) Significance at $p < .05$

4.5.1.4 Profitability performance and industries

Table 4.26 presents means and the significant differences in mean score of profitability performance of different types of industry: food-processing, textile & garment, rubber & plastic, metal products, glass & porcelain, and electronic. Electronic companies had profitability performance better than other type of ownerships. These type of companies were best at 'profit' (mean = 3.29), 'ROA' (mean = 3.14) and 'ROE' (mean = 3.29). The mean score of glass and porcelain was relatively lower than other industries. They had lowest mean score at both 'profit' (mean = 2.44) and 'ROE' (mean = 2.67). However the ANOVA test showed that (Table 4.26) there are not statistically significant differences among industries for all profitability indicators: profit, ROA and ROE.

Table 4.26: Mean of profitability performance in different industries

Items (*)	Food-processing	Textile & Garment	Rubber & Plastic	Metal products	Glass & Porcelain	Electronic	Significance (**)
Profit before tax	3.05	2.78	3.00	2.91	2.44	3.29	0.784
ROA	3.00	2.44	2.92	2.82	2.89	3.14	0.358
ROE	3.00	2.70	2.92	2.82	2.67	3.29	0.771

(*) Highest score is 5

(**) Significance at $p < .05$

4.5.2 Descriptive analysis of market performance

4.5.2.1 General description

In this section, the respondents have evaluated their market performance including market share and sales growth. In general the market performance of manufacturing companies in Vietnam was not very well and ranked at only average level. The performance of sales growth (mean = 3.26) had been perceived relatively better than the performance of market share (mean = 2.92). The percentage of respondents perceived their market performance as good and very good was less than 50% (**Table 4.27**). Only 42.73% of respondents satisfied with their sales growth while less than half of this figure (20.91%) satisfied with their market share.

Table 4.27: Mean of market performance

Items (*)	N	Means	Perception as Good & very good (%)
Sales growth	110	3.26	42.73
Market share	110	2.92	20.91

(*) Highest score is 5

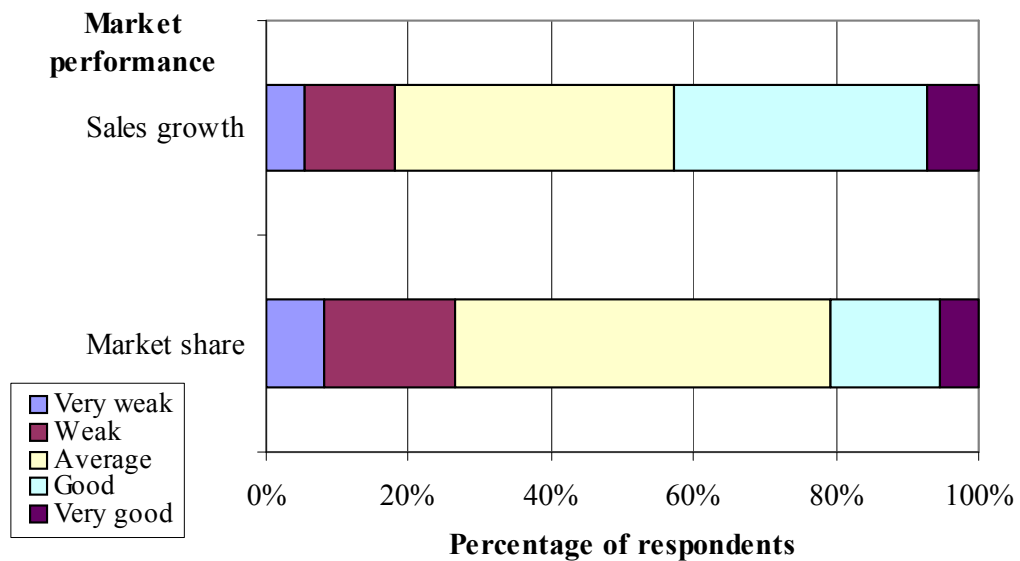


Figure 4.15: Market performance

4.5.2.2 Market performance and company location

Table 4.28 presents means and the significant differences in score of market performance among three groups of companies located in three different locations: North, South and Central of Vietnam. In general, there are minor differences of mean score in all indicators among locations. However, companies in the Central perceived themselves better than companies in the North and the South. They had highest mean score at both indicators: sales growth (mean = 3.44) and market share (mean = 3.33). The manufacturing companies in the South had lowest mean score of sales growth (3.23) while the companies in the North had lowest mean score of market share (2.82). But ANOVA test indicates that there is no statistically significant different for neither sales growth nor market share between the three groups of companies (Table 4.28).

Table 4.28: Means of market performance in different locations

Items (*)	Overall		Company location			Significance (**)
	Mean	S.D	North	South	Central	
Sales growth	3.26	0.96	3.26	3.23	3.44	0.836
Market share	2.92	0.94	2.82	2.97	3.33	0.284

(*) Highest score is 5

(**) Significance at $p < .05$

4.5.2.3 Market performance and company ownership

The significant differences in mean score of market performance among different types of ownership are presented in **Table 4.29**. However, there is no significant difference for both indicators (sales growth and market share) among these ownerships.

In general, Joint-stock companies had market performance better than other type of ownerships. These type of companies were best at both 'sales growth' (mean = 3.33) and 'market share' (mean = 3.00). While private companies had lowest mean score at both 'sales growth' (3.07) and 'market share' (mean = 2.80).

Table 4.29: Market performance and different types of ownership

Items (*)	SOE	Private	Joint-stock	Joint-venture & FDI	Sig. (**)
Sales growth	3.30	3.07	3.33	3.10	0.879
Market share	2.87	2.80	3.00	2.80	0.911

(*) Highest score is 5

(**) Significance at $p < .05$

4.5.2.4 Market performance and company type

Table 4.30 presents means and the significant differences in mean score of market performance of different types of industry: food-processing, textile & garment, rubber & plastic, metal products, glass & porcelain, and electronic. The mean score of glass and porcelain was relatively lower than other industries. Rubber and plastic companies had highest mean scores in sales growth (mean = 3.50), while Food-processing was best at market share (mean = 3.14). However the ANOVA test showed that (Table 4.30) there are not statistically significant differences among industries for both sales growth and market share.

Table 4.30: Mean of market performance in different industries

Items (*)	Food-processing	Textile & Garment	Rubber & Plastic	Metal products	Glass & Porcelain	Electronic	Significance (**)
Sales growth	3.24	3.30	3.50	3.36	2.67	3.14	0.439
Market share	3.14	2.81	3.08	3.09	2.89	2.71	0.798

(*) Highest score is 5

(**) Significance at $p < .05$

4.6 Hypothesis testing

4.6.1 Correlations among variables

Studying the relationships between the functional competencies and organizational performance will help the managers understand functional performance better. Managers can build appropriate solutions for functional management to improve their organizational performance.

Before building regression models, the study provides the correlation matrices among four functional competencies (independent variables) and among and between organizational performances (dependent variables). A summary of averages, standard deviations, and bivariate correlations between variables is shown in **Table 4.31**, **Table 4.32** and **Table 4.33**. Details of the correlation between independent variables and each dependent indicator are presented in **Appendix 7**.

It can be seen that the correlations demonstrate several noticeable properties. Among functional competencies (Table 4.31), Human resource management (HRM) is correlated with marketing (MKT), research & development (R&D) at a significant level of $p < 0.01$. Manufacturing (MNF) is not significantly correlated with all these other functional competencies (HRM, MKT and R&D). MKT is significantly correlated with both R&D and HRM but not with MNF. And R&D is significantly correlated with HRM and MKT but not with MNF. All the significant correlations are at level of $p < 0.01$.

Table 4.31: Correlations for functional competencies

Functional variables	Correlation with			
	X1	X2	X3	X4
X1 - Manufacturing (MNF)	1			
X2 - Marketing (MKT)	0.122	1		
X3 - Research & development (R&D)	0.072	0.593**	1	
X4 - Human resource (HRM)	0.143	0.486**	0.320**	1
Mean	4.010	3.121	3.485	3.495
Standard variation	1.590	0.832	0.807	0.718
** Correlation is significant at the 0.01 level (2-tailed).				

Among performance measures (Table 4.32), the result shows that all performance measures correlate with another at less than $p < 0.01$ significant level. This result is consistent with the result of Li (2000).

Table 4.32: Correlation for performance measures

Performance Variables	Correlation with	
	Y1	Y2
Y1 (Profitability performance)	1	
Y2 (Market performance)	.730**	1
Mean	2.827	3.091
Standard deviation	1.001	0.855
** Correlation is significant at the 0.01 level (2-tailed).		

It is remarkable that positive correlations were statistically significant between the four functional competencies and the profitability performance, while market performance was significant with MKT and R&D. This result showed the preliminary support of six (hypothesis 1, 2, 3, 4, 6, and 7) out of eight hypotheses. By contrast, the market performance is not significantly correlated with manufacturing and human resource management. Manufacturing was not statistically significant with profit. This result is consistent with findings of Li for Chinese manufacturers (2000). The rational is that improving manufacturing capability requires investment, which affects negatively company profit. However a more robust analysis was conducted subsequently to draw final conclusions regarding the impact of functional competencies on organizational performance.

Table 4.33: Correlation for functional competencies and performance

Functional Variables	Correlation with	
	Y1	Y2
X1 - Manufacturing (MNF)	.189*	.056
X2 - Marketing (MKT)	.385**	.355**
X3 - Research & development (R&D)	.242*	.257**
X4 - Human resource (HRM)	.277**	.240*
** Correlation is significant at the 0.01 level (2-tailed).		
* Correlation is significant at the 0.05 level (2-tailed).		

4.6.2 Relationship between functional competencies and organizational performance

4.6.2.1 Single regressions

Simple regression analysis with four functional competencies as independent variables and the two performance factors as dependent variables were conducted. A total 8 models were run individually. At this level, about one regression out of the 8 is expected to be positive and significant by chance.

The **Table 4.34** shows the result of the regression. It includes value of model R², the two-tail p-value for the significance of beta (or the regression itself), and the estimate the intercept. The estimates of the under standardized and standardized slope (beta) are also presented.

Hypothesis 1. *There is a positive relationship between the manufacturing competency and profitability performance*

Manufacturing competency (X1) is significantly correlated with profitability performance (Y1) at a significant level of $p < 0.05$ (Table 4.33). But this relationship is not strong ($R = 0.189$) (Table 4.34). The value of the R square is not high - 0.036 meaning that only 3.6 percent of the variance in profitability performance can be explained by manufacturing competency and the model does not fit the collected data well. However $F = 3.982$ and is significant at 0.049 (smaller than 0.05). This indicates that manufacturing variable do a good job explaining the variation of profitability performance. We can conclude that there is a positive relationship between the manufacturing competency and profitability performance and this relationship can be express as function:

$$Y1 = 2.351 + 0.119 X1$$

Where Y1: Profitability performance

X1: Manufacturing competency

Hypothesis 2. *There is a positive relationship between the marketing competency and profitability performance*

Marketing competency (X2) is significantly correlated with profitability performance (Y1) at a significant level of $p < 0.01$ (Table 4.33). The correlation coefficient (R) is 0.385 showing a moderate relationship between marketing

Table 4.34: Single regression model summary

Independent variables	Dependent variables									
	Profitability performance factor – Y1					Market performance factor – Y2				
	Unstandardized Coefficients		Standardized Coefficients	t	Significance	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	Beta	Std. Error	Beta			Beta	Std. Error	Beta		
Constant	2.351	.257		9.161	.000	2.970	.223		13.339	.000
Manufacturing competency–X1	.119	.060	.189	1.996	.049	.030	.052	.056	.585	.056
	R = 0.189 R2 = 0.036 Adjusted R2 = 0.027 F= 3.982 Sig.= 0.049					R = 0.056 R2 = 0.003 Adjusted R2 = -0.006 F= 0.342 Sig.= 0.560				
Constant	1.381	.345		4.002	.000	1.952	.298		6.546	.000
Manufacturing competency–X2	.464	.107	.385	4.338	.000	.365	.092	.355	3.952	.000
	R = 0.385 R2 = 0.148 Adjusted R2 = 0.141 F= 18.822 Sig.= 0.000					R = 0.355 R2 = 0.126 Adjusted R2 = 0.118 F= 15.616 Sig.= 0.000				

Table 4.34: Single regression model summary (cont.)

Independent variables	Dependent variables									
	Profitability performance factor – Y1					Market performance factor – Y2				
	Unstandardized Coefficients		Standardized Coefficients	t	Significance	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	Beta	Std. Error	Beta			Beta	Std. Error	Beta		
Constant	1.781	.414		4.300	.000	2.142	.352		6.085	.000
R & D competency–X3	.300	.116	.242	2.592	.011	.272	.098	.257	2.765	.007
	R = 0.242 R2 = 0.059 Adjusted R2 = 0.050 F= 6.717 Sig.= 0.011					R = 0.257 R2 = 0.066 Adjusted R2 = 0.057 F= 7.644 Sig.= 0.007				
Constant	1.476	.560		3.208	0.002	2.093	.397		5.274	.000
HRM competency–X4	.387	.129	.277	2.996	0.003	.286	.111	.240	2.567	.012
	R = 0.277 R2 = 0.077 Adjusted R2 = 0.068 F= 8.975 Sig.= 0.003					R = 0.240 R2 = 0.058 Adjusted R2 = 0.049 F= 6.591 Sig.= 0.012				

variable and profitability performance (Table 4.34). The R square is 0.148 indicating that 14.8 percent of the variation in the profitability performance can be predicted from marketing competency. The F value is 18.822 and significant at 0.000 (smaller than 0.05). This indicates that marketing variable significantly predict profitability performance. The t value of 4.338 (well below -2 and above +2) and significant at level of 0.000 means that marketing variable is significantly contributing to the equation for predicting profitability performance. We can conclude that there is a positive relationship between the marketing competency and profitability performance and this relationship can be express as function:

$$Y1 = 1.381 + 0.464 X2$$

Where Y1: Profitability performance

X2: Marketing competency

Hypothesis 3. *There is a positive relationship between the research and development and profitability performance*

Research and development competency (X3) is significantly correlated with profitability performance (Y1) at a significant level of $p < 0.05$ (Table 4.33). But this relationship is not strong ($R = 0.242$) (Table 4.34). The value of the R square is 0.059 and not high - meaning that only 5.9 percent of the variance in profitability performance can be explained by research and development competency and the model does not fit the collected data well. However $F = 6.717$ and is significant at 0.011 (smaller than 0.05). This indicates that research and development variable do a good job explaining the variation of profitability performance. Furthermore the t value of 2.592 (well below -2 and above +2) and significant at level of 0.011 meaning that this independent variable is significantly contributing to the equation for predicting profitability performance. We can conclude that there is a positive relationship between the research and development variable and profitability performance and this relationship can be express as function:

$$Y1 = 1.781 + 0.300 X3$$

Where Y1: Profitability performance

X3: Research & development competency

Hypothesis 4. *There is a positive relationship between the human resource management and profitability performance*

Human resource management competency (X4) is significantly correlated with profitability performance (Y1) at a significant level of $p < 0.01$ (Table 4.33). The correlation coefficient (R) is 0.277 showing a weak relationship between human resource variable and profitability performance (Table 4.34). The value of the R square is 0.077 and not high - meaning that 7.7 percent of the variance in profitability performance can be predicted from human resource competency. However $F = 8.975$ and is significant at 0.003 (smaller than 0.05). This indicates that human resource variable do a good job explaining the variation of profitability performance. Furthermore the t value of 2.996 (well below -2 and above $+2$) and significant at level of 0.003 meaning that this independent variable is significantly contributing to the equation for predicting profitability performance. We can conclude that there is a positive relationship between the human resource variable and profitability performance and this relationship can be express as function:

$$Y1 = 1.476 + 0.387 X4$$

Where Y1: Profitability performance X4: Human resource competency

Hypothesis 5. *There is a positive relationship between the manufacturing competency and market performance*

Manufacturing competency (X1) is not significantly correlated with market performance (Y2) (Table 4.33). The model result shows that there is very weak relationship between independent variable and dependent variable ($R=0.056$). Only 0.3 percent of the variance in market performance can be explained by manufacturing competency (R square = 0.003). Furthermore with a high value of significance (0.560) indicating that there is no statistical significance and manufacturing does not appear to be a strong predictor of market performance.

Hypothesis 6. *There is a positive relationship between the marketing competency and market performance*

Marketing competency (X2) is significantly correlated with market performance (Y2) at a significant level of $p < 0.01$ (Table 4.33). The correlation coefficient (R) is 0.355 showing a moderate relationship between marketing variable and market performance (Table 4.34). The R square is 0.126 indicating

that 12.6 percent of the variation in the market performance can be predicted from marketing competency. The F value is 15.616 and significant at 0.000 (smaller than 0.05). This indicates that marketing predictor significantly predict market performance. The t value of 3.952 (well below -2 and above +2) and significant at level of 0.000 meaning that marketing variable is significantly contributing to the equation for predicting market performance. We can conclude that there is a positive relationship between the marketing competency and market performance and this relationship can be express as function:

$$Y2 = 1.952 + 0.365 X2$$

Where Y2: Market performance X2: Marketing competency

Hypothesis 7. There is a positive relationship between the research and development and market performance

Research and development competency (X3) is significantly correlated with market performance (Y2) at a significant level of $p < 0.05$ (Table 4.33). But this relationship is not strong ($R = 0.257$) (Table 4.34). The value of the R square is 0.066 and not high - meaning that only 6.9 percent of the variance in market performance can be explained by research and development competency and the model does not fit the collected data well. However $F = 7.644$ and is significant at 0.007 (smaller than 0.05). This indicates that research and development variable do a good job explaining the variation of market performance. Furthermore the t value of 2.765 (well below -2 and above +2) and significant at level of 0.007 meaning that this independent variable is significantly contributing to the equation for predicting market performance. We can conclude that there is a positive relationship between the research and development variable and market performance and this relationship can be express as function:

$$Y2 = 2.142 + 0.272 X3$$

Where Y2: Market performance
X3: Research and development competency

Hypothesis 8. *There is a positive relationship between the human resource management and market performance*

Human resource management competency (X4) is significantly correlated with market performance (Y2) at a significant level of $p < 0.05$ (Table 4.33). The correlation coefficient (R) is 0.240 showing a weak relationship between human resource variable and market performance (**Table 4.34**). The value of the R square is 0.058 and not high - meaning that 5.8 percent of the variance in market performance can be predicted from human resource competency. However the significance value of the F statistic ($F=6.591$) is 0.0012 (smaller than 0.05) then the independent variables do a good job explaining the variation in the dependent variable. This indicates that human resource variable do a good job explaining the variation of market performance. Furthermore the t value of 2.567 (well below -2 and above $+2$) and significant at level of 0.012 meaning that this independent variable is significantly contributing to the equation for predicting market performance. We can conclude that there is a positive relationship between the human resource variable and market performance and this relationship can be express as function:

$$Y2 = 2.093 + 0.286 X4$$

Where Y2: Market performance X4: Human resource competency

4.6.2.2 Multiple regressions

Multiple regression provides a means of objectively assessing the degree and character of the relationship between the dependent and independent variables (Hair et al., 1998). Based on multiple regression models, the impact of functional competencies on organizational performance will be identified.

Multiple regression with profitability performance

The result of multiple regression is presented in **Table 4.35**. The high multiple correlation coefficient ($R = 41.6\%$) indicates that the model fit the data well. The R square is 0.173 meaning that seventeen percent of the variance in profitability performance can be predicted from manufacturing, marketing, research & development and human resource combined. The F value is 5.453 and significant ($p = 0.001 < 0.05$). This indicates that the combination of predictor significantly predicts profitability performance and the overall regression model was significant.

Table 4.35: Multiple regression model summary

Dependent variables	Independent variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		Beta	Std. Error	Beta		
Profitability performance	Constant	2.817	.089		31.751	.000
	Manufacturing – X1	.086	.089	.086	.970	.334
	Marketing – X2	.334	.089	.334	3.751	.000
	R&D – X3	.119	.089	.119	1.338	.184
	Human resource – X4	.199	.089	.200	2.238	.027
	R = 0.416 R ² = 0.173 Adjusted R ² = 0.142 F= 5.453 Sig.= 0.001					
Market performance	Constant	3.092	.078		39.768	.000
	Manufacturing – X1	.042	.078	.048	.532	.596
	Marketing – X2	.263	.078	.306	3.364	.001
	R&D – X3	.117	.078	.136	1.492	.139
	Human resource – X4	.135	.078	.157	1.722	.088
	R = 0.373 R ² = 0.139 Adjusted R ² = 0.106 F= 4.199 Sig.= 0.003					

In addition, the results from the regression analysis demonstrate that two of the four functional independent variables namely marketing (Beta = .334, $p=.000<0.001$) and human resource (Beta = .199, $p=.027<0.05$) had a positive relationship and a significant effect on profitability performance.

However, it is worthy to note that the other two variables including manufacturing (Beta = 0.086, $p = 0.334 > 0.05$) and research & development (Beta = 0.119, $p = 0.184 > 0.05$) did not have a significant positive effect on profitability performance factor.

This lead to conclusion that functional competencies have moderately positive relationships with profitability performance. This implies that functional competencies are conducive on improving profitability of an organization. However only two functions (marketing and human resource) had impact on the profitability performance.

Multiple regression with market performance

The result of multiple regression is presented in Table 4.35. The high multiple correlation coefficient ($R = 37.3\%$) indicates that the model fit the data well. R square is 0.139 meaning that about fourteen percent of the variance in market performance can be predicted from manufacturing, marketing, research & development and human resource combined. The F value is 4.199 and signifi-

cant ($p = 0.003 < 0.05$). This indicates that overall regression model was significant and the combination of predictor significantly predicts market performance.

In addition, the results from the regression analysis demonstrate that only two independent variable namely marketing (Beta = .263, $p = .001 < 0.05$) and human resource (Beta = .135, $p = .088 < 0.1$) had positively relationship with market performance.

On the other hand, one needs to note that there were no positive relationships from the other two functional competencies on market performance. They are manufacturing (Beta = 0.042, $p = 0.596 > 0.05$); and research and development (Beta = 0.117, $p = 0.139 > 0.05$). On other words, manufacturing, and research & development variables did not have a significant positive effect on market performance.

4.7 Discussion of the results

4.7.1 Discussion on findings from factor analysis

In this research, a total twenty-five variables of functional competencies were identified from the literature. It is necessary to find out how a set of these variables interconnects and how they cluster into distinctive dimensions. In doing so, this study submitted all functional variables to a series of factor analyses. The result reveals four peculiar functional factors of twenty-two variables in manufacturing companies in Vietnam. These four functional factors named manufacturing management, marketing management, research & development and human resource management.

There were certain commonality on the items loaded in these factors in this study and those in past studies. The Manufacturing factor has four common items of 'using capacity utilization', 'controlling manufacturing process quality', 'controlling material and inventory', and 'managing production, material & overhead cost' with study of Li (2000). Similarly, items of 'on going plant modernization', 'controlling material and inventory', and effective equipment maintenance & replacement' used in the Manufacturing factor are also the three elements in Hitt and Ireland (1985).

In addition, the Marketing factor has four items in common with that of Hitt and Ireland (1985): 'marketing research & information', 'sales promotion &

advertising', 'developing the distribution net-work', 'highly trained, motivated sales team'. This factor also had three common variables ('sales promotion & advertising', 'providing post-sale services', 'developing the distribution net-work') and two common items ('Providing post-sale services', 'Sales promotion & advertising') with study of (Droge and Vickery, 1994) and, (Li, 2000) respectively.

Research & development factor has two common elements of 'research capabilities', and 'matching R&D objective and strategy objectives' with study of Hitt and Ireland (1985). Item of 'Improving existing products' of this factor also found in the research of Droge and Vickery (1994), Li (2000), and Ha (2002).

The human resource factor has three items in common with that of Hitt and Ireland (1985): 'creating effective personnel policies', 'stimulating employee motivation, job satisfaction', and 'creating a compensation and recognition system based on performance'. Furthermore three common items of 'providing professional training for managers', 'providing job training for workers', and 'creating a compensation and recognition system based on performance' were found in the human resource dimension in the study of Li (2000). Two common elements of 'involving the employees in the decision making process', and 'encouraging the constructive criticism from employees' were found in human resource management factor in the study of Ha (2002).

In aggregate, while sharing some common elements in each functional factor reported in the literature, the set of functional variables identified in this study possess their idiosyncratic features at level of factor's elements. The unique incorporation of practices into each factor makes it less certain to predict, on the basis of existing literature, the firm-level impact of these factors. In addition, this also put constraints on the comparability of this research results with similar those of others.

The discovery of the four peculiar functional competencies in the Vietnamese sample of manufacturing companies demonstrates the need to first identify functional factors of a specific context before proceeding to examine their implication of the firm performance. Furthermore, the results pointed out those manufacturing companies in Vietnam show a varying emphasis on acting out of the dimensions of functional practices. It is interesting to reveal the impact of these functional competencies on firm performance.

4.7.2 Discussion on findings from functional competencies analysis

Based on the four main functions of organizations, this study shows a general picture about the practices of manufacturing companies in Vietnam. In general, manufacturing companies in Vietnam did not perform very well their four functions (manufacturing, marketing, research & development and human resource). This expected results came from a long of closed and centrally planned by government where production and consumption were all planned and distributed by the Government and where the enterprise did not need to improve themselves to be more efficient to compete with competitors.

Among the performance of four functions, companies were relatively better in manufacturing and less competitive in marketing. Among twenty two rated competitive items (**Table 4.36**), the three items: 'Providing an on going plant modernization programme', 'Controlling manufacturing process quality' and 'Managing production, material & overhead cost' that have been emphasized most by Vietnamese managers are all belonged to manufacturing function. This result is consistent with the past studies from other countries (Li, 2000; Nobel, 1995). Quality management were highly emphasized by Chinese managers and accomplishment in higher manufacturing process quality is a positive indicator for manufacturing competency (Li, 2000). A solid quality foundation serves as the basis for other sources of competitive advantages (Nobel, 1995). The focus on quality management in Vietnam reflects the demands of customers in changing business environment in Vietnam. They become more concerned with quality of the product than quantity. This made the managers have to put enormous attention on quality management and plant modernization.

The two items of marketing function: 'Marketing research & information' and 'Sales promotion & advertising' have gained less emphasis from managers in Vietnam in comparing to others. This however does not mean it is neglected in Vietnam. Vietnamese managers pay more and more attentions to these activities in the increasing competitive environment (Ha, 2002).

Although the performance of competitive items was different in manufacturing companies located in different regions (North, South and Central) this difference was only slight and not significantly except for 'Sale promotion & advertising'.

Table 4.36: Rank by mean of competitive items of four functions

Item	Function	Rank by mean	Good & very good (%)
Providing an on going plant modernization programme	MNF	4.07	83.64
Controlling manufacturing process quality	MNF	3.90	70.00
Managing production, material & overhead cost	MNF	3.88	69.72
Using capacity utilization	MNF	3.87	70.91
Creating an effective equipment maintenance & replacement	MNF	3.79	65.45
Improving existing products	R&D	3.69	61.82
Controlling material and inventory	MNF	3.68	60.91
Creating an effective personnel policies	HRM	3.61	59.09
Providing job training for workers	HRM	3.60	59.09
Developing compensation and recognition based on performance	HRM	3.55	52.73
Encouraging the constructive criticism from employees	HRM	3.55	51.82
Providing professional training for managers	HRM	3.51	52.73
Stimulating employee motivation, job satisfaction	HRM	3.49	49.09
Improving research capabilities	R&D	3.43	51.82
Developing the distribution net-work	MKT	3.37	46.36
Matching R&D objective and strategy objectives	R&D	3.34	48.18
Providing post-sale services	MKT	3.33	45.45
Providing information to R&D	MKT	3.25	44.55
Maintaining highly trained, motivated sales team	MKT	3.20	42.73
Involving the employees in the decision making process	HRM	3.15	32.73
Conducting marketing research & information	MKT	2.93	32.73
Conducting effective sales promotion & advertising	MKT	2.65	28.18

Unlike the common expectation that joint-venture and foreign investment companies are better than other types of Vietnamese companies, the empirical result shows that there was no significant difference for all items among com-

panies with different types of ownership. It means that there are no clear differences between SOE, private, joint-stock and foreign invested companies. This also means that foreign investment companies do not perform better than joint-stock, private companies and SOE's. The results are also in contrast to the government intention that equitization/ privatization will shape a new face for the managerial practices of ex-SOEs. The empirical result are very much in accord with the result of Thang (2004) which reported that on average joint-stock companies are more likely SOEs in human resource management issues. This result may be due to a lack of fundamental changes in managerial approaches and in management team of these companies for the company long-term perspective. One reason for this is that the carryover management has been deeply ingrained in the old management style of SOEs, which certainly takes time to undertake any change from the past.

However performance of different types of ownership still is an area that needs more attention. It is noted that the number of foreign investment companies are very few (only two) in the sample and this leads to a non-representative population of joint-stock and foreign investment companies.

In general electronic industry was better than other industries (food-processing, textile & garment, rubber & plastic, metal products, and glass & porcelain). However the results show that there are no statistically significant differences for manufacturing, human resource and research and development. But most items of marketing function had significant differences among these industries.

In aggregation, functional competencies in manufacturing companies in Vietnam are still under-developed. This expected results came from a long period of closed and centrally planned by government. Even they are willing to work for better performance, but often lack of managerial and strategic development experience to do it (Quang and Thang, 2004). Even though there is a certain amount of disparity in performing functional competencies among companies in different regions, ownerships and industries in Vietnam, however these differences are not significant.

4.7.3 Discussion on findings from hypothesis testing

A total of eight hypotheses were developed to assess the relationship between the independent and dependent variables. The results from simple linear regression analysis indicate that except manufacturing competency, all the other variables had a positive and significant impact on the level of profitability and

market performance. In addition, there is no unexpectedly significant and negative relationship with profitability and market performance. **Table 4.37** summarizes the results of the hypothesis testing that has been conducted in the study.

Table 4.37: Summary of hypothesis testing

Hypothesis	Description	Result of Hypothesis testing
H1	There is a positive relationship between the manufacturing competency and profitability performance	Supported
H2	There is a positive relationship between the marketing competency and profitability performance	Supported
H3	There is a positive relationship between the research & development and profitability performance	Supported
H4	There is a positive relationship between the human resource management and profitability performance	Supported
H5	There is a positive relationship between the manufacturing competency and market performance	Not supported
H6	There is a positive relationship between the marketing competency and market performance	Supported
H7	There is a positive relationship between the research & development and market performance	Supported
H8	There is a positive relationship between the human resource management and market performance	Supported

It was found that those manufacturing companies in Vietnam putting more emphasis on marketing, on research & development and on human resource competencies can expect to earn higher profitability and market performance. The study also found the positive and significant relationship between manufacturing competency and profitability. These findings are consistent with study of Droge and et al. (1994) and Li (2000). The empirical study of Droge found positive relationship between marketing, research and development and production with market share, ROI, ROI growth, ROS and ROS growth

(1994). While study of Li (2000) for manufacturing companies in China found:

- A positive relationship of marketing, human resource with market share, profit after tax, sales volume and ROI;
- A positive relationship between product design and development with sales volume and ROI;
- A positive relationship between manufacturing with ROI.

These findings suggest that in order to improve organizational performance (both profitability and market) manufacturing companies in Vietnam need to improve their functional competencies (manufacturing, marketing, research and development and human resource).

In general all positive relationships between functional competencies and organizational performance had small value of R-square ranging from 0.036 (manufacturing variable and profitability performance) to 0.148 (marketing variable and profitability performance). This indicates that an only small percentage of the variance in organizational performance can be explained by each functional competency. These results are consistent with the findings of Droge and Vickery (1994) and Li (2000). R squares in Li's study were small and varied from 0.06 to 0.21 and from 0.012 to 0.187 in the study of Droge and Vickery. These results imply that organization with only one good function could not achieve high performance. The empirical study indicates that manufacturing competency is not significant related to market performance. The possible reasons could be explained by many tasks in manufacturing function ('managing production, material and overhead cost', 'controlling material and inventory', 'using capacity utilization') with focus on cost saving and then lead to the improvement of profitability performance rather than market performance. While these other tasks identified as infrastructure development like 'on going plant modernization programme', 'Controlling manufacturing process quality' (Hill, 1994) may require time and investment and sometimes takes decades to implement (Skinner, 1969, 1985).

Furthermore, multiple regression indicates that two multiple regression models are significant at $p < 0.05$, showing a good combination of variables in predicting profitability and market performance. However, only the two functions of marketing and human resource are statistical significant with both profitability and market performance. While the other two variables named manufacturing and research & development do not have a significant positive effect on either profitability or market performance. This result is different with single regression. And possible explanation that may account for this in-

consistency is multicollinearity among independent variables (Table 4.31). And due to the multicollinearity, the relationship found in the regression models might be distorted.

The possible reasons for manufacturing and R&D not significant positive with profitability and market performance could be the low labour cost in Vietnam. In Vietnam, managers still prefer to best utilize relatively low labour cost rather than investing in modernization and automation. Vietnamese managers tend to spend little money on renovating the factory or upgrading the machinery (Hai, 1997). In addition, investing in manufacturing and R&D often require large investment and this will not lead to quick return (Ha, 2002).

However, manufacturing companies in Vietnam should pay attention to improve the performance of production and R&D in long run. Evidences had shown that manufacturing and research and development required large investment and this will provide sustainable competitive advantage and return in the long run (Ha, 2002). Swierczek (1999) and Wiklund (1999) found that the higher proactiveness and innovation would result in the higher performance. Being innovative would bring about new products and services that would, in turn, allow the firm to perform better (Swierczek, 1999; Wiklund, 1999). Ha (2002) found that Thai companies had better performance than Vietnamese companies as they made more investment in R&D to take the leadership in the technological innovation fronts as compared to the Vietnamese.

4.8 Chapter summary

This chapter describes the characteristics of the sample, including the locations, ownership, industry types, ages, number of employees, assets, revenues and profits of the manufacturing companies. In the study, majority of manufacturing companies (63.6%) are limited or joint-stock and more than half (56.4%) located in the North. Most of surveyed organizations (75.5%) have been established for more than 10 years with 30% of small companies having less than 300 employees. More than half of companies (55%) has total assets above VND 50 billion while almost two third of them (62.8%) make less than VND 5 billion of profit.

Exploratory factor analysis method was applied to identify the dimensions of functional competencies and company performance. Four functional competencies namely manufacturing, marketing, R&D, and human resource and two organizational performances called profitability and market performance were

identified with high loadings (all above 0.541) and high reliability (all above 0.794).

Among the performance of the four functions, companies were relatively better in manufacturing and less competitive in marketing. It also revealed that even though there is a certain amount of disparity in performing functional competencies among companies in different regions, ownerships and industries in Vietnam, however these differences are not significant.

Lastly, this chapter presents the findings about the testing of the eight hypotheses regarding the impact of four functional competencies on firm performance. It was discovered that seven hypotheses out of eight were supported by the empirical research and there was no unexpectedly results. The study confirmed that those manufacturing companies in Vietnam putting more emphasis on marketing, research and development and human resource competencies can expect to earn higher profitability and market performance. The study also found the positive and significant relationship between manufacturing competency and profitability. These findings are consistent with some previous studies.

5 Summary of findings and recommendations

5.1 Chapter overview

The previous chapter has presented the data analysis and hypotheses testing. This chapter presents a summary of findings and recommendations. In the beginning a summary of findings is presented and then contributions of the study are discussed. After that limitations are described. Finally, the last section is devoted to the presentation of recommendations for future research.

5.2 Summary of findings

5.2.1 Functional factors

The result reveals four peculiar functional factors of twenty-two variables in manufacturing companies in Vietnam. These four functional factors named manufacturing management, marketing management, research & development and human resource management.

Factor *Manufacturing management* had six loaded variables including ‘Providing an on going plant modernization programme’; ‘Using capacity utilization’; ‘Controlling manufacturing process quality’; ‘Controlling material and inventory’; ‘Providing an effective equipment maintenance & replacement’; and ‘Managing production, material & overhead cost’. Factor *Marketing management* had six loaded items: ‘Marketing research & information’; ‘Sales promotion & advertising’; ‘Developing the distribution network’; ‘Providing post-sale services’; ‘Highly trained, motivated sales team’; and ‘Providing information to R&D’. Factor *Research and development* had three loaded items. It includes: ‘Research capabilities’; ‘Matching R&D objective and strategy objectives’; and ‘Improving existing products’. And factor *Human Resource Management* had seven loaded variables: ‘Involving the employees in the decision making process’; ‘Providing job training for workers’; ‘Providing professional training for managers’; ‘Encouraging the constructive criticism from employees’; ‘Stimulating employee motivation, job satisfaction’; ‘Creating an effective personnel policies’; and ‘Creating compensation and recognition based on performance’.

In sum, although having some common elements in each functional factor reported in the literature, the set of functional variables identified in this study possess their idiosyncratic features at level of factor’s elements showing a

varying emphasis on acting out of the dimensions of functional practices of manufacturing companies in Vietnam.

5.2.2 Management perception of four functional competencies

In general, manufacturing companies in Vietnam were not performed very well their four functions: manufacturing, marketing, research & development and human resource. This expected results came from a long of closed and centrally planned by government where production and consumption were all planned and distributed by the Government.

Among the performance of four functions, companies were relatively better in manufacturing and less competitive in marketing. This result is consistent with the past studies from other countries (Li, 2000; Nobel, 1995). The focus on quality management in Vietnam reflects the demands of customers in changing business environment in Vietnam. They become more concerned with quality of the product than quantity. This made the managers have to put enormous attention on manufacturing especially on quality management and plant modernization.

Even though there is a certain amount of disparity in performing functional competencies among companies in different regions, ownerships and industries in Vietnam, however these differences are only slight and not significant for most of practices.

The study also indicated the distinctiveness of functional practices in a setting of an economy in transition where there were significant differences between Joint-stock/equitized, SOE and private companies. This suggest that equitization/privatization might need more time to pass a certain threshold before gaining enough momentum to drive the change in functional practices, as expected.

5.2.3 Relationship of functional competencies and firm performance

With the use of single regression in examining the relationship between four functional competencies with firm performance, it was found that those manufacturing companies in Vietnam putting more emphasis on marketing, research & development and human resource competencies can expect to earn higher profitability and market performance.

The empirical study also indicated that manufacturing competency had no significant relations to market performance. Multiple regression revealed that not only manufacturing but research & development had no significant positive effect on either profitability or market performance. The possible reasons could be the low labour cost in Vietnam and investing in manufacturing and R&D often requires large investment and this will not lead to quick return. However, there are evidences showing that investing in manufacturing and research & development will provide sustainable competitive advantage and return in the long run (Ha, 2002). It is therefore, managers in Vietnam should carefully consider the level of investment in these two functions in order to best take their competitive advantages.

5.3 Contributions

This study makes a number of contributions to resolution of both theoretical and practical issues.

First, putting the stream of research about the relationship of functional competencies and firm's performance, this study provides an additional case to the scare stock of researches which address the importance of integrative perspective by including several critical functional areas. In fact, many previous researches studied the impact of only one functional area competence on a firm's overall performance (Capon et al., 1990; Drucker, 1973; Ettlie, 1997; Hayes and Wheelwright, 1984; Tunalı, 1992).

Second is methodological contribution. With the use of factor analysis techniques, the study has extracted variables useful to measure functional competencies and organizational performance. Furthermore, each function is shown to have a good internal consistency. This can help in developing a conceptual framework for conducting research.

Third contribution is the comprehensive analysis. The results of this study have confirmed the findings of some previous studies, especially the impacts of marketing and human resource competencies on firm's performance. This illustrates the similar characteristics between management of manufacturing companies in Vietnam and in other countries. The findings of few minor differences reflected the special characteristics of manufacturing companies in Vietnam.

Finally, this study is a proper response to a growing need of both academics and practitioners for better understanding of the relationship of four functional

competencies and firm performance. In this respect, in addition to presenting a latest insight of the current status of the influence of four functions on performance of manufacturing companies, it come up with useful implications for managers regarding the development of these companies in Vietnam.

5.4 Limitations

There are some limitations that need to be mentioned. Future studies are likely to benefit if some limitations of the present study are examined.

First, studies on samples are seldom conducted without any intention to generalize the results to the whole population to which the samples belong (Cooper and Schindler, 2001). Not all sampling techniques allow this generalization. The most known, comprehensive and pervasive technique is perhaps the simple random sampling in which each possible sample of a given size is equally like to be the one selected (Newbold, 1999). The samples in this study were collected among manufacturing companies listed in the web-site <http://danhba.vdc.com.vn>. In fact, not all manufacturing companies were in the list especially not all foreign companies. Furthermore, number of samples and sampling methods was selected with consideration of time and budget constraints. Only to a small number (17.6%) of listed companies were sent the questionnaire. It is therefore the samples obtained may not be representative for the whole population and this some what would prevent generalizing the findings to all manufacturing companies in Vietnam.

Second, perceptual performance was used in the study instead of objective measure. Although previous studies showed a positive association between objective and perceptual performance (Geringer and Hebert, 1991; Powell, 1992), the latter is not able to fully reflect the real firm performance. Objective performance data is very difficult to obtain but it is the better approach to determining the success of the companies (Pothukuchi et.al, 2002).

Third, the validity of the findings regarding the relationship between four functional competencies and firm performance may be hampered by the fact that data on functional practices and organizational performance were collected at the same point in time. Consequently, the direction of causality between the two cannot be specified definitely. However, causality can not be established without longitudinal data. Future research effort is urged to collect longitudinal data to confirm the causal relationship between four function's competencies and firm performance.

Lastly, firm performance may be affected by various other extraneous variables not accounted for in this study. It would be beneficial to examine the myriad of firm performance by taking external conditions like the economic and legal situation into account.

5.5 Recommendations for future research

While this study was able to provide additional insight into four functional competencies and its relationship with firm performance, it also revealed areas that would benefit from further research.

First, this study focused only on four functions of manufacturing companies. Future research could thus focus on the other functions such as finance, planning, controlling.... By doing so, a better and fuller understanding on the effects of functional competencies on firm performance may be achieved.

Second, there is a strong need for longitudinal research. A longitudinal analysis of a group of companies over time would provide data to address at least two research questions: 1) is there a time lag between investing in functional competencies and achieving an expected performance, and 2) is there a particular order in which these investments should be made.

Third, this study failed to support one of the proposed hypotheses related to the relationship between manufacturing and firm performance. Hence, there is a need for further study on the influence of different manufacturing practices on firm performance.

Fourth, the empirical result shows that even though there is a certain amount of disparity in performing functional competencies among companies with different types of ownership, however these differences are not significant. This result might be the result of the period in which this research was carried out. The management in all companies is still deeply ingrained by the style of SOEs. It certainly takes time to undertake any change from the past. So there is an important need to investigate the differences in the future when managers had enough time to change their management styles.

Finally, to be able to generalize the results of this study future research might be extended to other industries like service and to other countries both developing and industrialized.

Appendices

Appendix 1: Survey questionnaire - English version



Ha noi May, 2006

Dear Sir/Madame,

I am Nguyen Thi Mai Anh – a lecturer of Hanoi University of Technology (HUT) as well as a doctoral student presently studying at the Fribourg University. I am currently working on the topic “Functional competencies and their effects on performance of manufacturing companies in Vietnam”. This questionnaire is designed to gather information for my research on the purpose of enhancing the knowledge of the manufacturing companies in Vietnam. I would appreciate very much if you, as a manager of the enterprise, would take some time to read, and fully fill in the questionnaire. The information that you are going to provide to me will be used only for academic purpose and kept strictly confidential.

Thank you very much for your cooperation
Best regards

Nguyen Thi Mai Anh – Lecturer
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Economics and Management Faculty
1 Dai Co Viet street, hanoi, Vietnam
Telephone: 844 868 0790/098 909 6180
Telefax: 844 868 4287
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PART 1. PERSONAL AND BUSINESS DETAILS

Please tick the mark (✓) into the square box (☐) which is suitable to your enterprise and your self

1. Enterprise's Name:.....
2. Contacts address:.....
3. Tel:.....Fax.....Email:.....
4. Your position in the enterprise:

- | | |
|--|---|
| <input type="checkbox"/> Director/general director | <input type="checkbox"/> Head of marketing/business dept. |
| <input type="checkbox"/> Vice director/Vice general director | <input type="checkbox"/> Head of production dept. |
| <input type="checkbox"/> Others (pls. specify)..... | |

5. Type of your enterprise:

- | | | | |
|--|---|----------------------------------|--|
| <input type="checkbox"/> State owned | <input type="checkbox"/> Limited or Joint-stock | <input type="checkbox"/> Private | <input type="checkbox"/> Joint-venture |
| <input type="checkbox"/> 100% Foreign invested <input type="checkbox"/> Others (pls. specify)..... | | | |

6. Your enterprise is operating in the area of:

- | | | |
|---|--|--|
| <input type="checkbox"/> Food processing & beverages | <input type="checkbox"/> Shoes & leather | <input type="checkbox"/> Electrical & electronic equipment |
| <input type="checkbox"/> Manufacturing wood & furniture | <input type="checkbox"/> Chemical | <input type="checkbox"/> Paper |
| <input type="checkbox"/> Glass, porcelain & construction material | <input type="checkbox"/> Textiles & garments | <input type="checkbox"/> Rubber & plastics |
| <input type="checkbox"/> Publishing & printing | <input type="checkbox"/> Metalproducts | <input type="checkbox"/> Others (pls. specify)..... |

7. How long have your enterprise been operated in this business?

- | | | | |
|------------------------------------|------------------------------------|-------------------------------------|------------------------------------|
| <input type="checkbox"/> < 3 years | <input type="checkbox"/> 3-5 years | <input type="checkbox"/> 5-10 years | <input type="checkbox"/> >10 years |
|------------------------------------|------------------------------------|-------------------------------------|------------------------------------|
- Total number of employees in your company currently ? (pls. specify the number).....

8. Which of the following ranges is the best indication for your business total capital for the year 2005:

- | | | |
|---|--|---|
| <input type="checkbox"/> ≤ 10 billion VN dong | <input type="checkbox"/> 10 - 50 billion VN dong | <input type="checkbox"/> > 50 billion VN dong |
|---|--|---|

9. Which of the following ranges is the best indication for your business revenue for the year 2005:

- | | | |
|---|--|--|
| <input type="checkbox"/> ≤ 500 million VN dong | <input type="checkbox"/> from 500 million to 1 billion VN dong | <input type="checkbox"/> from 1 to 5 billion VN dong |
| <input type="checkbox"/> from 5 to 50 billion VN dong | <input type="checkbox"/> from 50 to 100 billion VN dong | <input type="checkbox"/> from 100 to 500 billion VN dong |
| <input type="checkbox"/> from 500 to 1000 billion VN dong | <input type="checkbox"/> ≥ 1000 billion VN dong | |

10. Which of the following ranges is the best indication for your business profit (before tax) for the year 2005:

- | | | |
|--|--|--|
| <input type="checkbox"/> ≤ 100 million VND | <input type="checkbox"/> from 100 to 200 million VND | <input type="checkbox"/> from 200 to 500 mill. VND |
| <input type="checkbox"/> from 500 million to 1 billion VN dong | <input type="checkbox"/> from 1 to 2 billion VN dong | <input type="checkbox"/> from 2 to 5 billion VN dong |
| <input type="checkbox"/> from 5 to 10 billion VN dong | <input type="checkbox"/> from 10 to 50 billion VN dong | <input type="checkbox"/> ≥ 50 billion VN dong |

11. Which of the following ranges is the best indication for your business net profit for the year 2005:

- | | | |
|--|--|--|
| <input type="checkbox"/> ≤ 100 million VND | <input type="checkbox"/> from 100 to 200 million VND | <input type="checkbox"/> from 200 to 500 mill. VND |
| <input type="checkbox"/> from 500 million to 1 billion VN dong | <input type="checkbox"/> from 1 to 2 billion VN dong | <input type="checkbox"/> from 2 to 5 billion VN dong |
| <input type="checkbox"/> from 5 to 10 billion VN dong | <input type="checkbox"/> from 10 to 50 billion VN dong | <input type="checkbox"/> ≥ 50 billion VN dong |

PART 2. ENTERPRISE PERFORMANCE

Compared to other organizations that do the same kind of work (industry average), how would you rate your organization's performance over the last three years in term of the following indicators.

Indicator	Very weak	Weak	Average	Good	Very good
Growth in sales	1	2	3	4	5
Profit before tax	1	2	3	4	5
ROA (Return on asset)	1	2	3	4	5
ROE (Return on equity)	1	2	3	4	5
Market share	1	2	3	4	5

PART 3. FUNCTIONAL COMPETENCIES

Listed below are functional competencies that may be adopted in your enterprise. Using the scale provided, please indicate your preference by circling relevant number.

1= very weak

2=Weak

3=Average

4= Good

5=Very good

Functional competencies	Very weak	Weak	Average	Good	Very good
1 Conducting marketing research and information system	1	2	3	4	5
2 Developing the product distribution networks and distributor relations	1	2	3	4	5
3 Conducting an effective sales promotion and advertising campaigns	1	2	3	4	5
4 Maintaining a highly trained, motivated, vigorous and dynamic sales organization	1	2	3	4	5
5 Providing post-sale service	1	2	3	4	5
6 Providing information for and work closely with R&D to develop new product/services	1	2	3	4	5
7 Improving research and new product development capabilities	1	2	3	4	5
8 Improving existing products or services	1	2	3	4	5
9 Matching explicit R&D objectives and strategy objective	1	2	3	4	5
10 Providing an effective equipment maintenance and replacement policies	1	2	3	4	5
11 Providing computerization and decentralization of production control system for better control of quality, cost and time	1	2	3	4	5
12 Coordinating between R&D, operation & marketing	1	2	3	4	5
13 Controlling manufacturing process quality	1	2	3	4	5
14 Managing production, material and overhead cost	1	2	3	4	5

15	Providing an ongoing plant modernization programme to keep the efficiency of equipment comparable to that of the major competitors	1	2	3	4	5
16	Using capacity utilization					
17	Controlling materials and inventory	1	2	3	4	5
18	Developing an efficient & effective product-line policy for product additions & deletions'					
19	Creating effective and efficient personnel policies for hiring, training, promotion, compensation and employee services	1	2	3	4	5
20	Providing professional training for managers	1	2	3	4	5
21	Providing job training for workers	1	2	3	4	5
22	Involving the employees in the decision-making process	1	2	3	4	5
23	Stimulating employee motivation, job satisfaction, and morale	1	2	3	4	5
24	Creating a compensation and recognition systems based on performance	1	2	3	4	5
25	Encouraging the constructive criticism from employees	1	2	3	4	5

Thank you very much for your time and co-operation.
Please return the completed questionnaire to the address given in the attached envelop.

Appendix 2: Survey questionnaire - Vietnamese version



KHOA KINH TẾ VÀ QUẢN LÝ

Hà nội tháng 5 năm 2006

Kính gửi Ông/Bà

Tôi là Nguyễn thị Mai Anh - giảng viên khoa Kinh tế và quản lý, trường Đại Học Bách Khoa Hà nội. Hiện tôi đang làm một nghiên cứu khoa học về năng lực của các bộ phận chức năng và mối quan hệ của nó đến kết quả kinh doanh của các doanh nghiệp sản xuất ở Việt nam. Mục tiêu của nghiên cứu là đánh giá tác động của những yếu tố này đến các chỉ tiêu đo lường kết quả hoạt động sản xuất kinh doanh của doanh nghiệp sản xuất. Trên cơ sở đó đưa ra những đề xuất hỗ trợ cho những doanh nghiệp này hoạt động có hiệu quả hơn trong tương lai. Tôi xin cam kết chỉ sử dụng những thông tin về doanh nghiệp của Ông/Bà cho mục đích nghiên cứu và tuyệt đối bảo mật.

Tôi rất mong nhận được sự giúp đỡ của Ông/Bà bằng việc trả lời phiếu điều tra được đính kèm với thư này. Tôi xin chân thành cảm ơn Ông/Bà đã dành thời gian để chia sẻ những kinh nghiệm quản lý quý báu của mình.

Kính thư

Nguyễn thị Mai Anh

Khoa Kinh tế và Quản lý

Trường Đại Học Bách Khoa Hà nội

Tel: 04 868 0790 / 0989096180

Email: maianhdhbk@yahoo.com

PHẦN 1. THÔNG TIN VỀ DOANH NGHIỆP VÀ NGƯỜI TRẢ LỜI

Xin Ông/Bà cho biết một số những thông tin tổng quát sau:

1. Tên Doanh nghiệp của Ông/Bà là:
2. Địa chỉ liên lạc:.....
3. Tel:.....Fax.....Email:.....
4. Chức vụ của Ông/Bà trong doanh nghiệp:

<input type="checkbox"/> Giám đốc/Tổng giám đốc	<input type="checkbox"/> Trưởng phòng marketing/kinh doanh
<input type="checkbox"/> Phó giám đốc/Phó tổng giám đốc	<input type="checkbox"/> Trưởng bộ phận sản xuất
<input type="checkbox"/> Khác (xin vui lòng ghi rõ).....	
5. Doanh nghiệp của Ông/Bà là:

<input type="checkbox"/> DN Nhà nước	<input type="checkbox"/> CTTNHH hay cổ phần	<input type="checkbox"/> Tư nhân	<input type="checkbox"/> Liên doanh
<input type="checkbox"/> 100% vốn nước ngoài	<input type="checkbox"/> Khác (xin vui lòng ghi rõ).....		
6. Doanh nghiệp của Ông/Bà hoạt động chính trong lĩnh vực:

<input type="checkbox"/> Chế biến thực phẩm và đồ uống	<input type="checkbox"/> Giấy da	<input type="checkbox"/> Thiết bị điện và điện tử
<input type="checkbox"/> Chế biến gỗ và đồ gỗ	<input type="checkbox"/> Hoá chất	<input type="checkbox"/> Giấy
<input type="checkbox"/> Thủy tinh, gốm sứ và vật liệu XD	<input type="checkbox"/> Dệt và may	<input type="checkbox"/> Cao su và nhựa
<input type="checkbox"/> Xuất bản, in	<input type="checkbox"/> Sản phẩm kim loại	<input type="checkbox"/> Khác (xin chỉ rõ).....
7. Doanh nghiệp của Ông/Bà đã hoạt động được

<input type="checkbox"/> < 3 năm	<input type="checkbox"/> 3-5 năm	<input type="checkbox"/> 5-10 năm	<input type="checkbox"/> >10 năm
----------------------------------	----------------------------------	-----------------------------------	----------------------------------
8. Tổng số cán bộ nhân viên trong DN hiện nay.....
9. Tổng số vốn đầu tư hiện tại của doanh nghiệp:

<input type="checkbox"/> ≤ 10 tỷ đồng VN	<input type="checkbox"/> 10 đến 50 tỷ đồng VN	<input type="checkbox"/> >50 tỷ đồng VN
--	---	---
10. Doanh thu của DN đạt được năm 2005:

<input type="checkbox"/> ≤ 500 triệu đồng	<input type="checkbox"/> từ 500 triệu đồng đến 1 tỷ đồng	<input type="checkbox"/> từ 1 tỷ đồng đến 5 tỷ đồng
<input type="checkbox"/> từ 5 tỷ đến 50 tỷ đồng	<input type="checkbox"/> từ 50 tỷ đồng đến 100 tỷ đồng	<input type="checkbox"/> từ 100 tỷ đến 500 tỷ đồng
<input type="checkbox"/> từ 500 tỷ - 1000 tỷ đồng	<input type="checkbox"/> ≥ 1000 tỷ đồng	
11. Lợi nhuận trước thuế của DN đạt được năm 2005:

<input type="checkbox"/> ≤ 100 triệu đồng	<input type="checkbox"/> từ 100-200 triệu đồng	<input type="checkbox"/> từ 200 triệu đến 500 triệu đồng
<input type="checkbox"/> từ 500 tr. đến 1 tỷ đồng	<input type="checkbox"/> từ 1 tỷ đến 2 tỷ đồng	<input type="checkbox"/> từ 2 tỷ đến 5 tỷ đồng
<input type="checkbox"/> từ 5 tỷ đến 10 tỷ đồng	<input type="checkbox"/> từ 10 tỷ đến 50 tỷ đồng	<input type="checkbox"/> ≥ 50 tỷ đồng
12. Lợi nhuận sau thuế của DN đạt được năm 2005:

<input type="checkbox"/> ≤ 100 triệu đồng	<input type="checkbox"/> từ 100-200 triệu đồng	<input type="checkbox"/> từ 200 triệu đến 500 tỷ đồng
<input type="checkbox"/> từ 500 đến 1 tỷ đồng	<input type="checkbox"/> từ 1 tỷ đến 2 tỷ đồng	<input type="checkbox"/> từ 2 tỷ đến 5 tỷ đồng
<input type="checkbox"/> từ 5 tỷ đến 10 tỷ đồng	<input type="checkbox"/> từ 10 tỷ đến 50 tỷ đồng	<input type="checkbox"/> ≥ 50 tỷ đồng

PHẦN 2. KẾT QUẢ HOẠT ĐỘNG SẢN XUẤT KINH DOANH CỦA DOANH NGHIỆP

Đề nghị Ông/Bà cho ý kiến của mình đối với các chỉ tiêu phản ánh kết quả hoạt động kinh doanh của DN Ông/Bà trong ba năm gần đây (theo đánh giá chủ quan của ông bà) với “1” là kết quả kinh doanh “*rất kém*” và “5” là kết quả kinh doanh “*rất tốt*”.

Chỉ tiêu	Rất kém	Kém	Trung bình	Tốt	Rất tốt
Tăng doanh thu	1	2	3	4	5
Lợi nhuận trước thuế	1	2	3	4	5
Tỷ số lợi nhuận/Tổng tài sản (ROA)	1	2	3	4	5
Tỷ số lợi nhuận/ Vốn chủ sở hữu (ROE)	1	2	3	4	5
Thị phần	1	2	3	4	5

PHẦN 3. KHẢ NĂNG CẠNH TRANH CỦA DOANH NGHIỆP

1. Xin Ông/Bà cho biết ý kiến của mình về những hoạt động dưới đây của doanh nghiệp bằng cách khoanh tròn vào ô thích hợp. Trong đó **1** có nghĩa là doanh nghiệp của Ông/Bà ***không chú trọng*** hoặc ***thực hiện rất yếu*** hoạt động này và **5** có nghĩa là hoạt động này được doanh nghiệp Ông/Bà ***rất chú trọng*** hay ***thực hiện rất tốt***.

Năng lực cạnh tranh của các bộ phận chức năng		Rất yếu					Rất tốt	
		1	2	3	4	5		
1	Thực hiện công tác nghiên cứu marketing và xây dựng hệ thống thông tin marketing	1	2	3	4	5		
2	Mở rộng và hoàn thiện hệ thống phân phối. Cải thiện mối quan hệ với các nhà phân phối (đại lý, bán buôn, bán lẻ...)	1	2	3	4	5		
3	Thực hiện các chương trình khuyến mại và quảng cáo	1	2	3	4	5		
4	Duy trì đội ngũ bán hàng được đào tạo tốt, năng động và hiểu rõ về sản phẩm/dịch vụ của doanh nghiệp	1	2	3	4	5		
5	Cải tiến các dịch vụ sau bán hàng	1	2	3	4	5		
6	Cung cấp thông tin về thị trường cho bộ phận nghiên cứu và phát triển và hợp tác chặt chẽ với bộ phận này trong việc phát triển sản phẩm mới	1	2	3	4	5		
7	Nâng cao khả năng nghiên cứu và phát triển sản phẩm mới	1	2	3	4	5		
8	Cải tiến/hoàn thiện các sản phẩm/dịch vụ hiện có	1	2	3	4	5		
9	Liên kết chặt chẽ giữa mục tiêu của bộ phận nghiên cứu và phát triển với chiến lược doanh nghiệp về sản phẩm/thị trường	1	2	3	4	5		
10	Có chính sách về bảo dưỡng và thay thế các thiết bị	1	2	3	4	5		
11	Thực hiện máy tính hoá và tăng trao quyền trong hệ thống kiểm tra sản xuất để tăng chất lượng, giảm chi phí và thời gian	1	2	3	4	5		
12	Phối hợp giữa các bộ phận nghiên cứu & phát triển, sản xuất và nghiên cứu marketing	1	2	3	4	5		

13	Kiểm tra chất lượng qui trình sản xuất	1	2	3	4	5
14	Quản lý chi phí sản xuất, nguyên vật liệu và chi phí văn phòng	1	2	3	4	5
15	Có kế hoạch hiện đại hoá nhà máy để đảm bảo hiệu suất của các thiết bị so với đối thủ cạnh tranh	1	2	3	4	5
16	Sử dụng công suất của nhà máy	1	2	3	4	5
17	Kiểm soát nguyên vật liệu và hàng tồn kho	1	2	3	4	5
18	Chính sách về bổ sung sản phẩm mới và loại bỏ các sản phẩm không phù hợp	1	2	3	4	5
19	Chính sách nhân sự đối với việc tuyển dụng, đào tạo, thăng tiến, trả lương và các dịch vụ phục vụ nhân viên	1	2	3	4	5
20	Đào tạo nghiệp vụ quản lý cho cán bộ quản lý	1	2	3	4	5
21	Đào tạo kỹ năng thực hiện công việc cho công nhân	1	2	3	4	5
22	Khuyến khích nhân viên tham gia vào quá trình ra quyết định	1	2	3	4	5
23	Chính sách khuyến khích sự hài lòng của nhân viên, sự hài lòng đối với công việc và đạo đức	1	2	3	4	5
24	Hệ thống thưởng theo mức độ hoàn thành công việc	1	2	3	4	5
25	Khuyến khích nhân viên đóng góp ý kiến xây dựng	1	2	3	4	5

Xin chân thành cảm ơn Ông/Bà đã giành thời gian trả lời phiếu điều tra.

Sau khi điền xong vào phiếu điều tra

Xin Ông/Bà vui lòng gửi về địa chỉ ghi trên phong bì được đính kèm theo đây.

Appendix 3: Reliability of functional competencies

	Mean	Std Dev	Corrected Item-Total Correlation	Alpha if item Deleted
Marketing				$\alpha=0.870$
Conducting marketing research & information	2.927	1.090	0.787	0.826
Developing the distribution net-work	3.373	1.021	0.560	0.866
Conducting effective sales promotion & advertising	2.655	1.215	0.713	0.841
Maintaining highly trained, motivated sales team	3.200	1.021	0.663	0.849
Improving post-sale services	3.327	0.996	0.644	0.852
Providing information to R&D	3.245	1.060	0.654	0.850
Research & Development				$\alpha=0.803$
Matching R&D objective and strategy objectives	3.336	1.069	0.623	0.746
Improving research capabilities	3.427	1.000	0.681	0.671
Improving existing products & services	3.691	0.787	0.639	0.737
Manufacturing				$\alpha=0.858$
Providing an effective equipment maintenance & replacement	3.791	0.879	0.582	0.845
Controlling manufacturing process quality	3.900	0.823	0.721	0.818
Managing production, material & overhead cost	3.881	0.836	0.611	0.839
Providing an on going plant modernization programme	4.073	0.738	0.668	0.830
Using capacity utilization	3.873	0.836	0.662	0.829
Controlling material and inventory control	3.682	0.867	0.639	0.834
Human resource management				$\alpha=0.909$
Creating effective personnel policies	3.609	0.847	0.699	0.898
Providing professional training for managers	3.509	0.965	0.786	0.888
Providing job training for workers	3.600	0.837	0.705	0.897
Involving the employees in the decision making process	3.155	0.950	0.779	0.889
Stimulating employee motivation, job satisfaction, and moral	3.491	0.843	0.767	0.891
Creating compensation and recognition based on performance	3.555	0.874	0.601	0.908
Encouraging the constructive criticism from employees	3.545	0.925	0.745	0.893

Appendix 4: Reliability of organizational performance

	Mean	Std Dev	Corrected Item-Total Correlation	Alpha if item De- leted
Profitability Performance				$\alpha=0.917$
Profit before tax	2.891	1.112	0.850	0.939
ROA	2.764	1.013	0.881	0.913
ROE	2.827	1.048	0.908	0.892
Market Performance				$\alpha=0.759$
Sales growth	3.264	0.964	0.611	-
Market share	2.918	0.940	0.611	-

Appendix 5: Demographic data of the sample

Demographic Characteristics	Categories	Frequency	Percentage
Position	Director/general director	38	34.5
	Vice director/vice general director	19	17.3
	Head of marketing/business dept.	15	13.6
	Others	38	34.5
Company location	North	62	56.4
	Central	9	8.2
	South	39	35.5
Ownership	State owned	30	27.3
	Private and joint-stock	70	63.6
	Foreign	10	9.1
Operating areas	Textiles & garments	27	24.5
	Food processing & beverages equipment	21	19.1
	Rubber & plastics	12	10.9
	Metal products	11	10.0
	Glass, porcelain & construction material	9	8.2
	Electrical & electronic	7	6.4
	Manufacturing wood & furniture	3	2.7
	Chemical	3	2.7
	Others	17	15.4
Ages	<3 years	3	2.7
	3 – 5 years	5	4.5
	5 –10 years	19	17.3
	>10 years	83	75.5
No of employees	<300	33	30.0
	300-500	19	17.3
	500-1000	26	23.6
	>1000	32	29.1
Total assets	≤10 billion VND	20	18.2
	10-50 billion VND	30	27.3
	>50 billion VND	60	54.5
Revenue	≤ 500 million VND	5	4.5
	from 500 million to 1 billion VND	2	1.8
	from 1 to 5 billion VND	6	5.5
	from 5 to 50 billion VND	22	20.0
	from 50 to 100 billion VND	20	18.2
	from 100 to 500 billion VND	45	40.9
	500 to 1000 billion VND	4	3.6
	≥ 1000 billion VND	6	5.5

Demographic Characteristics	Categories	Frequency	Percentage
Profit	≤ 100 million VND	13	11.8
	from 100 to 200 million VND	5	4.5
	from 200 to 500 million VND	12	10.9
	from 500 million to 1 billion VND	9	8.2
	from 1 to 2 billion VND	15	13.6
	from 2 to 5 billion VND	15	13.6
	from 5 to 10 billion VND	16	14.5
	from 10 to 50 billion VND	19	17.3
	≥ 50 billion VND	6	5.5

Appendix 6: Communalities of Sequential Runs of Factor Analysis

Communalities

	Communalities			
	Run 1	Run 2	Run 3	Run 4
Human resource management ($\alpha=0.909$)				
Involve the employees in the decision making process	0.750	0.740	0.746	0.746
Emphasize job training for workers	0.769	0.678	0.675	0.674
Emphasize professional training for managers	0.798	0.743	0.739	0.739
Encourage the constructive criticism from employees	0.746	0.679	0.677	0.681
Improve employee motivation, job satisfaction	0.751	0.680	0.687	0.685
Effective personnel policies	0.632	0.618	0.618	0.618
Compensation based on performance	0.630	0.515	0.524	0.530
Marketing management ($\alpha=0.870$)				
Marketing research & information	0.758	0.764	0.763	0.763
Sales promotion & advertising	0.734	0.726	0.728	0.729
Widening distribution net-work	0.585	0.534	0.532	0.541
Improve post-sale services	0.604	0.577	0.578	0.577
Highly trained, motivated sales team	0.659	0.630	0.632	0.631
Provide information to R&D	0.675	0.609	0.607	0.607
Manufacturing management ($\alpha=0.858$)				
Reduce production rework rate	0.712	0.607	0.637	0.649
Improve capacity utilization	0.666	0.624	0.639	0.653
Improve manufacturing process quality control	0.714	0.688	0.687	0.684
Improve process engineering	0.577	0.587	0.582	0.580
More effective equipment maintenance & replacement	0.576	0.486	0.469	0.512
Reduce production, material & overhead cost	0.556	0.562	0.567	0.564
Research and development ($\alpha=0.803$)				
Research capabilities	0.762	0.760	0.760	0.804
Efficient & effective product line	0.721	0.710	0.711	0.728
Improve existing products	0.732	0.752	0.748	0.690
Eliminated Variables				
Develop more efficient & effective product-line policy for product additions & deletions	0.515			
Increase computerization & decentralization of production control system	0.727	0.608		
Coordination between R&D, operation & marketing	0.698	0.709	0.706	

Appendix 7: Correlation between independent and dependent variables

Correlation for performance measures

Performance Variables	Correlation with						
	Y1	Y2	Y3	Y4	Y5	Y6	Y7
Y1 (Profitability performance)	1						
Y2 (Market performance)	.730**	1					
Y3 (Profit)	.936**	.754**	1				
Y4 (ROA)	.945**	.634**	.808**	1			
Y5 (ROE)	.960**	.678**	.842**	.886**	1		
Y6 (Sales growth)	.687**	.900**	.746**	.572**	.626**	1	
Y7 (Market share)	.622**	.895**	.606**	.567**	.591**	.611**	1
Mean	2.827	3.091	2.891	2.764	2.827	3.264	2.918
Standard deviation	1.001	0.855	1.112	1.013	1.048	0.964	0.940
** Correlation is significant at the 0.01 level (2-tailed).							

Correlation for functional competencies and performance

Functional Variables	Correlation with						
	Y1	Y2	Y3	Y4	Y5	Y6	Y7
X1	.189*	.056	.160	.195*	.182	.116	-.017
X2	.385**	.355**	.358**	.375**	.362**	.238*	.402**
X3	.242*	.257**	.189*	.257**	.244*	.148	.315**
X4	.277**	.240*	.280**	.234*	.271**	.218*	.212*
** Correlation is significant at the 0.01 level (2-tailed).							
* Correlation is significant at the 0.05 level (2-tailed).							

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