

UNIVERSITY OF SOUTH AUSTRALIA

# Post-Merger Integration Strategies: An Integration Process Perspective

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## ABSTRACT

Firms use Mergers and Acquisitions (M&As) to pursue growth as they are regarded as a fast and seemingly less expensive way to acquire production capacity, market share, and knowledge given the shortening product life cycles, fierce global competition, and accelerating technological innovations. However, the literature, studying M&A mechanisms from different perspectives, suggests that most M&A deals fail.

Post-merger integration (PMI) is commonly agreed to be an extremely important decision-making process for management, which ensures value creation through M&As. PMI is also a subject of great interest to management and academics in Taiwan following an unprecedented M&A boom due to the entry into WTO, regional economic integration, and regulatory reform since the year 2000.

This research seeks to develop a model of PMI strategy, incorporating four constructs: M&A motives, PMI, M&A performance, and contextual factors. PMI is conceptualized through integration speed and scope to capture the construct's abstract meanings, and is observed in two specific aspects, task integration and human integration. The developed framework was tested across a sample of 51 M&A cases in Taiwan. The case survey method was used. Correlation and multiple regression analyses were conducted to investigate the proposed relationship.

This research confirms the relationship between M&A motives and integration scope, in that integration scope is positively associated with motives for synergy. Management style has a positive moderator effect on integration scope, but not integration speed. Firm size does not affect integration speed and scope, supporting Haspeslagh and Jemison (1991), and Homburg and Bucerius (2006). Knowledge has a significant moderator effect on integration scope and speed.

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# CHAPTER 1: INTRODUCTION

## 1.1 Background

An acquisition occurs when one company takes a controlling ownership interest in another firm, or the selected assets of another firm such as a manufacturing facility. 'An acquisition tends to be used for the takeover of one firm by the other' (DePamphilis 2003, p. 5). A merger is a combination of two or more firms in which only one firm's identity survives ('Assort merger'), or a new identity is created ('Create merger'). 'It tends to be used for the combination of equal-sized firms' (DePamphilis 2003, p. 6).

Merger and acquisition (M&A) activities peaked in 2000 in response to the rising trends of globalization, free trade, deregulation, and technological developments (Hsu 2001). After this period, the global M&A transaction value declined, largely due to the bursting of the speculative 'dotcom' bubble, the slump in the global equity markets, and the U.S. recession in 2001. After bottoming out in 2002, the trend reversed to the late 1990s level as overall economic conditions improved. The deal numbers charted a similar trend. 'Enterprises undertaking M&A are increasingly looking beyond transaction size toward the potential for improving operational efficiency' (Depamphilis 2003, p. 4). Figure 1-1 shows the global M&A transaction value in 1989–2005 and the 1997–2005 deal numbers.

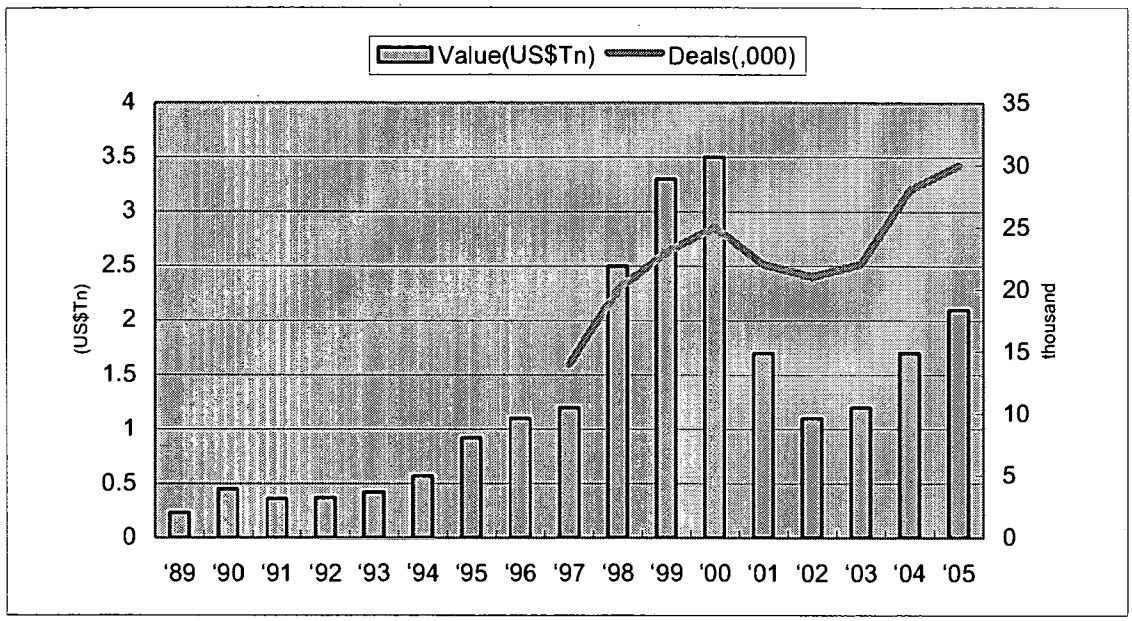



Figure 1-1. Worldwide M&A transactions
Source: Wilmerhale (2006)

Through M&As, firms can gain resources, channels, market share, technological capabilities and diversify into different business fields much faster rather than by themselves (Datta 1991; Coff 1999; Graebner 2004; Zollo and Singh 2004). In contrast to an internal growth strategy by organic development, growth through M&As is often referred to as an external growth strategy (Yao 2004). In a survey by PricewaterhouseCoopers (2003), two-thirds of the 150 largest U.S. multinational corporations (MNCs) indicated that M&A is an important route for pursuing external growth. This agrees with Galpin and Herndon's (2000) study. Throughout this research, the terms 'merger' and 'acquisition' will be used interchangeably because the focus is on the integration process of two combining organizations irrespective of financial or legal distinctions.(Tetenbaum 1999)

Despite the popularity of M&As, there is still a high percentage of failures.[1]

[1] 'Failure' is used to describe M&A transactions which provide fewer benefits or lower performance gains than anticipated by acquiring firms (Datta 1991; Tetenbaum 1999).

According to a KPMG (2000) report, the share prices of half of the companies surveyed were devalued after a merger; one-sixth remained unchanged, while only one-third made a gain. This was a similar conclusion to that of Sirower (1997). Porter (1987) suggested that half of all acquisitions were considered unsatisfactory by the acquiring firms. Scherer and Ravenscraft (1989) also found that the profitability of the target firms, on average, declined after an acquisition. Table 1-1 shows the commonly cited reasons for M&A failures at different stages of the M&A process.

Table 1-1. Reasons for M&A failures

| Reasons | Pre-M&A planning | Processing of M&A | Post-M&A integration |
|---|---|---|---|
| 1. Overestimating synergy/overpaying | X | | |
| 2. Slow pace of integration | | | X |
| 3. Poor strategy | X | X | X |
| 4. Form of payment | X | X | |
| 5. Poor post-merger communication | | | X |
| 6. Conflicting corporate culture | | | X |
| 7. Weak core business | X | | X |
| 8. Large size of target company | X | | X |
| 9. Inadequate due diligence | X | X | X |
| 10. Poor assessment of technology | X | | |

Source: DePamphilis (2003), p. 39

Table 1-1 shows that most causes of M&A failure are related to the post-merger integration (PMI), a process which normally takes from a few months to a year to complete. Managing the PMI process inappropriately is one main reason for the high failure rate in M&As (Marks 1997). Haspeslagh and Jemison (1991), from a process perspective, illustrate the problems that firms encounter in both pre-acquisition

decision-making and post-acquisition integration, and stress that the PMI process is key to making acquisitions work.

## 1.2 Motivation for research

There are a number of reasons why this research topic was chosen. First, the paradox between the popularity of M&As and the high failure rate suggests that it is a challenge for firms to achieve satisfactory M&A performance for the new combined firm. Jemison and Sitkin (1986) differentiated between making an M&A decision and making an M&A work. Making an M&A decision is concerned with the selection process, while making an M&A work is concerned with the management of the integration process. Firms often bypass detailed discussion about integration due to its uncertainty, complexity, and other pressures. They either think that an M&A's value should be realized spontaneously as long as a suitable combination is formed or merely leave the integration work to completely contingent responses because it is too complicated to specify a rule. Hence, without guidance about what, why, how, and where the M&A is expected to create value, such vague rationalizations may result in unsatisfactory performance (King et al. 2004).

Second, the need for PMI in an M&A is primarily bounded by its objectives (Datta 1991), which are directed by the M&A motives (Hsu 2001). Prior research suggests various theories on M&A motives from different perspectives. Most either focus on M&A motives per se (Salter and Weinhold 1981; Trautwein 1990) or the relationship between M&A motives and M&A performance (Lubatkin 1987; Shelton 1988; Seth 1990). Few studies relate both the motives and PMI process to M&A performance. Graebner (2004) pointed out that there is a relationship between the firm's original motives and PMI, but the acquisition results are unpredictable.

Third, there is considerable heterogeneity with respect to the definition of performance as well as its measurement. Overall, the evidence from prior research shows that the average gains to the acquiring firm are either zero or negative (Jarrell, Brickley and Netter 1988; Loderer and Martin 1992; Agrawal and Jaffe 2000; Zollo and Singh 2004). This seems to contradict the firm's positive opinions of M&A result (King et al. 2004). Such a contradictory phenomenon indicates that the finance-economics view of the capital markets stream may not clearly explain the value created by M&A. However, the process perspective, which incorporates the merits of the strategic management stream and the organizational behavior stream, may do so. This gives rise to another approach, which is to adopt synergy realization (Haspeslagh and Jemison 1991) to gauge M&A performance and avoid 'the more removed and potentially ambiguous criteria of accounting or stock price reactions' (Larsson and Finkelstein 1999, p. 1).

Subsequently, as well as M&A motives that cannot completely correspond to the source of value creation after acquisitions, a number of emerging contextual factors such as differences in size (Larsson and Finkelstein 1999), management style (Datta 1991; Zollo and Singh 2004), and knowledge capability (Hsu 2001; Graebner 2004) between combining organizations have been discussed in the relationship between PMI strategy and M&A performance. Most research studies treat these contextual factors as a strategic choice (Gu 2004; Zollo and Singh 2004) and study their effects on M&A performance. However, the integration manager may not be the same as the acquisition manager. From the standpoint of integration managers, these contextual factors are moderators that exist when the acquisition is completed, but are not strategic choices. In other words, unlike prior research on the way contextual factors

affect M&A performance, this thesis analyzes the way contextual factors affect PMI in influencing M&A performance.

While global M&A activities declined dramatically after year 2000 (Figure 1-1), Taiwan conversely showed an unprecedented period of M&A boom (Figure 1-2). This is attributed to the changes in regional economic dynamics, government policy, and relevant regulations for M&As (PricewaterhouseCoopers 2003), which will be further discussed in Section 2.2. How managers deal with these changes and play their role in the PMI process became of central importance to the value creation.

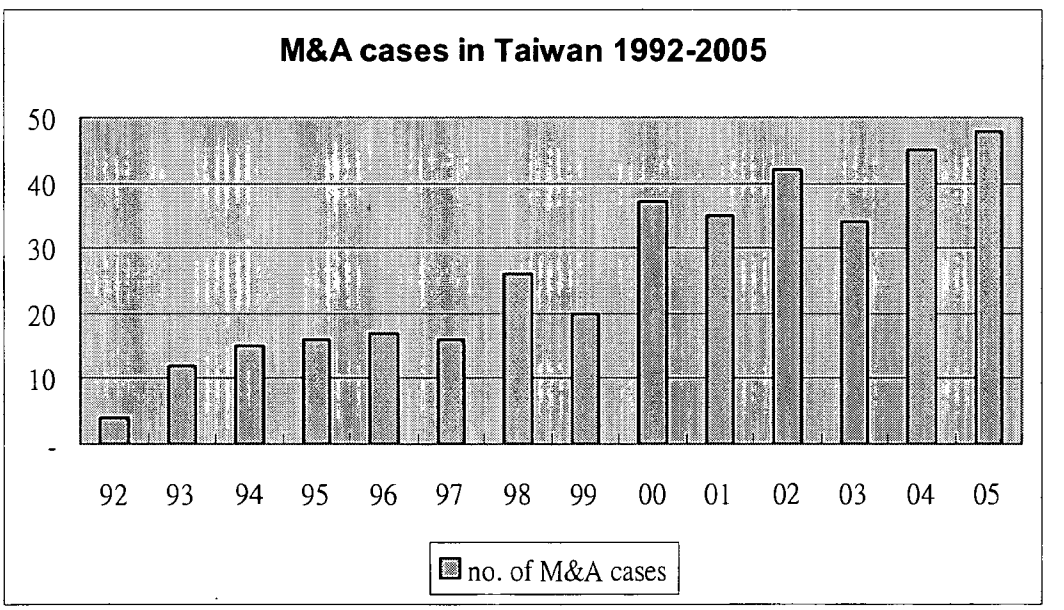



Figure 1-2. M&A deals with transaction value greater than NT$1 billion 1992–2005

Source: Fair Trade Commission, http://www.sfb.gov.tw

In brief, the researcher believes in the contingent thought of the process perspective: the formation of a competitive PMI strategy must fit with a number of conditions such as M&A motives and contextual factors. Hence, this thesis develops a framework incorporating M&A motives, contextual factors, PMI strategy, and M&A

performance. By understanding these relationships with a case survey in Taiwan, managers can set an effective PMI strategy and create M&A value.

## 1.3 Research aims and research questions

The purposes of this research are two-fold:

*(1) To develop a model which incorporates M&A motives, post-merger integration, contextual factors, and M&A performance.*

*(2) To determine the relationship between PMI and M&A performance, given the M&A motives and contextual factors.*

The following research questions have been developed for exploration:

*RQ1: How do the M&A motives relate to integration strategy?*

*RQ2: What is the relationship between PMI and M&A performance under the different sets of contextual factors between acquiring and acquired firms?*

*RQ3: To what extent do these contextual factors affect the relationship between PMI and M&A performance?*

## 1.4 Methodology

There have been attempts to bridge the gap between the quantitative analysis of a few variables across large samples to attain generalizability and the qualitative case study investigating multi-issues to capture insights of one or a few specific cases. Case survey is a research method involving a cross-sectional analysis of large samples (case studies) to attain generally applicable patterns (Larsson 1993). This method has proven to be a useful tool to integrate several isolated cases (Yin and Heald 1975;

Bullock 2004). Larsson (1993) also suggested a detailed set of steps for the application of the case survey method to an empirical survey on M&As. Given the complex nature of issues related to M&As and the case studies dominating PMI research, the case survey method was adopted in this thesis to generalize applicable patterns. The details of this method will be elaborated in Chapter 3.

## 1.5 Outline of the research

There are five chapters in this thesis. The introduction covers the background to this research, the motives, aims, research questions, methodology, definition of relevant terms, and the scope and delimitations. Chapter 2 reviews relevant prior research, develops testable hypotheses, and provides a conceptual framework. Chapter 3 describes the research methodology, the justification for the method employed, the operationalization of the important theoretical constructs, and the methods of data analysis. Chapter 4 further discusses the results of the data analyses. Finally, Chapter 5 concludes with implications and suggestions for future research.

## 1.6 Research scope and limitations

The scope of this research can be addressed in two ways: research topic and research objects.

As indicated in the title, the focus of this thesis is on an optimum integration strategy that can lead to superior M&A performance by taking an integration process perspective. Unlike strategy-performance studies which cover the whole process from pre-acquisition decision-making to post-acquisition integration, this research is concerned only with the integration process. The factors existing before the M&A

transaction are regarded as conditions that the management has to deal with, but did not change. Specifically, in this research, the focus is not on how the pre-existing factors impact the M&A performance, but rather how the contextual factors influence the integration process to create value for M&A.

Second, the research objects are M&A cases in Taiwan because previous research has mostly used cases in the U.S. and Europe. Since the business environment and culture are different between West and East (to be further discussed in Section 2.2), the consequences of M&As could be very different even when using the same integration approach. Further, as the researcher is Taiwanese, the complexity of cross-country nature, primary information accessibility, needs of in-depth case survey (addressed in Section 1-4), and budget concerns, this thesis uses M&As in Taiwan as the research objects. Although such delimitation makes the research more specific, it may limit the applicability of the research results to other countries.

## 1.7 Conclusion

Given the popularity of M&A activities and the high failure rate, this research aims to focus on the management of an effective integration process to achieve satisfactory M&A performance, and considers the different sets of contextual factors under different M&A motives. This research takes an integration process perspective from the combined firm's standpoint. A case survey method was employed to capture in-depth information from individual case studies and to generate applicable patterns by cross-sectional analysis. The research objects are M&A cases in Taiwan with an emerging need for an effective integration process.

# CHAPTER 2: LITERATURE REVIEW

## 2.1 Introduction

This chapter provides a theoretical foundation for this research by reviewing the literature to justify the research questions and develop the hypotheses. It starts with the history of M&As and an overview of the main streams of thought, followed by a review of M&A motives and performance, the PMI process, and contextual factors. Subsequently, a conceptual framework is developed.

## 2.2 History of M&As

The history of M&As is presented through the M&A activities in the U.S. and Taiwan, as the former is the major player in global M&A activities and the latter is the focus of this research.

### 2.2.1 M&A in the U.S.

M&A activities in the U.S. generally reflect global trends. Table 2-1 shows that since 2000, 36-57% of worldwide M&A activities (in terms of both deal numbers and transaction value) have occurred in the U.S.

Table 2-1. M&A activities globally and in the United States

| | | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---|---|---|---|---|---|---|---|
| Globally | No. of deals | 24980 | 21794 | 20541 | 22202 | 28256 | 29788 |
| | $ in US bil | 2331 | 1150 | 882 | 983 | 1487 | 1962 |
| U.S. | No. of deals | 12979 | 9606 | 8393 | 8763 | 10349 | 10636 |
| | $ in US bil | 1339 | 647 | 448 | 538 | 783 | 1035 |

Source: Wilmerhale (2006), pp. 2–5

Besides the overwhelming number of M&As, the U.S. has also played a role in the development of M&A history. Table 2-2 illustrates five waves of M&A activities in the U.S., commencing in 1897 (DePamphilis 2003). The beginning and end of each wave correspond to the emergence of favorable and unfavorable factors for M&A activities; these include efficiency improvement, technological acquisitions, and risk diversification. The main types of M&A in each wave are reflected in the different prevailing strategies. As such, there were also different streams of thought, which will be elaborated in the next section.

Table 2-2. Historical M&A waves

| Period | Initiators | Main types | Reasons for end | Representative deal |
|---|---|---|---|---|
| First wave 1897–1904 | Drive for efficiency Technological change | Horizontal consolidation | Fraudulent financing Stock market crash | JP Morgan created US Steel in 1901 |
| Second wave 1916–1929 | Post-World War I economic boom | Horizontal consolidation | Stock market crash Antitrust regulation | Samuel Insull built his utilities empire |
| Third wave 1965–1969 | Financial engineering | Conglomeration | Overpay and economic bubble bursting | Gulf & Western bought 80 firms in 5 years |
| Fourth wave 1981–1989 | US dollar undervalued Favorable accounting practices | Hostile takeovers Divestment of unrelated acquisitions Cross-border M&As | Slowing economy Publicized LBO bankruptcies Junk bond market collapsed | Beecham Group bought SmithKline Beckman Corp. |
| Fifth wave 1992–2000 | IT revolution Deregulation Economic expansion and stock market boom | Strategic mega-merger | Global economic slowdown Dotcom bubble burst | AOL's purchase of Time Warner |

Source: Organized for this research with reference to DePamphilis (2003), pp. 29–32

### 2.2.2 M&As in Taiwan

In Taiwan, M&As were not popular before 1990, partly due to the entrepreneurial

culture—most firms were family-owned small and medium-sized enterprises (SMEs), with owners as executive managers. These owners were reluctant to sell their unprofitable firms because of 'loss of face' (Yao 2004). Also, government protection prevented company failure (PricewaterhouseCoopers 2003).

Since the late 1990s, M&A activities have substantially increased (Figure 1-2) for four reasons. First, globalization has pushed companies to merge to enhance their competitiveness. Taiwan's entry into the World Trade Organization (WTO) in 2001 considerably amplified this impact. Second, shorter product life cycles, especially in the information technology (IT) industry, and the need to expand markets have driven firms to acquire new technology, capacity, and market access. Third, (1) Taiwanese firms expand operations into China to take advantage of low labor costs and the booming market, and (2) the Chinese government has ratified significant legislation to facilitate foreign investment, Taiwanese firms consider M&A an effective way of achieving that goal. Fourth, the enforcement of the Corporate M&As Act in 2000 simplified the procedures and offered tax benefits, facilitating even more M&A transactions. Moreover, the Financial Holding Company Act enacted in 2001 provided the financial institutions with an adequate platform to manage their balance sheet problems and led to over 50% of them merging into 14 conglomerates by 2005.

## 2.3 Overview of M&A theories

An overview of the literature shows four broadly defined streams of thought on M&As: capital markets, strategic management, organizational behavior, and process perspective (Haspeslagh and Jemison 1991).

### 2.3.1 Capital markets stream

The capital market stream evolved from the capitalist economic system, particularly from the efficient market hypothesis and the free cash flow theory of financial economics (Jensen 1987). Studies are mainly on acquisition performance and focus on firms at the time of the announcement of an M&A deal. They examine the performance with stock market-based measures (Jarrell, Brickley and Netter 1988; Weston, Chung and Hoang 1998), and with accounting-based measures (Steiner 1975; Ravenscraft and Scherer 1987). The merits of M&As are judged in terms of the immediate value created for the firms' shareholders. Only the shareholders of a target firm benefit from M&As (Jarrell, Brickley and Netter 1988; Franks, Harris and Titman 1991; Shleifer and Vishny 1994; Agrawal and Jaffe 2000).

However, there are three major critiques of this stream of thought. First, the main assumption, the existence of market efficiency, that a firm's stock price reflects an unbiased estimate of all publicly available information about the firm's future cash flows and risk is challenged by various scholars (Scheller 1988; Larsson and Finkelstein 1999). It ignores the uncertainty of strategy and the possibility of the firm's competitiveness being weakened by revealing managerial decisions to the investment community (Haspeslagh and Jemison 1991). Second, the cash flow estimate may not adequately reflect the real situation due to information asymmetry between the acquiring and the target firms. As a consequence, an acquiring firm cannot easily predict the initiatives needed to change the target firm's free cash flow, and thus cannot predict whether the M&A would actually create value (Haspeslagh and Jemison 1991). Third, the assumption that managers act on behalf of the shareholders contradicts research studies which indicate several other motives for managerial behavior on M&As (Mueller 1969; Holmstrom 1979; Donaldson and

Lorsch 1987). This will be discussed in Section 2-4.

### 2.3.2 Strategic management stream

Researchers from the strategic management stream claim that M&As provide economies of scale and scope, as well as diversification (Gort 1962; Rumelt 1974; Jacquemin and Berry 1979; Montgomery 1982) and address the difficulties of acquisition implementation through a concern for better pre-acquisition analysis (Searby 1969; Howell 1970; Salter 1979; Bradley and Korn 1981) and post-acquisition planning (Howell 1970). They focus on both the motives for different combinations (Salter and Weinhold 1981; Trautwein 1990) and the impact of a set of variables on individual firms or the relationship between them (Lubatkin 1987; Shelton 1988; Seth 1990). These variables include relative size, market share, pre-acquisition profitability, growth prospects, acquisition experience (Kitching 1967; Fowler and Schmidt 1989), and relatedness (Christensen and Montogomery 1981; Rumelt 1982; Singh and Montgomery 1987).

Nevertheless, taking relatedness as a determinant of M&A performance has not been supported (Elgers and Clark 1980; Chatterjee 1986; Lubatkin 1987). Also, this stream has been criticized for its disproportionate emphasis on the strategic task, while ignoring practical impediments to value creation (Haspeslagh and Jemison 1991).

### 2.3.3 Organizational behavior stream

The organizational behavior researchers base their studies on individuals and their organizations, highlighting the PMI process (Haspeslagh and Jemison 1991; Pablo 1994), culture clash (Nahavandi and Malekzadeh 1988; Buono and Bowditch 1989; Hartog 2004), conflict resolution (Mirvis 1985), psychological issues, effective

communication (Schweiger and DeNisi 1991; Marks 1997), and careers (Buono and Bowditch 1989; Hambrick and Cannella 1993). Their perspectives on the consequences of M&A tend to be negative.

Although these views offer antidotes to those from capital markets and strategic management streams, the organizational behavior stream has received strong criticism for allowing organizational issues to outweigh M&A's strategic potential.

### 2.3.4 Process perspective

The process perspective recognizes that 'the value derived from an M&A largely depends on the skill with which the administrative problems of integration are handled' (Haspeslagh and Jemison 1991, p. 307). It adds that both acquisition and integration processes are important determinants of M&A outcomes (Jemison and Sitkin 1986) in addition to retaining the important roles of strategic fit and organizational fit. Researchers in process perspective have centered their studies on the effect of the M&A process on the attainment of the firm's strategic motives and objectives. They focus on the interactions between two combining organizations leading to strategic capabilities transfer. Haspeslagh and Jemison (1991) suggested a common set of elements in the integration process in which managers have to execute the capability transfer to achieve the M&A's objectives (Figure 2-1).

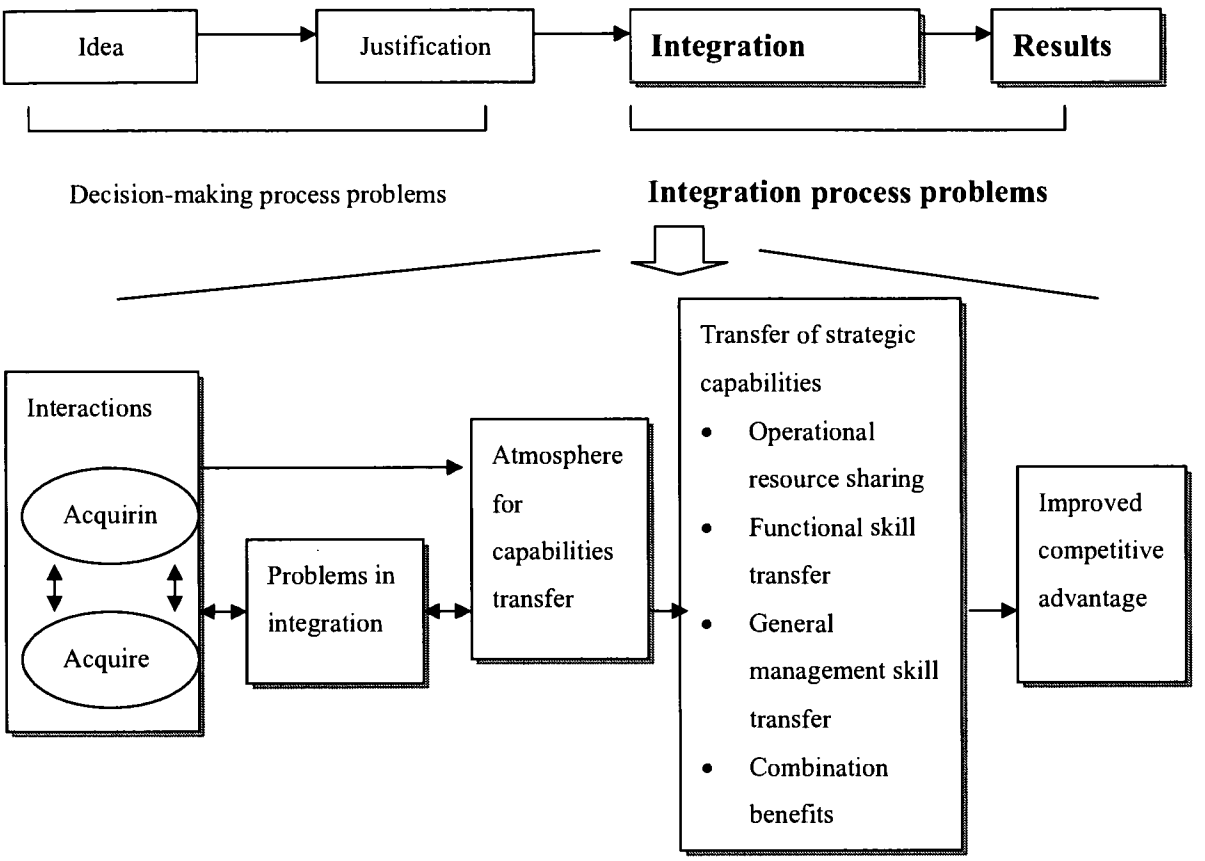



Figure 2-1. Acquisition integration process

Note: The blocks with shadow are related to the integration process.

Source: Haspeslagh and Jemison (1991), p. 108

Moreover, they indicate two critical dimensions in the PMI decision-making process —degree of strategic interdependence and degree of organizational autonomy—and suggest different approaches with the corresponding scenarios (Figure 2-2).

| Need for organizational autonomy | Need for strategic interdependence: Low | Need for strategic interdependence: High |
|---|---|---|
| High | Preservation | Symbiosis |
| Low | (Holding) | Absorption |

Figure 2-2. Matrix of strategic interdependence and organizational autonomy

Source: Haspeslagh and Jemison (1991), p. 145

The process perspective lists four managerial decisions in the integration process: (1) capabilities which need to be transferred, (2) number of capabilities, (3) method, and (4) speed. The first three are the choices in integration scope, while the fourth is the choice in integration speed. These choices are subject to a set of internal and external factors—M&A motives and contextual factors. Thus, the process perspective forms a theoretical basis for the current research targeted at the PMI process, the M&A motives, the contextual factors, and the final M&A performance. A summary of stream of thought on M&A is included in Appendix A.

## 2.4 M&A motives

A number of theories explain why M&As occur. Table 2-4 summarizes the most common cited theories. There are similarities and diversities between the theories, as scholars often make different classifications of M&A motives based on different perspectives and criteria. In addition, the theories are interdependent. M&As commonly result from a number of different motivations (Trautwein 1990; Hsu 2001). The above theories will be briefly examined in the following subsections.

Table 2-3. Summary of theories on M&A motives

| Theory | Main points | Scholars |
|---|---|---|
| Efficiency theory | Financial synergy | Levy and Sarnat (1970); Weston, Chung and Hoang (1998) |
| | Operational synergy | Porter (1985); Weston (1998); Klein, Crawford and Alchian (1978); Arrow (1975) |
| | Managerial synergy | Trautwein (1990); Baker, Jensen and Murphy (1988) |
| Monopoly theory | Market power | Porter (1985) |
| | Collusive synergy | Chatterjee (1986) |

| | | |
|---|---|---|
| Diversification | Position the firm in higher growth products or markets | Schipper and Thompson (1983) |
| | Product-market matrix | Weston, Chung and Hoang (1998) |
| Valuation theory | Net gains through private information | Steiner (1975); Holderness and Sheehan (1985); Ravenscraft and Scherer (1987), Trautwein (1990) |
| Raider theory | Wealth transfers from target's Shareholders | Holderness and Sheehan (1985) |
| Tax consideration | Tax credit, tax-free status | Levy and Sarnat (1970) |
| Empire building theory | Merger benefits managers | Mueller (1969) |
| | Agency problem | Andrei and Vishny (1988); Manne (1965) |
| Hubris hypothesis | Manager's overestimate of his/her ability and target's value | Roll (1986) |

Source: Organized for this research based on Trautwein (1990), pp. 283–290 and Depamphilis (2003), pp. 19–28

1. Efficiency theory (Synergy)

This widely used theory views M&As as being planned and executed to achieve synergies. It is a rather simplistic notion that the combination of two businesses can create greater shareholder value than the two separate operations. There are three basic types of synergy: financial, operational, and managerial.

Financial synergy can mainly be achieved by increasing a firm's size, which may obtain capital at a cheaper cost, establish a more efficient internal capital market, or manage a better investment portfolio (Levy and Sarnat 1970; Weston, Chung and Hoang 1998). The theory shares the notions of risk diversification and co-insurance suggested by Lubatkin (1983) and Seth (1990). However, it has been criticized that financial synergies cannot be achieved in an efficient capital market (Montgomery and Singh 1984; Rumelt 1986).

Operational synergy can be achieved through (1) economies of scale (Bain 1959; Lloyd 1976) and scope (Seth 1990); and (2) knowledge transfer (Williamson 1975; Porter 1985) to reduce operational and transaction costs (Klein, Crawford and Alchian 1978; Weston, Chung and Hoang 1998). Managerial synergy can be realized when the acquiring firm possesses superior management abilities that benefit performance (Trautwein 1990). The acquiring firm can either apply complementary competencies or replace incompetent managers in the acquired firm (Lorsch 1973; Stout 1992). This concurs with other research findings on the transfer of strategic capabilities in the integration process (Haspeslagh and Jemison 1991; Maksimovic and Phillips 2001).

However, both operational and managerial synergies have been criticized as evasive concepts that are seldom realized (Kitching 1967). This judgment was mainly based on the response from the stock markets. To avoid this potentially ambiguous response, recent studies have adopted a different measure—the degree of synergy realization—to gauge the M&A success (this will be discussed in Section 2.5). In other words, unsatisfactory performance is not sufficient to judge whether operational or managerial synergy is a motive (Graebner 2004). There could be other factors such as integration process and/or contextual factors (Porter 1985; Haspeslagh and Jemison 1991).

2. Monopoly theory (Market Power)

This theory views M&As as being planned and executed to achieve market power (Caves and Porter 1977). Combined firms might have better control of the market and take advantage of collusive synergies (Chatterjee 1986). These differ from the aforementioned synergies in that: (1) there is no efficiency gain and (2) the wealth is

transferred from customers to the combined firms.

However, the earlier empirical studies did not support this theory (Eckbo 1983; Stillman 1983). Their results suggest that investors apparently did not believe that the regulatory authorities would find the investigated mergers anticompetitive. Presumably, the motivation for these mergers was something other than a desire to gain market power. Another explanation of the results could be that the market priced in the expectation that these M&As would face regulatory problems at the time of announcement. This is also against the basic premise of the Monopoly theory that the wealth is transferred from customers to combined firms.

3. Diversification theory

This theory refers to a strategy of buying firms outside a company's current primary lines of business. Two commonly used justifications for diversification are reduction of risk and strategic resources.

Firms often justify diversification on the basis of reducing shareholder risk by shifting a portion of the firm's assets from a cyclical industry to a more stable one (DePamphilis 2003). Eisenmann (2002), in his study on the effect of CEO equity ownership and corporate diversification, suggested that those agent CEOs tend to diversify to avoid risks when facing increasing environmental turbulence. They believe that such a portfolio effect could reduce the impact of the results of any individual business on the overall corporate performance, and so reduces the volatility in their personal income (Hayes and Abernathy 1980; Mintzberg and Waters 1982; Hoskisson, Hitt and Hill 1991). This justification used to be criticized as being on shaky theoretical grounds (Levy and Sarnat 1970). Shareholders can more efficiently

spread their investments and risks among industries, thus obviating the need for firms to diversify on their behalf. However, this argument ignores the fact that information asymmetry and interest divergence exist between shareholders and managers (Barney 1988; Hitt et al. 1998), and shareholders have rather limited ability to make a correct assessment.

The other common claim for diversification is from the strategic resource-based perspective. The shift of firms from their core product lines or markets into those with higher growth prospects has long been recognized as a key factor in explaining diversification (Penrose 1959; DePamphilis 2003). This product-market matrix is illustrated in Figure 2-3, where the direction of the arrows represents the direction of diversification. Firms can move current products into new markets when encountering slow growth in the current market, or diversify into new business lines in the current or new markets to pursue higher growth.

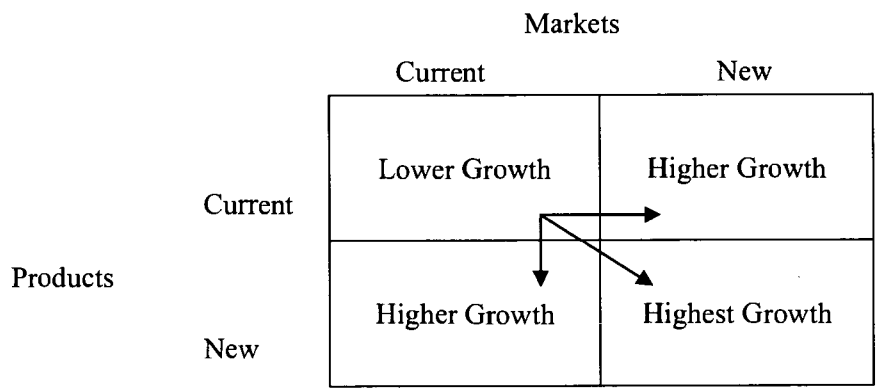



Figure 2-3 Product-Market Matrix
Source: DePamphilis (2003), p. 23

The strategic resource-based view also applies to the claim of the superiority of internal capital markets (Williamson 1975). Through diversification, firms can allocate free cash flow more efficiently than through external capital markets (Eisenmann 2002). This shares the same ideas of risk taking and internal capital

market arguments with financial synergy addressed earlier (Olie 1994).

Therefore, diversification tends to pursue the benefit combination, which requires less capabilities transfer during the integration process (Haspeslagh and Jemison 1991). This builds up a connection between the degree of diversification and the extent of capability transfer—referred to as integration scope.

4. Valuation theory

This theory argues that mergers are planned and executed by managers who have better information about the target's value than the stock market (Steiner 1975; Holderness and Sheehan 1985; Ravenscraft and Scherer 1987). Based on q-ratio (the ratio of firm's market value to the replacement cost of its assets), firms interested in expansion can acquire a company whose market value is less than the replacement cost of its assets (i.e. q-ratio < 1). This theory was very useful in explaining M&A activities during the 1970s when high inflation and interest rates depressed stock prices well below the book value of many firms. However, like the argument on financial synergy, this theory conflicts with the assumption of an efficient capital market (Trautwein 1990). Moreover, the conditions of high inflation and interest rates no longer existed after the 1970s.

5. Raider theory

Raider theory claims that the acquiring firm causes the wealth transfer of the acquired firm's stockholders after a successful takeover (Holderness and Sheehan 1985). This wealth transfer has been severely criticized as illogical and questionable because the 'raiders' paid other stockholders a premium to become the controlling stockholders of the firm. Any extortion scheme would hurt the raider disproportionately, while

partially bought-out stockholders might still enjoy a net gain from his activities (Trautwein 1990).

6. Tax considerations and regulatory change

There are two important tax considerations as motives for M&As. One is the tax benefits associated with the target's unused net operating losses and tax credits as well as the revaluation or write-up of acquired assets (Levy and Sarnat 1970). The other consideration is the tax-free status of the deal (Haspeslagh and Jemison 1991). Regulatory changes have also played a significant role in triggering more M&A activities in recent years. There is significant empirical evidence that M&A activities are higher in deregulated industries than in regulated ones (Jensen 1993; Mitchell and Mulherin 1996; Mulherin and Boone 2000). The effect of regulatory change to M&A activities was also reflected in the greatly increasing number of M&A transactions following the Telecommunications Reform Act of 1996 in the U.S. (DePamphilis 2003), Corporate M&A Act of 2002 and the WTO entry of both China and Taiwan (PricewaterhouseCoopers 2003).

7. Empire building theory (Managerialism)

M&As are planned and executed by managers who maximize their own utility instead of their shareholders' value. This theory originated from the study on the separation of ownership and control in the firm (Berle and Means 1933), the agency problem (Manne 1965; Andrei and Vishny 1988), and growth maximum hypothesis (Mueller 1969). It can be amplified with the 'free cash flow' of Jensen (1987), who claimed that when agency costs are high and firms have free cash flow, the threat of M&As might be an effective disciplining mechanism to force managers to return the free cash flow to the shareholders. Empire building theory enjoyed great popularity during the

1970s and 1980s, corresponding to proportional growth with the size of mergers (Trautwein 1990). However, its premise may be questionable because there is empirical evidence that management compensation is determined not only by size but also by profitability (Lewellen and Huntsman 1970; DePamphilis 2003).

8. Hubris hypothesis

M&As are planned and executed by managers of acquiring firms who overestimated their managerial ability and the value of the targeted firm (Roll 1986). As a result, the acquiring company tends to overpay for the target firm. Even in the presence of significant synergies, the competition among bidders likely results in the winner overpaying—'winner's curse' (Capen, Clapp and Campbell 1971).

In brief, the efficiency theory (synergy) and diversification are commonly accepted and widely adopted as M&A motives (Capron, Dussauge and Mitchell 1998; Hitt et al. 1998; Wortmann 2000). They will thus be applied in this research. Monopoly theory is less empirically supported, while Valuation theory has been questioned, since a capital market such as that in the 1970s no longer exists. Most importantly, this theory, as well as Raider theory, tax considerations and regulatory changes, is of little relevance to management issues, but only to financial and accounting issues. Most are important in the pre-acquisition decision-making choices, but not in the PMI strategy. Further, Empire building theory and Hubris hypothesis exist in real business practices; however, from the company's standpoint, they are irrational. As this research focuses on managing PMI for value creation, the less relevant theories are excluded from the scope of this study.

## 2.5 M&A performance

Section 2.3 has outlined the M&A performance implications from the capital markets stream and strategic management stream. In the view of the capital markets stream, value is created when an acquisition either increases the income flow of those assets or decreases the variability of this income flow (Haspeslagh and Jemison 1991). However, this stream of thought excludes the way in which the income flow is created or the variability is controlled. It provides little guidance for action-oriented managers looking to create value. Recently, this view has received criticism due to the strong growth in M&As, but with a high failure rate (Larsson and Finkelstein 1999; Larsson et al. 2004). This contradiction could be attributed to accounting measurements (ROA, ROE) and stock price response, which the capital market researchers have always used to measure M&A performance.

On the other hand, the strategic management stream believes that an acquisition must be consistent with a firm's strategic vision and expect to enhance the firm's capabilities and long-term competitive position. It tries to explain M&A performance by applying the resource-based view (Rumelt 1986)—synergy can be achieved only when firms carefully design and execute integration processes for realizing the combination potentials. This builds up the theoretical linkage between PMI and M&A performance. In a study of 61 M&As, Larsson and Finkelstein (1999) assessed their performance in terms of synergy realization to avoid the drawbacks of stock market and accounting-based measurements, and to afford a more accurate conceptualization of value creation in an M&A.

## 2.6 Post-merger integration processes

A number of studies have indicated that the post-merger integration process (PMI) is strongly associated with M&A performance. PMI is complex to study empirically

because of the lack of process level data typically available for a sufficiently large number of observations (Zollo and Singh 2004). In addition, PMI is subject to different sets of internal and external conditions (Haspeslagh and Jemison 1991; Homburg and Bucerius 2006). As a result, research in this area has reached controversial findings. However, two main questions raised in the PMI process have been reported: (1) the extent of integration (integration scope), and (2) the time needed to make it happen (integration speed). Hence, this research conceptualizes PMI in terms of integration scope and integration speed. Table 2-4 summarizes studies on integration speed or integration scope (or both) in M&As.

Table 2-4. Summary of research on integration speed and scope

| Authors (year) | Speed | Scope |
|---|---|---|
| Buono and Bowditch (1989) | | x |
| Schweiger and Walsh (1990) | x | |
| Seth (1990) | | x |
| Hitt, Hoskinsson, and Ireland (1990) | | x |
| Haspeslagh and Jemison (1991) | x | x |
| Datta (1991) | | x |
| Reichheld and Henske (1991) | | x |
| Olie (1994) | x | |
| Mercer Management Consulting (1997) | x | |
| Capron (1999) | | x |
| Larsson and Finkelstein (1999) | | x |
| PricewaterhouseCoopers (2000) | x | |
| Birkinshaw, Bresman, and Hakanson (2000) | | x |
| Ashkenas and Francis (2000) | x | x |
| Hsu (2001) | x | x |
| Fujitsu Consulting (2001) | x | |
| Ranft (2002) | x | |
| Croyle and Kager (2002) | x | x |
| DePamphilis (2003) | x | x |
| Zollo and Singh (2004) | | x |
| Homburg and Bucerius (2005) | x | x |
| Homburg and Bucerius (2006) | x | |

Source: Organized by the researcher

### 2.6.1 Integration scope

Integration scope is defined as the degree of similarity achieved between two joining organizations (Homburg and Bucerius 2005). Prior research has provided both positive and negative viewpoints for the relationship between integration scope and M&A result.

These arguments mainly stem from the efficiency theory which is based on the notions of economies of scale and scope (Lubatkin 1983; Rumelt 1986; Prahalad and Hamel 1990; Capron 1999). They claim that integration creates the potential for a reduction in essential resources and/or exploits the resources more effectively. Larsson and Finkelstein (1999) concluded that integration is the strongest predictor of synergy realization representing M&A performance. This seems to imply that the greater the integration, the greater the cost savings and/or efficiency improvement.

However, a high degree of integration does not necessarily equal a high degree of cost savings and/or efficiency improvement. It merely means a high degree of similarity (Homburg and Bucerius 2005). The organizational behavior stream asserts that a large degree of integration causes stronger employee resistance (Buono and Bowditch 1989) and more compromise in product varieties and service offerings (Reichheld and Henske 1991). With a larger scale of integration, management would be largely absorbed by internal issues; thus leading to neglect of marketing and customer needs (Hitt, Hoskinsson and Ireland 1990). This may result in both customer dissatisfaction and market loss.

Haspeslagh and Jemison (1991) integrated the strategic management and organizational behavior views by taking a process perspective. They highlighted the

integration scope as a core decision of the integration strategy, contingent on a set of conditions. This view is supported by Mercer Management Consulting (1997).

Subsequently, Birkinshaw, Bresman, and Hakanson (2000), in their case study of three Swedish MNCs, took a process perspective and divided integration into two sub-processes: task integration and human integration (Figure 2-4). Task integration, derived from the resource-based view (strategic management stream), is aimed at value creation in an M&A and is the mechanism utilized during the integration process. Human integration, derived from organizational behavior, is aimed at employee satisfaction and identity sharing, including the pre-M&A experience, redundancy, personnel rotations, and culture convergence. These two sub-processes are interdependent in the two phases of the integration process.

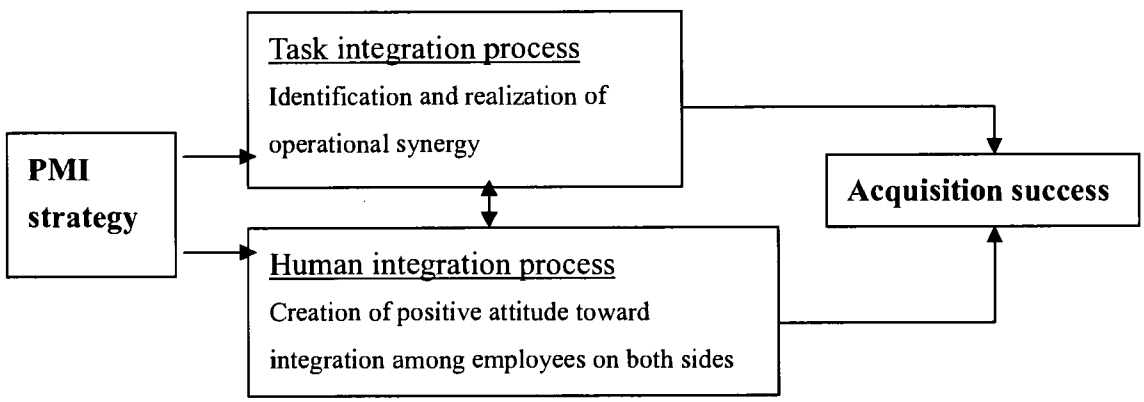



Figure 2-4. Framework for integration management
Source: Birkinshaw, Bresman, and Hakanson (2000), p. 400

Their findings provide three considerations. First, the integration construct can be separated into task and human aspects to be observed and measured more specifically. Second, the task integration and human integration are closely related but not necessarily to the same degree; this should be determined separately. Third, the task integration and human integration could be supportive or conflicting, subject to the

extent of each aspect and the different stages of the integration process. The last two considerations are consistent with Haspeslagh and Jemison's (1991) concern on the extent and timing for integration.

### 2.6.2 Integration speed

Integration speed is the time needed to achieve the intended level of integration (Homburg and Bucerius 2005). Compared with integration scope, integration speed has drawn rather limited attention from both practitioners and academics. In general, studies by consulting and management firms have suggested that integration speed is positively associated with M&A performance; fast integration could minimize the uncertainties among the combined firm's employees and customers (Mercer Management Consulting 1997; Fujitsu Consulting 2001). If integration goes well, it should be completed within 6–12 months. Other studies have also suggested that rapid integration is more likely to result in M&A success (Schweigher and Walsh 1990; Ashkenas and Francis 2000; Croyle and Kager 2002).

However, researchers from the organizational behavior perspective made different suggestions. An M&A represents change, and integration leads to internal turbulence and, thus, employee resistance. As it takes time for employees from two organizations with different corporate cultures and practices to build up mutual trust and common identification, slow integration is regarded as an appropriate way to minimize conflict and enhance trust-building (Olie 1994; Ranft and Lord 2002). Moreover, from the 'risk aversion' point of view, fast integration could fail as a result of unclear responsibility definition and unexpected resignations. Management sometimes prefers a low-risk strategy, which seeks only a synergy when individual units are operating at an acceptable level (Birkinshaw, Bresman and Hakanson 2000). Homburg and

Bucerius (2006) conducted a large-scale empirical study of 232 M&As in Central Europe to evaluate the effect on M&A success of integration speed in the sales and marketing sector. Their results suggest that the decision on integration speed is subject to various external and internal conditions. These findings echo Haspeslagh and Jemison's (1991) suggestion that the decision on speed depends on the need for both strategic interdependence and organizational autonomy (Section 2.3.4).

In brief, the PMI process is recognized as a core factor in the success of M&A, and the construct has been conceptualized by integration speed and integration scope. PMI is divided into two sub-processes, task integration and human integration, for the sake of specific observation and measurement. Thus, the first two hypotheses are developed here in response to RQ 1.

*Hypothesis 1: The greater the motive for synergy, the greater the need for integration.*

*Hypothesis 2: The greater the motive for diversification, the less the need for integration.*

## 2.7 Contextual factors

'The success of value creation from an M&A lies in a successful transfer of strategic capabilities. Transferring the capabilities effectively require an appreciation for the contexts from which they come and to which they transfer' (Haspeslagh and Jemison 1991, p. 111). This signifies the imperative role of contextual factors in an M&A. Recently, King et al. (2004), in their meta-analysis of post-acquisition performance of 92 M&As, also re-confirmed the presence of moderator effects. However, research has produced inconclusive results due to the use of different sets of variables and different methods (Datta, Pinches and Narayanan 1992; King et al. 2004). Table 2-5

summarizes the commonly cited contextual factors. An overview of these factors will provide a justification for attaining a set of contextual factors for this research.

Table 2-5. Summary of contextual factors studied in prior research

| Contextual factor | Datta (1991) | Datta, Pinches and Narayanan (1992) | Olie (1994) | Larsson and Finkelstein (1999) | Polanyi (1967) | Badaracco (1991) | Hsu (2001) | King et al. (2004) | Homburg and Bucerius (2005, 2006) |
|---|---|---|---|---|---|---|---|---|---|
| Management style | X | | X | X | | | | | X |
| Relative size | | | X | X | | | X | | X |
| Knowledge level | | | | | X | X | X | | |
| Cross-border | | | | X | | | X | | |
| Relatedness | | X | | X | | | X | X | X |
| Payment method | | X | | | | | | X | |
| Prior M&A experience | | | | | | | | X | |

Source: Organized for this research

### 2.7.1 Management style of acquirer and acquiree

Management style is a commonly cited contextual factor (Table 2-5). It shares the same notion as the social identity theory, which is rooted in the similarity–attraction paradigm (Byrne 1971; Berscheid and Walster 1978). Integration between firms with similar characteristics, culture, and management style is assumed to lead to cooperation and satisfactory performance.

Datta's (1991) findings, in a survey of 173 acquisitions, indicated that the degree of management style difference has a significantly negative impact on the M&A performance. Olie (1994) also identified the degree of compatibility of management practice as a key moderator in the relationship between integration and M&A success. Homburg and Bucerius (2006) further specified and assessed the management style

similarities.[2] When the management styles of combining organizations are similar, the level of cooperation is often enhanced and the perceptions of the degree of change might be cushioned (Marks 1982; Diven 1984; Walter 1985; Buono and Bowditch 1989). Such enhanced cooperation could increase the likelihood that synergies would be realized (Chatterjee et al. 1992). Thus, the larger integration activities could be facilitated to realize the M&A synergy in the context of small difference in management style. This view was echoed in a study of 228 acquisitions in the U.S. banking industry by Zollo and Singh (2004), who concluded that replacing top managers in the acquired firm leads to a change in management style which negatively impacts M&A performance.

Similarly, Homburg and Bucerius's (2006) findings suggested that speed is most beneficial when there is a small difference in management style between combining organizations. In contrast, speed is detrimental when there is a large difference in management style. The basic logic still follows the aforementioned social identity theory that speed increases internal turbulence, which is harmful to M&A success (Olie 1994; Ranft and Lord 2002).

Thus, Hypotheses 3 and 4 are developed in response to RQs 2 and 3.

*Hypothesis 3: The Effect of integration scope on M&A performance depends on the influence of management style.*

*Hypothesis 4. Effect of integration speed on M&A performance depends on the influence of management style.*

---

[2] Homburg and Bucerius (2006) assess management style similarity by seven pairs of opposite characteristics; centralized vs. decentralized, short-term oriented vs. long-term oriented, hierarchical vs. delegative, flexible vs. inflexible, output-oriented vs. process-oriented, proactive vs. reactive, bureaucratic vs. unbureaucratic.

### 2.7.2 Size of acquirer and acquiree

Size issue is often conceptualized in the form of either relativity of acquiree to acquirer or the absolute difference between the two combining organizations in terms of sales turnover, capital, and/or employee numbers. Early studies focused on the impact of size difference on M&A performance while recent studies have paid more attention to its moderator effect on the integration process in explaining M&A success (Larsson and Finkelstein 1999).

Kitching (1967), in a sample of 69 M&As, noted that 84% of transactions with the relative size of the acquiree to acquirer in sales of less than 2% were classified as failures. A similar conclusion was made in later studies (Kitching 1974; Asquith, Bruner and Mullins 1983; Hunt 1990; Franks, Harris and Titman 1991), claiming that the larger the size of the acquiree, the greater the acquirer's return. Diven (1984), Ravenscraft and Scherer (1987) also indicated that smaller acquired organizations might not receive sufficient managerial attention to realize their potential synergies. So, when the acquiree is much smaller, the combination potential would be limited by size (Kusewitt 1985; Seth 1990) and staff in the larger firm would be less willing to help those in the smaller firm (Haspeslagh and Jemison 1991).

However, Bastien and Van de Ven (1986), based on the assumption that comparative size is a proxy for relative power, report that a small difference in size makes integration more difficult as it obstructs the acquiring firm imposing its strategic preferences. Similar conclusions were obtained by other researchers (Olie 1994; Beatty 1994; Kang 2005).

There were studies that found no significant relationship between acquisition size and M&A performance (Newbould, Wilson and Stray 1976; Shanley 1987; Fowler and Schmidt 1989). Haspeslagh and Jemison (1991) suggested that, at a more fundamental level, the significant differences between firms have more to do with the development stage of the acquired business than with pure size. With the diverse research findings, the effect of size on M&A performance is still inconclusive.

Recently, the subject of the effect of size difference has received much attention, especially in the financial sector (Lee 2001), as the banking industry is now evolving into larger and more diversified businesses by extending into smaller communities and/or mergers between big financial institutions as a result of relaxed inter-banking laws. Homburg and Bucerius (2005) focused on the moderator effect of size on the relationship between integration and M&A performance. In their findings, size difference had no impact on M&A performance in a single direction, but was subject to the net result of positive force vs. negative force. In the case of a small size difference, there tends to be a greater increase in scale and more similarity in organizational structure (Pugh et al. 1969), resulting in more redundancies and greater cost reduction. This implies that a greater level of integration benefits M&A performance when there is a small size difference between combining firms.

Conversely, when two combining organizations are more equal in size, greater integration involves more staff interaction. This probably causes more internal conflict, which would distract managerial energy from dealing with other market-related issues. Also, Homburg and Bucerius (2005) identified integration speed as beneficial to M&A performance in the case of a small difference in size. Uncertainty and more rumors could arise among the employees and customers of both companies if the integration process is too protracted. However, no significant

relationship has been found between speed and performance in the context of a large size difference. Hence, we posit the following hypotheses in response to RQs 2 and 3.

*Hypothesis 5. Effect of integration scope on M&A performance depends on the influence of size.*

*Hypothesis 6. Effect of integration speed on M&A performance depends on the influence of size.*

### 2.7.3 Knowledge level of acquirer and acquiree

The factor of difference in knowledge level between two combining organizations has drawn much attention in recent years following the increase in M&A activities as a result of accelerating technological change, increased need for engineering talent, and decrease in product life cycles (Graebner 2004). This implies that greater integration is needed for value creation, especially when there is a large difference in knowledge level between combining organizations.

Knowledge is often conceptualized in terms of its complexity, tacit nature, and collectivity (Winter 1987; Grant 1996; Ranft and Lord 2002; Graebner 2004). Explicit knowledge can be articulated, codified, and accessed by the use of verbal communication and written documentation, which is easy to transfer. This suggests that less time is needed for integration when there is a small difference in knowledge levels between acquirer and acquiree (Ashkenas and Francis 2000; Fujitsu-Consulting 2001; Homburg and Bucerius 2006). Tacit and socially complex forms of knowledge—referred to as a large difference in knowledge levels—based on accumulated experience are often reflected in the expertise, skills, and routines acquired over time (Winter 1987) and are difficult to transfer (Haspeslagh and

Jemison 1991; Birkinshaw, Bresman and Hakanson 2000). Nevertheless, they are a firm's competitive advantage and source of value creation (Itami 1987). An integrator tends to slow down the integration process for mutual learning and the establishment of mutual trust (Barney 1991; Graebner 2004).

However, the implications of delayed integration may postpone the synergy realization and result in the acquirer losing business opportunities. Therefore, the management of an acquiring firm could find itself in a dilemma in integration speed when there are large knowledge differences between combining organizations (Badaracco 1991; Coff 1999; Ranft and Lord 2000; 2002). This scenario is in line with the symbiotic character of the matrix depicted in Figure 2-2. Hence, the following hypotheses are developed in response to RQs 2 and 3.

*Hypothesis 7. Effect of integration scope on M&A performance depends on the influence of knowledge level.*

*Hypothesis 8. Effect of integration speed on M&A performance depends on the influence of knowledge level.*

Based on the reviewed literature, Table 2-6 summarizes the likelihood of directions corresponding to Hypotheses 3–8.

Table 2-6. Summary of PMI influence on M&A performance in various contexts

| Contextual factors | | PMI | Direction of PMI influence on M&A performance (Direction of contextual factor impact on M&A performance) |
|---|---|---|---|
| Dif. in management style | Large | Scope | Negative |
| | Small | | Positive |
| | Large | Speed | Negative |
| | Small | | Positive |
| | | | (Negative) |
| Dif. in size | Large | Scope | Inconclusive |
| | Small | | Inconclusive |
| | Large | Speed | Uncertain |
| | Small | | Positive |
| | | | (Inconclusive) |
| Dif. in knowledge | Large | Scope | Positive |
| | Small | | Uncertain |
| | Large | Speed | Inconclusive |
| | Small | | Positive |
| | | | (Inconclusive) |

Source: Organized by researcher based on the literature review in Section 2.7

Inconclusive: There are diverse findings including positive, negative, and no relationship

Uncertain: There is limited information revealed in the prior literature.

Other factors such as relatedness (Datta 1991; Larsson and Finkelstein 1999), and cross-border M&A (Hsu 2001; Gu 2004) are also considered to be influential factors. However, the arguments of relatedness and cross-border on M&A performance are still inconclusive (addressed in Sections 2.4 and 2.5). Moreover, they tend to be strategic choices when M&A motives arise. The motives for synergy and for diversification have thoroughly covered these two aspects. On payment method and prior experience, the findings from prior research have shown either inconclusive results or proven insignificant in explaining M&A success.[3] Hence, the differences in

[3] Some studies suggest that the payment methods are associated with post-merger performance (Tavlos 1987; Datta, Pinches and Narayanan 1992). However, other studies claim an uncertain relationship (Hayward and Hambrick 1997; King et al. 2004). Similarly, diverse findings on the relationship

management style, size and knowledge level are included as the main contextual factors in this research.

## 2.8 Conceptual framework and hypotheses development

This framework is composed of four constructs—M&A motives, post-merger integration (PMI), contextual factors, and M&A performance—and the specific characters (variables) that conceptualize the abstract meanings of the given constructs. H1 and H2 correspond to each pair of variables between M&A motives and PMI with a dual arrowed line representing a proposed correlation. Each of the remaining six hypotheses corresponds to the moderator effect of each contextual factor on the relationship between PMI and M&A performance with a single arrowed line representing a proposed causal effect between the connected variables.

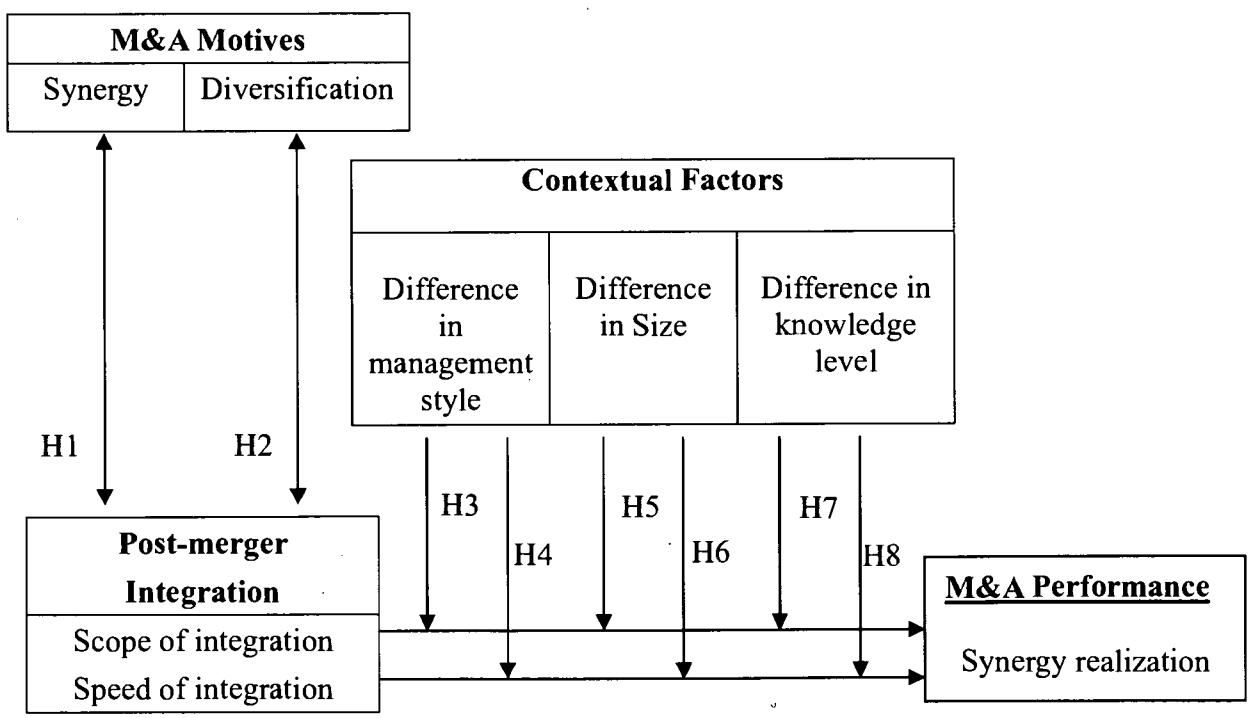



Figure 2-5. Conceptual framework

between prior M&A experience and post-merger performance have been found in prior research, i.e., some claiming positive (Bruton, Oviatt and White 1994; Fowler and Schmidt 1989), some negative (Kusewitt 1985), and some insignificant (Lahey and Conn 1990; King et al. 2004).

## 2.9 Conclusion

Four streams of thought on M&A have been elaborated. The process perspective provides more explanation to managers and shows how the PMI process interacts with motivations and contextual factors to ultimately shape the sources of M&A value creation (Haspeslagh and Jemison 1991; Graebner 2004). The most common questions in the PMI process are centered on integration speed and integration scope.

Though synergy realization is less objective than stock-market and accounting-based measurements, it can still afford a more accurate conceptualization of value creation in an M&A (Larsson and Finkelstein 1999). For that reason, this research uses the degree of synergy realization to gauge M&A performance. Contextual factors that may moderate the relationship between PMI and M&A performance include differences in management style, size and knowledge level between the combining organizations. The hypotheses are properly developed after a thorough literature review in response to the research questions. Consequently, a conceptual framework is built up as a road map for the following research design and data analysis.

# CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

## 3.1 Introduction

This chapter describes the methodology used to collect data for investigation. It aims to establish the research design and methodology, and to provide assurance that appropriate procedures were followed. It is organized around (1) quantitative and qualitative research methodologies, (2) methodology employed, (3) justification for the methodology used, (4) research procedures, and (5) ethical issues.

## 3.2 Quantitative and qualitative research methodology

There have been debates about the merits of two research methods (Burrell and Morgan 1979): the nomothetic survey, a quantitative analysis of a few variables using many cases to gain a general picture of the population; and the idiographic case study, a qualitative analysis of multi-issues through one or a few cases to attain in-depth insights of specific cases. Researchers tend to look for a combination of these two methods instead of sacrificing either the generalizability of the quantitative method or the specificity of the qualitative case study. However, a lack of resources is a constraint for conducting studies on many issues using a large number of case studies. Without exception, researchers in M&A have encountered the same constraints and have been seeking solutions to fill the gap between a nomothetic survey and an idiographic case study, which include the case survey method (Lucas 1974; Yin and Heald 1975; Larsson 1989; 1993), case meta-analysis (Bullock and Tubbs 1987; Datta, Pinches and Narayanan 1992; King et al. 2004), and structured content analysis of cases (Jauch, Osborn and Martin 1980). Each method has its own strengths and weaknesses, but essentially they utilize the same process of quantifying a group of case studies for statistical analysis (Larsson 1993).

The M&A research studies which have been conducted in Taiwan are predominantly case studies. Although this research method can display comprehensive and in-depth insights into the case, its generalizability and value for extensive applications in academic studies and in practice are often questionable. In the reviewed case studies, without exception, a statement on the shortfall in generalizability is addressed as a research limitation, and a recommendation for an extensive and systematic empirical survey is given as the direction for future research. Thus, this research employs a case survey method to fill the gap and generalize applicable patterns.

### 3.3 Research method of this study — Case survey method

Case survey method is a quantitative method which analyzes the patterns across case studies (Larsson 1993). It is particularly suitable when: (1) case studies dominate the area of research (Yin and Heald 1975); (2) the unit of analysis is the organization; (3) a broad range of conditions is of interest (Jauch, Osborn and Martin 1980); and (4) an experimental design is impossible or otherwise fails to capture situations relevant to managerial practice (Bullock and Tubbs 1987).

Compared with questionnaires, which tend to produce relatively low response rates for complicated or sensitive questions (Ansoff et al. 1971; Datta 1991), and solely secondary data surveys, which might not capture the complexities of the PMI process that is the central part of this research, the case survey method offers a useful solution as 'a medium-grained methodology by combining the generalizability of coarse-grained methodologies (cross-sectional analysis using large data bases) with the detail of fine-grained methodologies (individual case studies)' (Datta 1991, p. 294). Table 3-1 shows a brief review of representative empirical case surveys.

Table 3-1. Empirical case survey reviews

| Researcher | Topic | Main developments |
|---|---|---|
| Yin and Heald (1975) | Use Case Survey Method to Analyze Policy Studies | First to test case survey method |
| Yin, Bingham, and Heald (1976) | Sociological Method and Research | Further developed the coding of research quality |
| Yin, Heald, and Vogel (1977) | Tinkers with the System | Further developed the coding of research quality |
| Mintzberg, Raisinghani, and Theoret (1976) | The Structure of 'Unstructured' Decision Processes | Illustrated basic steps of investigating research questions through a coding scheme applied to a set of cases |
| Miller and Friesen (1977) | Strategy Making in Context: Ten empirical Archetypes | Used 7-point Likert-scale variables/multivariate statistics and case executives validation |
| Miller and Friesen (1980) | Archetypes of Organizational Transition | Firms' executives helped to confirm validity of coding results |
| Golembiewski, Proehl, and Sink (1981) | Success of OD Applications in the Public Sector | 574 cases applied; the most extensive case survey |
| Osborn et al. (1981) | The Event of CEO Succession, Performance and Environmental Conditions | First to adequately combine treatment of inter-rater reliability and discrepancy resolution |
| Bullock and Lawler (1985)<br>Bullock and Tubbs (1987; 1990) | Gain-sharing<br>The case meta-analysis for OD<br>The Case Meta-analysis of Gain-sharing plans as OD Interventions | The important milestone for using multi-raters<br>Listed four techniques for resolving discrepant codings (1. One expert rater, 2. Modal score, 3. Average score, and 4. Consensus ratings) |
| Calingo (1989) | Environmental Determinants of Generic Competitive Strategies | Used external validation |
| Larsson (1989) | Organizational Integration of Mergers and Acquisitions: A | Applied case survey method on M&As |

| | | |
|---|---|---|
| | Case Survey of Realization of Synergy Potential | |
| Tang (1991) | Institutional arrangement and the management of common-pool resources | Used external validation |
| Manimala (1992) | Entrepreneurial heuristics | Extensive study with 197 variables and 164 cases |
| Datta (1992) | Factors Influencing Wealth Creation from Mergers and Acquisitions | Used a multivariate framework to analyze empirical literature and draw statistically meaningful conclusions |
| Lin (1998) | Success Factors of SMEs in Taiwan | Applied case surveys to investigate SME success factors |
| Larsson and Finkelstein (1999) | Integrating Strategic, Organizational and Human Resource Perspectives on Mergers and Acquisitions: a Case Survey of Synergy Realization | Applied case surveys to 61 M&A case studies |
| King et al. (2004) | Meta-Analyses of Post Acquisition Performance: Indications of Unidentified Moderators | Employed case survey to empirically assess the impact of the most commonly researched antecedents on acquisition performance |

Source: Organized by the researcher with reference to Datta et al. (1992), Larsson (1993), Lin (1998), Larsson and Finkelstein (1999), King et al. (2004)

### 3.4 Justification of case survey method

The case survey method has both strengths and limitations. Its strengths include: (1) it is relatively inexpensive and is effective for identifying and testing patterns across studied cases (Lucas 1974; Larsson 1993)—this compensates for the resource constraints of the individual researcher; (2) it can tap the rich and complex data reported in case studies, and can also overcome the typical lack of procedural and contextual depth in questionnaire surveys (Larsson and Finkelstein 1999); (3) the use

of coding schemes and multiple raters allows replication and the measurement of reliability.

Although some researchers believe that the case survey method has a number of limitations (Yin and Heald 1975; Bullock 2004), there are means to overcome them. First, the number of qualified cases is limited. This shortfall can be compensated by using multiple search strategies and sources. Second, the case survey method may not be able to achieve theoretical and statistical generalization as the case selection is beyond the control of a secondary investigator. This view ignores the fact that researchers can overcome the problem by controlling the secondary selection of cases through stratification (Lucas 1974). Third, case reports may not provide all the information required. Hence, the participation of case authors is highly valued as this allows access to more primary data and latent information not mentioned in the report. Fourth, the quality of a case survey is no better than that of the case studies. At times, the coding may merely simplify the complex phenomena of the cases and result in information loss. Datta's (1991) comment gives the best argument that the case survey method is a trade-off between the complementary strengths and weaknesses of individual case studies and the quantitative cross-sectional analysis across a large number of cases. Thus, the central question for a researcher is whether the benefits of quantitative analysis can compensate for this information loss.

## 3.5 Research procedures

Larsson (1993) conducted a thorough methodological review of eight studies, employing the case survey method (Table 3-2). Following his suggestion, the following steps were adopted in this study: (1) the sample was selected, (2) a coding scheme was developed to quantify the qualitative information from selected case

studies, (3) two independent raters were invited to code the selected cases and measure the inter-rater reliability, (4) case authors were interviewed, and (5) the coding results were analyzed. The following sections describe the detailed steps.

### 3.5.1 Sample selection

Sample selection and data collection took place from November 2005 till June 2006. It started with a computer-aided search and a manual search (based on titles and keywords) through case studies from bibliographies, references, dissertations, and working papers. Initially, 508 dissertations and papers on M&As in Taiwan from 2001 to 2005 were collected.[4] Through further analysis of abstracts, 55 case studies were identified based on (1) a specific M&A case study describing M&A motives, PMI and M&A performance, and (2) a description of PMI process for at least six months.

Next, the repeat cases in the selected 55 case studies were consolidated and a total of 61 cases presented in these 55 case studies were identified. A further screening of the 61 cases to assess the relevance and completeness of each case description yielded a final set of 51 cases. Appendix F includes a descriptive list of the case sample.

[4] Selecting the studied cases reported between 2001 and 2005 was to maximize the likelihood that informants accurately remembered the events that transpired. This excluded the most recent M&As in which the PMI process was still at an early stage and had not yet led to significant outcomes, and older M&As because of the difficulty in obtaining detailed information on integration activities due to managerial turnover. Another consideration in commencing from 2001 was to minimize disruption from the regulatory change—both the M&A and Financial Holding Company (FHC) Acts were enforced in 2001.

Table 3-2. Methodological review of case surveys

| | Yin and Yates (1974) | Yin et al. (1977) | Mintzberg et al (1976) | Miller and Friesen (1977) | Golembiewski et al. (1981) | Osborn et al. (1981) | Bullock and Lawler (1985) | Larsson (1989) | Lin (1998) | Larsson and Finkelstein (1999) |
|---|---|---|---|---|---|---|---|---|---|---|
| Research questions | Urban decentralization | Service technology innovations | Unstructured decision processes | Strategy making in context | Public organization development applications | CEO succession environmental volatility | Gain sharing | M&A integration | Success factors of SMEs | Merger and acquisition integration |
| No. of cases | 215 | 140 | 25 | 81 | 270 | 313 | 33 | 55 | 43 | 61 |
| No. of variables | 118 | 94 | 21 | 31 | 2 | 19 | 19 | 84 | 21 | 84 |
| Typical scale | Nominal | Nominal | Sequence | Likert-type | Ordinal | Rank 5 of 23 alternative | Nominal | Likert-type | Percentage | Likert-type |
| No. of rater per case | 1.1 | 1.2 | 2 | 1.4 | 2 | 3 | 3 | 2.8 | 2 | 2.8 |
| Author participation | | | Yes | | | | | Yes | Yes | Yes |
| Inter-rater reliability | 82–61% | 62% | | 90% | 78% | 90% | APPA (47-93%) | APPA (69%) | 95% | APPA, 69% |
| Discrepancy resolution | | | | | | Majority | Consensus | Consensus | Consensus | Consensus |
| Coding validity test | | | | Questionnaire on case reports to primary respondents | | | | Secondary validation by author data | By author | Secondary validation by author data |
| Data analysis | Bivariate correlation | Bivariate correlation | Frequency count | Obverse factor analysis | Frequency count | Multiple discriminant | Bivariate correlation | Multiple regression analysis | Frequency count | Multiple regression analysis, LISREL |

Source: Organized for this research with reference to Larsson (1993), Lin (1998), and Larsson and Finkelstein (1999)

Table 3-3 illustrates the sample composition and the comparison in terms of industry and transaction value between the selected and actual M&A deals in Taiwan from 2001 to 2005. First, 78% of the selected cases in 2000–2005 represent the earlier-mentioned criterion on time interval, which is helpful for comprehensive data collection and minimizes interference due to regulatory change. Second, the selected cases extensively cover the main industries in Taiwan, thereby alleviating the problem of statistical generalizability. Third, the transaction value of 92% of the selected M&A cases was above NT$2 billion, which means the sample selection captures the most representative portion, where the relevant information on the case is more transparent and the PMI process is more amenable for further statistical analysis.

Table 3-3. Sample composition (51 cases)

| Year | Sample | | Actual deal number | |
|---|---|---|---|---|
| | Deal number | % | Deal number | % (Sample/Actual) |
| 2000–2005 | 40 | 78% | 224 | 18% |
| 1990–1999 | 11 | 22% | 126 | 9% |
| Total | 51 | 100% | 350 | 15% |
| Industry | | | | |
| IT/Electronics | 24 | 47% | 185 | 13% |
| Finance | 14 | 27% | 30 | 47% |
| Others | 13 | 26% | 135 | 10% |
| Value (NT$) | | | | |
| > 2 Billion | 47 | 92% | 230 | 20% |
| 1–2 Billion | 4 | 8% | 120 | 3% |

The sample size meets the guidelines for minimum ratio of observations to independent variables (5:1) with an actual ratio of 10:1 (51 observations with 5 independent variables). Such a sample size can identify relationships with $R^2$ values of approximately 29% at a power of 0.80 with $p<0.01$ or with $R^2$ value about 23% for $p<0.05$ (Hair et al. 2006, pp. 195–197).

### 3.5.2 Coding scheme development

A coding scheme to convert qualitative descriptions into quantified variables was developed (Appendix B). The following steps were taken in the coding process:

1. All the cases were rated within two months (April–May 2006) to avoid any perceptual inconsistency due to time lag.
2. A repeat coding was undertaken one month later (June 2006), and then the second coding result was compared with the first. Consistency and disagreement reviews were conducted to determine whether recoding was needed.
3. To improve coding reliability, the second and third raters (June 2006) were invited to code the cases. At the first stage, each rater coded two pilot cases repeatedly to become familiar with the coding scheme. Next, three raters (including myself) compared the coding result of each pilot case for calibration purposes. The coding results were discussed and the discrepancy in these two pilot cases solved. Next, the two raters coded the remaining 49 cases separately. To safeguard against undue coding influence from me during the coding process—which took three months (June–August 2006)—these two raters did not know the theoretical hypotheses. Appendix G includes a brief of the two raters.
4. In late August, three raters compared the coding results to check the consistency, and tested the inter-rater reliability.
5. To resolve the coding discrepancies and disagreement among the raters, the consensus resolution approach was adopted. After the inter-raters' discrepancies were resolved, a preliminary composite rating result was obtained.
6. For the next three months till the end of November, eighteen case authors

covering 39 cases—78% of the total cases—were interviewed. A list of the 18 case authors is included in Appendix D.

### 3.5.3 Constructs

There are four constructs in this study: M&A performance, M&A motives, post-merger integration, and contextual factors. The following subsection explains how these constructs were defined for measurement.

#### *M&A performance*

M&A performance (Performance), the dependent variable, is defined as the degree of satisfaction with the synergy realization. It is measured by adopting the eleven items used by Larsson and Finkelstein (1999): (1) purchasing, (2) production, (3) marketing, (4) market power, (5) overheads, (6) vertical economies, (7) new market access, (8) cross selling, (9) transfer of current knowledge, (10) creation of new knowledge, and (11) other substantial synergy sources that may be described in a case. In this survey, due to financial synergy being frequently highlighted across the studied cases, based on the consensus of the three raters and the strong recommendation from the case authors interviewed, the eleventh item was used to gauge the degree of satisfaction with financial synergy realization.

Three raters rated each of these 11 items (questions) based on the descriptions in the studied case reports of the synergy realization after the M&A compared with the descriptions prior to the M&A. This mode of before/after comparison is typically used as an indicator to measure M&A success/failure (Capron and Hulland 1999). Each item is rated on a 5-point Likert scale (1 = very low, 5 = very high). They were summed, then averaged, by the number of total ratable items to create an overall

measure of satisfaction with M&A performance (Cronbach's alpha = 0.771). In general, Cronbach's alpha greater than 0.6 is considered satisfactory in research on organizations (Larsson and Finkelstein 1999). Averaged scores were used instead of summed scores to avoid any possible distortion resulting from lack of information in some case reports.

***M&A motive***

As illustrated in Section 2.4, the M&A motive (Motive) is not necessarily a dummy typology; it was conceptualized as the degree of matter, which varies continuously from 1 = 'diversification' to 5 = 'synergy'. Those cases with mixed motives of synergy and diversification were rated between 2 and 4 depending on whether diversification or synergy had more weight.

***Contextual factors***

Three contextual factors were included: difference in management style (Management Style); difference in size (Size); and difference in knowledge level (Knowledge) between acquired and acquiring firms. They were measured on an ordinal scale where 0 is low/small and 1 is high/great.

First, Management Style is defined as the difference between acquired and acquiring firms before M&A in terms of seven opposite pairs of characteristics suggested by Homburg and Bucerius (2006), which were listed in footnote 2.

Second, Size is defined as the difference in annual sales turnover of the acquired and acquiring firms in the year of (or prior to) the legal M&A (Larsson and Finkelstein 1999). If the sales turnover was not available, total assets or number of employees

was adopted.[5] The Size was measured as a ratio of one to the other; 0 was rated as small for a ratio of acquirer to acquired of less than two while 1 was rated as large for a ratio equal to/greater than two. We swapped the numerator and denominator when the acquirer size was smaller than the acquired, and applied the same rule to judge the difference in size between the two. In five cases (#5, #8, #10, #21, #26), the acquirer size was smaller than the acquired.

Third, knowledge level refers to the extent of factors such as technology, know-how, market intelligence, skill held by the firm. Knowledge is defined as the difference between acquired and acquiring firms before M&A in terms of complexity, advancement, tacit nature, and collectivity of knowledge level.

***Post-merger integration***

Post-merger integration (PMI) is conceptualized in terms of integration speed and scope (Hsu 2001; Homburg and Bucerius 2005; 2006). Integration speed (Speed) is defined as the length of time needed to complete the intended integration (Homburg and Bucerius 2005). Integration scope (Scope) is defined as the degree of the change as a result of the integration process. It is the degree of similarity achieved between two joining organizations in the integration process (Homburg and Bucerius 2005). In order to be observed and measured more specifically, both Speed and Scope were assessed by two aspects: task integration and human integration (Black and Mouton 1985; Birkinshaw, Bresman and Hakanson 2000). The measurement of Scope was on a 5-point interval scale (1 = very low/small to 5 = very high/large). For Speed, the

[5] All of the cases in this research adopted the sales turnover measure, except for case 13 and case 45, in both of which the number of employees measure was applied because (1) acquirers acquired R&D/production divisions of target companies and (2) sales turnovers were not revealed in the case reports.

rating scales were 5 = ≤ 6 months, 4 = 7–12 months, 3 = 13–18 months, 2 = 19–24 months, and 1 = ≥ 24 months. The rating results of Speed were then summed and averaged by the total ratable number as the final score of Speed. The same process was applied to Scope. Appendix B lists the details of the coding scheme.

Table 3-4. Measurement of constructs

| Constructs | Variables (Variables in short form) | Items (measures) | Scale |
|---|---|---|---|
| M&A Performance | Satisfaction at synergy realization (Performance)[bd] | Purchase cost<br>Production cost<br>Marketing cost<br>Overheads<br>Market power<br>Vertical economies<br>New market access<br>Cross-selling<br>Knowledge transfer<br>Knowledge creation<br>Financial synergy | Likert; 1 = very low, and 5 = very high, or insufficient information |
| M&A motives | M&A motive (Motive)[ad] | Synergy vs. diversification | Likert; 1 = most for diversification and 5 = most for synergy, or insufficient information |
| Contextual factors | Difference in management style (Management Style)[abe] | Centralized vs. decentralized<br>Short-term oriented vs. long-term oriented<br>Hierarchical vs. delegating<br>Flexible vs. inflexible<br>Output-oriented vs. process-oriented<br>Proactive vs. reactive | Ordinal scales; 0 = small and 1 = large, or insufficient information |

| | | | |
|---|---|---|---|
| | | Bureaucratic vs. unbureaucratic | |
| | Difference in size (Size)[be] | Sales turnover<br>Asset<br>Employee number | Ordinal scales; 0 = small and 1 = large, or insufficient information<br>0 = acquirer/acquiree < 2<br>1 = acquirer/acquiree ≥ 2 |
| | Difference in knowledge level (Knowledge)[ce] | Complexity vs. simplicity<br>Tacit vs. Explicit<br>Advanced vs. traditional | Ordinal scales; 0 = small and 1 = large, or insufficient information |
| Post-merger integration (PMI) | Integration Speed (Speed)[cde] | Task integration (Task) | Likert; 1 = very low and 5 = very high, or insufficient information<br>5 = ≤ 6 months<br>4 = 7–12 months,<br>3 = 13–18 months<br>2 = 19–24 months<br>1 = ≥ 24 months<br>or insufficient information |
| | | Human integration (Human) | |
| | Integration Scope (Scope)[cde] | Task integration (Task) | Likert; 1 = very small and 5 = very large, or insufficient information<br>5 = large range<br>3 = middle range<br>1 = small range<br>or insufficient information |
| | | Human integration (Human) | |

Source: Organized for this research with reference to [a]Black and Mouton (1985), [b]Larson and Finkelstein (1999), [c]Brikinshaw, Bresman and Hakanson (2000), [d]Hsu (2001), [c]Homburg and Bucerius (2005; 2006).

### 3.5.4 Reliability

'The key decision for the coding scheme design was a compromise between resource saving, reliable simplicity and information-rich complexity' (Larsson 1993, p. 1519),

i.e. the more alternatives and the finer the distinction, the greater the risk of low inter-rater reliability. Bullock and Tubbs (1987) suggested the simpler the design of the coding scheme, the better. However, this simplicity is at the expense of information loss. Larsson (1993) proposed that it is better to start with an overly detailed scheme and gradually simplify it until adequate reliability is reached. Hence, in order to capture more information, the coding scheme of this research employed a five-point Likert scale.

The same argument was applied to the numbers of raters. 'Although using two raters saves resources and reduces the risk of low inter-rater reliability, using three raters improves the extraction of information by eliminating mistakes and single-minded interpretations and enabling majority votes to resolve discrepancies' (Larsson 1993, p. 1531). Thus, three raters were used in this coding scheme. For measurement of inter-rater reliability, 'average pairwise percent agreement' (APPA) was adopted instead of percent absolute agreement (PAA) as APPA is neutral to the number of raters and captures partial agreements missed by PAA (see Larsson 1993 for details). By using the raw scores of three raters, Cronbach's alpha of inter-rater reliability was measured as 79.2%, which is considered satisfactory against the benchmark of 65% recommended by Yin and Heald (1975) and Jauch et al. (1980), and the reliability of other case survey reports (Miller and Friesen 1977; Lin 1998; Larsson and Finkelstein 1999).

### 3.5.5 Discrepancy resolution and author's participation

Due to the subjective judgment of each rater, there were inevitably different coding results. To solve this discrepancy, after all the cases were coded a 'consensus

approach' was employed (Bullock and Tubbs 1987). The consensus approach is regarded as superior to other alternatives (e.g. majority, average, or expert approach) because "it enables raters to re-examine the coding results for items that were not in agreement and thus facilitates detection of any coding errors" (Larsson and Finkelstein 1999, p. 21). Three raters met to discuss the discrepant coding results by re-investigating points of disagreement and jointly determined the most appropriate coding results—a preliminary set of composite coding results.

Case authors are regarded as the primary researchers who had first-hand knowledge about the actual cases (Lucas 1974). Some are even members of the case management directly or indirectly involved in the M&A decision-making and integration process. Of the 18 case authors interviewed, 10 were working for the case companies at the time of the M&A and during the integration process. The 18 case authors were interviewed face-to-face or via teleconference. Interviews with the case authors each lasted 1–2 hours; they were asked for their validation on the preliminary set of composite coding results from the three raters. Additional information was also sought on those questions earlier coded as having insufficient information. The same consensus resolution approach was employed. The authors' comments on their own cases were incorporated with the preliminary set of composite coding results, and the final set of coding results was generated for analysis.

Subsequently, the validity test was conducted between two sets of coding results— the preliminary set from raters and the final set incorporating authors' comments. PAA was adopted.[6] The Cronbach's alpha was 0.80.

[6] Percent absolute agreement (PAA) is a simple percentage of cases on which all raters code a variable

### 3.5.6 Data analysis

Three methods of data analysis were used in this study. First, descriptive statistical analysis (Cavana, Delanhaye and Sekaran 2001) was applied to display the coding results of all selected cases including the available number of cases, means and standard deviations for each variable.

Second, bivariate correlation analysis (Cavana, Delanhaye and Sekaran 2001) was employed to present the nature, direction and significance of the bivariate relationships of the variables used in this study. A Pearson correlation matrix was used to provide this information, in which Pearson's correlation coefficient (r) indicates the strength and direction of the association between any two metric variables, and the significance level is set at 5% and 1%. Subsequently, multiple regression analysis (MRA) (Cavana, Delanhaye and Sekaran 2001) was conducted to investigate the proposed relationships between the variables. The computer program applied in the data analysis was SPSS version 13.0.

## 3.6 Ethics

As case authors were involved in this research, the following steps were taken in accordance with ethical requirements. First, a search for potential interviewees was conducted by email, telephoning all case authors and checking their availability to participate in this research (Appendix C). During communication with the potential interviewees, the researcher: (1) briefed them on the research objective; (2) tried to

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identically. That means PAA is either 0% when coding results differ, or 100% when coding results are identical. Its application as a reliability index in case surveys was suggested by Bullock and Tubbs (1987).

raise their interest in the case survey method; (3) indicated the time of 1–2 hours needed for an interview, and arranged the time and venue convenient for them; and (4) gave assurance of confidentiality for their participation.

Of the total 34 case authors covering 51 cases, 18 case authors agreed to be interviewed. Eight were interviewed in face-to-face meetings and the remaining ten via teleconference. At the start of each interview, the points in the information sheet (Appendix D) were gone through with the interviewee to ensure their understanding of the process. Each case author interviewed then returned the consent form with his or her signature (Appendix E)—personally in the case of face-to-face meetings or via email in the case of teleconferences.

## 3.7 Conclusion

Through an overview of the literature, the case survey method is claimed to be useful in bridging the gap between nomothetic and idiographic researchers. It is suitable for the specific and complex conditions of this research topic. The research procedures and detailed steps were undertaken using Larsson's (1993) suggestions. Four constructs—M&A motives, post-merger integration, contextual factors, and performance—were properly defined and operationalized into observable and measurable items (measures) according to the reviewed literature and relevant theories. Reliability and validity were tested and the results were considered satisfactory. SPSS version 13.0 and bivariate correlation and multiple regression analyses were subsequently used to analyze the data. The processes of potential interviewee recruitment and interview were recorded. Relevant ethical issues were taken into account and reviewed by the UNISA Ethics Committee.

# CHAPTER 4: DATA ANALYSIS AND RESULTS

## 4.1 Introduction

This chapter presents the research results and analyzes them for their relevance to the research questions and hypotheses. It starts with a data overview of the selected cases, followed by the data analysis, the testing of each hypothesis, and then the conclusion.

## 4.2 Overview of surveyed case data

Table 4-1 summarizes the coding results of the 51 selected cases. First, motives of all surveyed cases were averaged as 4.43, showing they were mostly for pursuing synergy. However, M&As in the financial industry demonstrated mixed motives of synergy and diversification (rating=2–4) This observation is in response to the introduction of the M&A and the Financial Holding Corporate (FHC) Acts, mentioned in Section 2.2.

Second, both the mean (2.81, which is slightly below medium level) and standard deviation (0.64) of the satisfaction degree with M&A performance (Performance) of the surveyed cases suggest that a significant proportion of M&As have not yet realized the expected synergy. This result is in agreement with the perceived high failure rate of M&A, which has been elaborated in Section 1.1.

Third, the ratings for the three contextual factors were high (0.65–0.80) across the surveyed cases, especially in Size and Management style; both were as high as 0.80. This suggests that the case managers were facing challenges as a result of large

differences in selected contextual factors and also justifies this study's choice of the contextual factors as moderators rather than as strategic choices.

Table 4-1. Descriptive statistics of the data of 51 selected cases

| Items | N | Mean | Std. Deviation |
|---|---|---|---|
| Purchase cost | 51 | 2.96 | 1.33 |
| Production cost | 51 | 2.84 | 1.30 |
| Marketing cost | 51 | 3.35 | 1.00 |
| Market power | 51 | 3.51 | 0.88 |
| Overheads | 51 | 3.06 | 1.10 |
| Vertical economies | 51 | 1.71 | 1.15 |
| New markets | 51 | 2.88 | 1.16 |
| Cross-selling | 51 | 2.86 | 1.11 |
| Knowledge transfer | 51 | 2.65 | 1.18 |
| Knowledge creation | 51 | 2.47 | 1.08 |
| Financial synergy | 51 | 2.61 | 1.22 |
| Speed task | 50 | 3.34 | 1.17 |
| Speed human | 50 | 3.22 | 1.18 |
| Scope task | 51 | 3.02 | 1.01 |
| Scope human | 51 | 2.86 | 1.27 |
| Management style | 50 | 0.78 | 0.42 |
| Size | 51 | 0.80 | 0.40 |
| Knowledge | 51 | 0.65 | 0.48 |
| Performance | 51 | 2.81 | 0.64 |
| Speed | 50 | 3.28 | 1.08 |
| Scope | 51 | 2.94 | 0.93 |
| Motive | 51 | 4.43 | 1.06 |

## 4.3 Correlation analysis

Table 4-2 reports the Pearson Correlation Coefficients of all variables in the study. Several of the correlations provide preliminary support for some of the hypotheses.

Motive is positively correlated with Integration (r= 0.32*). This result supports H1 (the greater the motive for synergy, the greater the need for integration) and H2 (the greater the motive for diversification, the less the need for integration). It answers RQ1. Specifically, Motive is significantly correlated with Scope (r= 0.37**), which indicates that when M&A motive is more for synergy, integration tends to be larger in scope, whereas M&A motive is more for diversification, integration tends to be smaller in scope. However, Speed appears to have no significant relationship with Motive probably because Speed could be moderated by other contextual factors (Homburg and Bucerius 2005, 2006), which will be analyzed later.

These findings are not surprising as, in the literature reviewed, the integration cited is more likely to be in line with Scope as defined in this research, which is the degree of similarity achieved between two combining organizations (Homburg and Bucerius 2005). Larsson and Finkelstein (1999) also defined integration is the single most important factor in explaining synergy realization; their definition of integration was the extent of interaction and coordination during the organizational integration process. Similarly, in Haspeslagh and Jemison's (1991) integration model (Figure 2.1), they focused on what items should be included and what actions taken during the integration process. None of them takes the 'time' factor (Speed) into consideration; they concentrate, instead, on the content of the integration.

Second, though Scope is positively correlated with Performance (r=0.30*), Speed has no significant correlation with Performance. This is consistent with Homburg and Bucerius's (2006, p. 354) finding that 'integration speed does not have a significant impact on the performance', based on the first test run of 232 M&A cases. They found that the impact of Speed becomes significant only after the inclusion of a set of contextual factors as moderators. The correlation result shows that Speed is negatively correlated with one of the contextual factors, Knowledge (r= -0.33*). This agrees with the discussion in Section 2.7.3 that when there is a large difference in knowledge levels, the integrator tends to delay the integration process to offer opportunities for mutual learning and the establishment of mutual trust between combining organizations (Barney 1991; Graebner 2004).

Third, Management Style appears to have a positive correlation with Performance (r=0.37*), while Size and Knowledge show no significant relationship with Performance. These results oppose the perceived negative association between Management Style and M&A performance, which is derived from the social identity theory (Byrne 1971; Berscheid and Walster 1978) and supported by prior empirical studies (Buono and Bowditch 1989; Chatterjee et al. 1992; Zollo and Singh 2004; Homburg and Bucerius 2006). One possible explanation is that, from the resource-based view (Lubatkin 1987; Capron 1999), the management incompetence of acquired or acquirer, which resulted in poor pre-merger performance, was replaced and/or improved by the other through the integration process so as to lead to better post-merger performance, particularly in operational and managerial aspects (Haspeslagh and Jemison 1991). This explanation is supported by the positive correlations between Management Style and operation-related items of performance,

e.g. purchase cost (r=0.48**), production cost (r=0.59**), and knowledge transfer (r=0.37**).

In brief, the findings from the bivariate correlation analysis between Motive and Integration tested for H1 and H2. They also provided a preliminary foundation for testing hypotheses H3–H8. Scope was found to be significantly associated with Performance. Though Speed appears not to have a significant association with Performance, prior research suggests that it might differ when the moderator effect is considered. Management Style has a significant correlation with Performance, but Size and Knowledge do not. However, the effects of Size and Knowledge on Performance have been widely discussed in prior literature (Sections 2.7.2 and 2.7.3). Thus, this research includes Size, Knowledge together with Management Style, Speed, and Scope as a baseline in the subsequent regression modeling.

Table 4-2. Bivariate correlation matrix

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Purchase cost | | | | | | | | | | | | | | | | | | | | | | |
| 2. Production cost | .76** | | | | | | | | | | | | | | | | | | | | | |
| 3. Marketing cost | .22 | .26 | | | | | | | | | | | | | | | | | | | | |
| 4. Market power | .75** | .56** | .29* | | | | | | | | | | | | | | | | | | | |
| 5. Overheads | .47** | .33* | .42** | .38** | | | | | | | | | | | | | | | | | | |
| 6. Vertical economics | -.18 | -.34* | -.05 | -.05 | .11 | | | | | | | | | | | | | | | | | |
| 7. New markets | .40** | .37** | -.02 | .39** | .40** | .00 | | | | | | | | | | | | | | | | |
| 8. Cross-selling | .23 | .01 | -.15 | .40** | .07 | .05 | .33* | | | | | | | | | | | | | | | |
| 9. Knowledge transfer | .62** | .43** | -.03 | .49** | .25 | -.05 | .19 | .14 | | | | | | | | | | | | | | |
| 10. Knowledge creation | .47** | .22 | .01 | .35* | .23 | .24 | .25 | .40** | .54** | | | | | | | | | | | | | |
| 11. Financial synergy | .30* | .24 | -.02 | .28* | .35* | .13 | .43** | .33* | -.00 | .22 | | | | | | | | | | | | |
| 12. Speed Task | .00 | .00 | .34* | -.08 | -.03 | -.14 | -.18 | -.12 | .02 | .01 | -.07 | | | | | | | | | | | |
| 13. Speed Human | .11 | .09 | .32* | .02 | -.08 | -.10 | -.16 | -.10 | .16 | .06 | -.17 | .68** | | | | | | | | | | |
| 14. Scope Task | .37** | .22 | .13 | .39** | .05 | .14 | .07 | .29* | .51** | .61** | .10 | .11 | .23 | | | | | | | | | |
| 15. Scope Human | .07 | .10 | .26 | -.08 | .19 | .01 | -.20 | -.38** | .41** | .21 | -.14 | .26 | .18 | .33* | | | | | | | | |
| 16. Management style | .48** | .59** | .12 | .51** | .19 | -.34* | .25 | .06 | .37** | -.11 | .04 | -.26 | -.19 | -.03 | .02 | | | | | | | |
| 17. Size | .20 | -.06 | .03 | .01 | .07 | .13 | .04 | -.06 | -.19 | -.24 | -.08 | .14 | -.18 | -.09 | -.05 | .00 | | | | | | |
| 18. Knowledge | .10 | -.06 | -.24 | .20 | .12 | .35* | .10 | .32* | .27 | .36** | -.10 | -.43** | -.18 | .06 | -.18 | .11 | -.16 | | | | | |
| 19. Performance | .83** | .64** | .29* | .78** | .64** | .13 | .62** | .45** | .59** | .64** | .54** | -.05 | .02 | .47** | .07 | .37** | -.10 | .23 | | | | |
| 20. Speed | .06 | .05 | .36* | -.03 | -.06 | -.13 | -.19 | -.12 | .10 | .04 | -.13 | .92** | .92** | .19 | .24 | -.25 | -.02 | -.33* | -.02 | | | |
| 21. Scope | .25 | .18 | .25 | .16 | .16 | .09 | -.10 | -.10 | .55** | .47** | -.04 | .24 | .25 | .77** | .86** | -.00 | -.09 | -.09 | .30* | .27 | | |
| 22. Integration | .20 | .15 | .39** | .09 | .07 | -.03 | -.18 | -.14 | .38** | .31* | -.10 | .75** | .76** | .58** | .66** | -.17 | -.05 | -.28* | .18 | .83** | .76** | |
| 23. Motive | .25 | .18 | .23 | .23 | .20 | .19 | .17 | -.12 | .49** | .24 | -.28* | .06 | .23 | .27 | .33* | -.02 | .06 | .19 | .28* | .16 | .37** | 0.32* |

* $p < 0.05$; ** $p < 0.01$

## 4.4 Multiple regression analysis

In this section, MRA is employed on Performance (Y) as the dependent variable predicted against a set of independent variables of Speed ($X_1$), Scope ($X_2$), Management Style ($X_3$), Size ($X_4$), and Knowledge ($X_5$). The proposed moderator effects will be investigated in three steps[7] (Hair et al. 2006, pp. 201–202). Consequently, hypotheses H3–H8 are tested using the following equations.

Baseline model (Unmoderated equation): $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$

Moderated regression models:

Model 1: $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_{23}X_2X_3$

Model 2: $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_{13}X_1X_3$

Model 3: $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_{24}X_2X_4$

Model 4: $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_{14}X_1X_4$

Model 5: $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_{25}X_2X_5$

Model 6: $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_{15}X_1X_5$

Model 7: $Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_5X_5 + b_{23}X_2X_3 + b_{15}X_1X_5$

Compound variables such as $X_2X_3$, $X_1X_3$, $X_2X_4$, $X_1X_4$, $X_2X_5$, $X_1X_5$, are moderator (interaction) terms formed by multiplying Speed and Scope each by the moderator variables (Management Style, Size, Knowledge) respectively. Coefficients such as $b_{23}$, $b_{13}$, $b_{24}$, $b_{14}$, $b_{25}$, $b_{15}$ represent the moderator effect indicating the unit change in the

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[7] Step 1: Estimate the original (unmoderated) equation.
Step 2: Estimate the moderated relationship (Original equation plus moderator variable).
Step 3: Assess the change in $R^2$: If it is statistically significant, then a significant moderator effect is present. Only the incremental effect is assessed, not the significance of individual variables.
(Hair et al. 2006, pp. 201-202)

effect of $X_2$ or $X_1$ as $X_3$, $X_4$, or $X_5$ changes respectively. Table 4-3 summarizes the results of the regression models.

Table 4-3. Results of multiple regression analysis (MRA)

| | Baseline Model | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
|---|---|---|---|---|---|---|---|---|
| Speed | 0.076 | 0.068 | -0.109 | 0.077 | -0.251 | 0.168 | -0.658** | -0.649** |
| Scope | 0.284* | -0.159 | 0.277* | 0.314 | 0.297* | -0.111 | 0.405** | -0.137 |
| Mgmt Style | 0.357** | -0.309 | 0.070 | 0.355** | 0.360** | 0.443** | 0.342** | -0.494 |
| Size | -0.129 | -0.105 | -0.125 | -0.078 | -0.549 | -0.196 | -0.170 | |
| KL | 0.262$^+$ | 0.308* | 0.253 | 0.266$^+$ | 0.238$^+$ | -0.582 | -1.414** | -1.307** |
| ScopeMS | | 0.812 | | | | | | 1.018* |
| SpeedMS | | | 0.423 | | | | | |
| ScopeSize | | | | -0.058 | | | | |
| SpeedSize | | | | | 0.529 | | | |
| ScopeKL | | | | | | 0.936$^+$ | | |
| SpeedKL | | | | | | | 1.652** | 1.626** |
| $R^2$ | 0.308 | 0.327 | 0.310 | 0.308 | 0.318 | 0.359 | 0.519 | 0.523 |
| Adj. $R^2$ | 0.229 | 0.233 | 0.214 | 0.211 | 0.223 | 0.270 | 0.452 | 0.457 |
| F | 3.912** | 3.487** | 3.225** | 3.190** | 3.338** | 4.021** | 7.742** | 7.865** |

$^+p<0.1$, * $p<0.05$, ** $p<0.01$

Note: Detailed analytical results are included in Appendix I.

Standardized regression coefficients are reported to allow for a direct comparison between coefficients as to their relative explanatory power of the dependent variable.

The standardized coefficient of Speed in the baseline model is not significant, suggesting that Speed does not have a direct effect on Performance, which has been discussed in the previous section. On the other hand, Scope is presented as a significant positive predictor on Performance ($\beta$=0.284), consistent with the results of the 61 M&A case survey conducted by Larsson and Finkelstein (1999).

Management Style presents a significant positive effect on Performance ($\beta$=0.357).

This result can be easily predicted based on the previous correlation analysis. Follow-up interviews with the case authors also provide more reasons. First, the macroeconomic situation and the job market during the integration period (mostly 2000–2005) under-performed, and employees were often more concerned about their job security than serving the different management styles. They were keen to work harder to demonstrate their value and deliver performance to secure their positions. Hence, there was a higher tolerance and adaptation toward change as a result of M&A—that would transform into higher combination potentials (Rumelt 1982; Larsson and Finkelstein 1999). Consequently, the perceived negative impact of Management Style was minimized or became positive. Second, from the corporate control (Zollo and Singh 2004) and agency problem (Manne 1965) points of view, such fierce competition and anxiety about value creation made combined firms look more deeply into operational and managerial efficiency improvement by replacing incompetent managers, which represented a different management style (Lorsch 1973; Stout 1992; Maksimovic and Phillips 2001). Thus, the large difference in management could be a positive perception of M&A success. Third, the emphasis in Chinese culture on harmony rather than confrontation possibly also contributed to this analytical consequence.

Knowledge has a mild positive effect on Performance ($\beta$=0.262). This finding has two interesting implications. First, the positive effect reflects the reality that most acquiring firms aim to gain distinguishable knowledge capabilities from acquired firms through M&As, and thus devote much effort to facilitating such capability transfer. This may form a good combination potential and is likely lead to M&A success (Larsson and Finkelstein 1999). Second, the marginal $\beta$ value implies that the

success of an M&A still relies on achieving an appropriate integration level despite the aforementioned fact. This echoes Graebner's (2004) conclusion that a symbiotic category of integration could be appropriate in the context of a large knowledge difference between two combining organizations and provide a rationale for further investigation of the moderator effect of Knowledge.

Next, the moderator effect of each contextual factor (Management Style, Size, Knowledge) with Speed and Scope in influencing Performance was investigated.

### 4.4.1 Models 5 and 6

The $R^2$ change of model 5 ($R^2$=0.359), and model 6 ($R^2$=0.519) exhibited improvements in explanatory power to Performance, compared to the baseline model ($R^2$=0.308). This suggests that the moderator effect of the interaction terms (Scope*Knowledge, Speed*Knowledge) which were selected in the specific model could exist. Moreover, the adjusted $R^2$s of model 5 ($R^2$=0.270), and model 6 ($R^2$=0.452) indicate that adding the interaction term to the specific model provides additional explanatory power over the baseline model ($R^2$=0.229). These observations suggest that model 5 and model 6 have significant moderator effects (Hair et al. 2006, pp. 201-202). The F statistics of model 5 (F=4.021**) and model 6 (F=7.742**) also support the selected interaction term in each specific model, enhancing the model-fitting compared with the baseline model (F=3.912**).

Looking at the interaction term in the regression model, the standardized coefficient of Scope*Knowledge in model 5 ($\beta$=0.936, $p<0.1$) further confirms the moderator effect of Knowledge on Scope in explaining Performance. This result supports H7 and

responds to RQ2 concerning the moderator effect of Knowledge on the relationship between integration scope and M&A performance in the context of knowledge difference between two combining organizations.

An observation worth addressing in model 5 is that the multicollinearities increase dramatically in Scope (TOL=0.243) and Knowledge (TOL=0.067) compared with those in baseline model—Scope (TOL=0.914) and Knowledge (TOL=0.870). In other words, the predictive power of the individual term (Scope, Knowledge) is reduced by the extent to which it is associated with other terms after the addition of Scope*Knowledge (Appendix I). This addresses the need to further investigate the change in total predictive power (Hair et al. 2006) of Scope after the interaction term (Scope*Knowledge) was added in model 5 compared to the baseline model. The impact of integration scope on M&A performance was stronger (∂Performance/∂Scope = 0.825) when the difference in knowledge was large, and it became insignificant (∂Performance/∂Scope = -0.111) when the difference in knowledge was small (Table 4-4). This finding answers RQ3.

Table 4-4. Total predictive power of the integration scope to M&A performance (Baseline vs. model 5)

| | Baseline model | Model 5 |
|---|---|---|
| Total predictive power of Scope to Performance | ∂Performance/∂Scope = 0.284 | ∂Performance/∂Scope = -0.111 + 0.936*Knowledge<br>∂Performance/∂Scope = 0.825 when Knowledge = 1 (large difference in knowledge level).<br>∂Performance/∂Scope = -0.111 when Management style = 0 (small difference in knowledge level) |

Source: Development of this research based on the regression models in Table 4-3. For example, 0.284 is obtained by partial differentiation of baseline model ($Y= 0.076X_1 + 0.284X_2 + 0.357X_3 - 0.129X_4 + 0.262X_5$).

Similarly, the standardized coefficient of Speed*Knowledge in model 6 (β=1.652**) confirms the moderator effect of the said interaction term. Indeed, among the selected contextual factors Knowledge has the strongest moderator effect on Speed in influencing Performance. This supports H8 and answers RQ2 concerning the moderator effect of Knowledge on the relationship between integration speed and M&A performance in the context of different knowledge levels between two combining organizations.

Knowledge itself is presented as a significantly negative predictor to M&A performance (β=-1.414**), which demonstrates that M&A performance tends to be unsatisfactory in the context of a large difference in knowledge levels. This result reflects the difficulties in establishing mutual trust, the capture and transfer of the tacit and complex nature of knowledge, and greater time consumption (Winter 1987; Barney 1991; Haspeslagh and Jemison 1991; Grant 1996; Ranft and Lord 2002; Graebner 2004), which were elaborated in Section 2.7.3. Similar to previous analysis, the multicollinearity statistics in model 6 present significant increases in Speed (TOL=0.262) and Knowledge (TOL=0.069) vs. those in baseline model—Speed (TOL=0.787) and Knowledge (TOL=0.870). This indicates that the unique variance explained by any individual term decreases and the change in a total predictive power needs to be further analyzed in order to draw a clearer conclusion.

Examining the change in predictive power of Speed to M&A performance after the interaction term (Speed*Knowledge) was included in model 6 vs. baseline model presents two interesting findings. First, without the inclusion of the moderator (Knowledge), Speed appeared irrelevant to M&A performance (baseline model).

Second, when a large difference in knowledge existed, the impact of Speed was positive (∂Performance/∂Speed = 0.994) to M&A performance. On the other hand, it was negative (∂Performance/∂Speed = -0.658) when a small difference in knowledge existed. Thus, the findings answer RQ3: To what extent does the difference in knowledge level affect the relationship between integration speed and M&A performance.

Table 4-5. Total predictive power of integration scope on M&A performance (Baseline vs. model 6)

| | Baseline model | Model 6 |
|---|---|---|
| Total predictive power of Speed to Performance | ∂Performance/∂Speed = 0.076 | ∂Performance/∂Speed = -0.658 + 1.652*Knowledge<br>∂Performance/∂Speed = 0.994, when Knowledge = 1 (large difference in knowledge level).<br>∂Performance/∂Speed = -0.658, when Knowledge = 0 (small difference in knowledge level) |

Source: Development of this research based on the regression models in Table 4-3

### 4.4.2 Models 1 and 7

The $R^2$ change of model 1 ($R^2$=0.327) indicated better explanatory power to Performance, compared to the baseline model ($R^2$=0.308). The adjusted $R^2$ of model 1 ($R^2$=0.233) also suggests that adding the interaction term (Scope*Management Style) to the specific model provides additional explanatory power over the baseline model ($R^2$=0.229). These observations reveal that the moderator effect of the interaction term could exist in the specific model.

However, when the interaction term in model 1 was investigated, Scope*Management

Style was found to be insignificant. This made the researcher less confident to draw a conclusion on the moderator effect of Management Style on Scope in influencing Performance. Next, Size is insignificant in all the models discussed (Table 4-3). Therefore, model 7 was built up by removing Size. Instead of including all independent variables by an enter procedure, the regression method was modified by entering Speed, Scope, Management Style, Knowledge and selecting the remaining interaction terms (Scope*Management Style, Speed*Management Style, Scope*Size, Speed*Size, Scope*Knowledge, Speed*Knowledge) by a stepwise procedure. The results were summarized in Table 4-3 as model 7. Scope*Management Style was selected stepwise after Speed, Scope, Management Style, Knowledge, and Speed*Knowledge were included. The $R^2$ (0.523) of model 7 exhibits better explanatory power than model 6 ($R^2$=0.519). The adjusted $R^2$ (0.457) also suggests that adding the interaction term (Scope*Management Style) improves the prediction. This conclusion supports H3 and answers RQ2 concerning the relationship between Integration Scope and M&A performance in the context of management style differences between acquiring and acquired firms.

Another finding worth noting is that both Scope and Management Style in model 7 become insignificant after adding Scope*Management Style. Obviously, there are high multicollinearities in Scope (TOL=0.091) and Management Style (TOL=0.043) compared to those in model 6 (TOL=0.934, 0.866) before the inclusion of Scope*Management. The same situation is also seen in model 1, where these three variables simultaneously appear insignificant after the inclusion of Scope*Management. Thereafter, the total predictive power (Hair et al. 2006) of Scope after interaction term (Scope*Management style) was examined. Table 4-6 shows that

the influence of integration scope was stronger (∂Performance/∂Scope = 0.881) when the difference in management style was large, and had a less significant impact on M&A performance (∂Performance/∂Scope = -0.137, but was not significant) when the difference in management style was small, in comparison with the baseline model (∂Performance/∂Scope = 0.284). Thus, the findings answer RQ3.

Table 4-6. Total predictive power of the integration scope on M&A performance (Baseline vs. model 7)

| | Baseline model | Model 1 |
|---|---|---|
| Total predictive power of Scope to Performance | ∂Performance/∂Scope = 0.284 | ∂Performance/∂Scope = -0.137 + 1.018*Management style<br>∂Performance/∂Scope = 0.881 when Management style = 1 (large difference in management style)<br>∂Performance/∂Scope = -0.137 when Management style = 0 (small difference in management style) |

Source: Development of this research based on the regression models in Table 4-3.

### 4.4.3 Model 2

The $R^2$ of model 2 ($R^2$=0.310) does not change significantly compared to the baseline model ($R^2$=0.308). The adjusted $R^2$ (0.214) further reveals that the added interaction term (Speed*Management Style) in model 2 lends little explanatory power compared to the baseline model ($R^2$=0.229). The findings show that there is no interaction effect of Management Style on Speed in influencing M&A performance. Thus, H4 is rejected.

Nevertheless, given the large difference in market positioning, product quality, and management style between acquirer and acquiree (Table 4-1), the conclusion drawn from this research fits Homburg and Bucerius's scenario of low external relatedness

vs. low internal relatedness (Section 2.4, and 2.7.1), where they found that integration speed has no significant effect on M&A success. Wang's (the author of case 12) comments further supported this conclusion.

> *"The decision on integration speed is very much subjected to firm's own condition, sometimes each division's own conditions. Given the significant differences in the marketing strategy and management style between two joining organizations, we adopted a rather cautious and contingent manner. We did very fast to integrate the IT system and R&D where we needed that talents anxiously, but took more than two years to integrate the sales and marketing due to the complex nature of our distribution networks." (Wang 2004)*

### 4.4.4 Models 3 and 4

The $R^2$s of models 3, 4 (0.308, 0.318) change marginally compared to the baseline model ($R^2$=0.308). The adjusted $R^2$s (0.211, 0.223) reveal that the added interaction term (Scope*Size, Speed*Size) in each specific model does not provide additional explanatory power compared to the baseline model (0.229). The findings show that there are no moderator effects of Size on Scope and of Size on Speed in influencing Performance. Thus, H5 and H6 are rejected.

However, the conclusions, to a large extent, reflect the diverse findings of prior research, which were discussed in Section 2.7.2. There are two assertions worth addressing: First, Larsson and Finkelstein (1999) conclude that Size is related to combination potential, but does not affect integration. Larger M&As perform better

because they offer greater combination potential, not because managers pay more attention and undertake more activities during the integration process when acquired firms are large. This research focuses on the moderator effect of Size on Speed and Scope that conceptualize the construct of integration (Homburg and Bucerius 2005), but not on combination potential that is seldom associated with the manager's operations during the integration process. Hence, it is not surprising that this research could not obtain any significant effects of Size on Speed and Scope.

Second, the relative size (difference in size) is taken as a proxy of relative power (Bastien and Van de Ven 1986), which means that the influence of Size is affected by a tug of war between the positive and negative forces of both internal and external considerations (Haspeslagh and Jemison 1991; Homburg and Bucerius 2005). Given the complexity and diversity of the studied cases, it is expectable that the conclusion drawn in this research is that Size does not have a significant moderator effect on the Scope and Speed. A summary of the above analytical results is given in Table 4-7 to be compared with the perceived directions based on previous literature review.

Table 4-7. Summary of PMI influence on M&A performance in various contexts

| Contextual factors | | PMI | Direction of PMI influence on M&A performance (Direction of contextual factor impact on M&A performance) | Empirical results from this case survey |
|---|---|---|---|---|
| Dif. in management style | Large | Scope | Negative or uncertain | Positive |
| | Small | | Positive | Insignificant |
| | Large | Speed | Negative | Insignificant |
| | Small | | Positive | Insignificant |
| | | | (Negative) | (Positive) |

| | | | | |
|---|---|---|---|---|
| Dif. in size | Large | Scope | Inconclusive | Insignificant |
| | Small | | Inconclusive | Insignificant |
| | Large | Speed | Uncertain | Insignificant |
| | Small | | Positive | Insignificant |
| | | | (Inconclusive) | Insignificant |
| Dif. in knowledge | Large | Scope | Positive | Positive |
| | Small | | Uncertain | Insignificant |
| | Large | Speed | Inconclusive | Positive |
| | Small | | Positive | Negative |
| | | | (Inconclusive) | Positive |

Source: Organized by researcher based on the literature review in Section 2.7 and the analytical results in Section 4.4.

Inconclusive: There are diverse findings including positive, negative, and no relationship.

Uncertain: There is limited information revealed in prior literature.

## 4.5 Conclusion

Through an overview of the surveyed case data, the findings are: (1) M&A motive in IT and other industries is mainly for pursuing synergy across surveyed cases, while M&A motive in the financial sector is more diversified and mixed with synergy and diversification across the surveyed cases; (2) The lower than medium level of satisfaction with M&A performance over the sample surveyed is in agreement with prior literature and empirical research findings; (3) The existing conditions of large differences in management style, size, knowledge level between two combining organizations challenge management during the PMI process.

The results of the correlation analysis were supportive of H1 and H2, providing a preliminary foundation for further regression analysis. Next, multiple regression models were established. Speed, Scope, Management Style, Size, and Knowledge were chosen for inclusion as independent variables in the baseline model. Each of the

six interaction terms was fed in the specific regression model. The regression results supported H3, H7, and H8, but rejected H4, H5, and H6. The findings have been verified with the reviewed literature in Chapter 2. The summarized opinions from the case authors interviewed were also used in the discussion to support the findings. Table 4-7 was made to compare the analytical results with perceived notions from the literature reviewed.

# CHAPTER 5: CONCLUSIONS AND IMPLICATIONS

## 5.1 Introduction

This chapter (1) summarizes the research findings, and identifies the contributions of this study to knowledge; (2) draws the implications for theory, business management practice, and methodology; subsequently (3) outlines the research limitations; and finally (4) offers suggestions for future research.

The research conclusions can be briefly stated: First, this research confirms that M&A motive has a positive relationship with integration scope, but an insignificant connection with integration speed. This contradicts the usual perception that a larger integration is beneficial to M&A performance. Instead, the integration scope should take note of the initial motives. Second, examining task and human aspects enables the researcher to measure the integration activities systematically and offers flexibility for the raters to code the studied cases in a broader manner.[8] It also allows managers to tailor the PMI strategy to suit their own conditions.

Third, this research agrees with the literature that, to a certain extent, Management Style has significant predictive power on M&A performance, and further clarifies that

[8] Hsu (2001, p. 65) indicated that the following items are the key elements of integration, organization structure (Datta 1991); centralization and delegation (Henderson 1989); management style (Buono and Bowditch 1989; Henderson 1989); integration team/project management (Ashkenas and Francis 2000; Marks and Mirvis 2000); reward system (Datta 1991); redundancy, personnel rotation (Buono and Bowditch 1989; Datta 1991). However, he still made adjustments in selecting the items due to the cases' varied conditions and the information availability. Therefore, he suggested that future research adopt a broader scope to measure the integration activities.

such predictive power has a largely moderator effect on integration scope in influencing M&A performance. On the other hand, the conclusions showing the positive moderator effect of Management Style disagree with the negative nature suggested by the literature; this adds another thought to the body of knowledge on management. Fourth, the research findings—no significant moderator effect of Management Style on integration speed or a direct predictive power of Speed on M&A performance—confirm Haspeslagh and Jemison's (1991) assertions about the symbiotic scenario in the matrix (Figure 2-2, and Section 4.4.3), and give empirical evidence to further verify Homburg and Burcerius's (2006) work on integration speed.

Fifth, the finding of no significant moderator effect of Size on PMI in M&A success reflects the diverse results of prior research. Sixth, the conclusion that Knowledge has a mild moderator effect on integration scope, and the strongest moderator effect on integration speed in explaining the M&A performance not only reflects the symbiotic nature of knowledge difference between two combining organizations, but also provides a clear direction on what and how actions should be undertaken during the integration process.

Table 5-1 summarizes the conclusions and main contributions of this study to the body of knowledge. All are in response to one or more specific research questions (Section 1.4) and are classified according to the degree of importance in the reviewed literature (Perry 1998).[9]

[9] Degree of being addressed' represents the degree to which the extant literature had explicitly addressed them. It is expressed in four ways: (1) 'To a large extent'—addition to knowledge from findings that confirm expectations from the literature; (2) 'to some extent'—contribution to knowledge from findings about disconfirmations of expectations derived from the literature review; (3) 'to a very

Table 5-1. List of conclusions and contributions

| Contributions | Response to research questions | Degree of being addressed |
|---|---|---|
| This research employs synergy–diversification to conceptualize M&A motives instead of superficial relatedness–unrelatedness paradigm. | RQ1 | To a very small extent |
| This research confirms the relationship between the pre-existing condition (M&A motive) and integration strategy (Speed, Scope) over the sample surveyed, which provides management with guidance for PMI strategy setting. | RQ1 | To a large extent |
| This research confirms the moderator effect of difference in management style on integration scope in influencing degree of satisfaction with M&A performance. | RQ2, RQ3 | To some extent |
| This research verifies no significant moderator effect of differences in management style on integration speed in explaining degree of satisfaction with M&A performance. | RQ2, RQ3 | To some extent |
| This research verifies that difference in size between acquiring and acquired firms has no significant moderator effect on integration scope or speed in explaining degree of satisfaction with M&A performance. | RQ2, RQ3 | To some extent |
| This research finds that the difference in knowledge level has a mild moderator effect on integration scope in explaining degree of satisfaction with M&A performance. | RQ2, RQ3 | To a large extent |
| This research finds that the difference in knowledge level is the single most important moderator on integration speed in explaining degree of satisfaction with M&A performance. | RQ2, RQ3 | To some extent |
| This research adopts the synergy realization to measure degree of satisfaction with M&A performance. The eleven items suggested by Larsson and Finkelstein (1999) are used to capture the value created as a result of M&A activities. | RQ2 | To a large extent |
| This research adds financial synergy to the measured items to | RQ2 | To a large |

small extent'—contributions to knowledge from areas where speculation had been raised in the literature but had no empirical testing; (4) 'None'—contributions to knowledge from findings about new areas which had not been raised in the literature (Perry 1998, p. 37).

| | | |
|---|---|---|
| gauge degree of satisfaction with M&A performance, which makes the coding scheme more specific and comprehensive to present value creation through integration process after M&A. | | extent |
| By taking the integration process perspective, this research establishes an integrative model for PMI strategy which takes into consideration pre-existing conditions (M&A motives) and existing differences in various contextual factors between acquiring and acquired firms. | RQ1, RQ2, RQ3 | To some extent |

Source: Development of this research

## 5.2 Implications to theory

The complex nature of M&As and multi-disciplinary involvement are the main hurdles for M&A theory building. Though a number of theories and models are presented in the literature on M&A, scholars have found that they are fragmented (Larsson and Finkelstein 1999), and have recognized that very few are able to clearly explain the relationship between M&A antecedents and subsequent performance (Hoskisson, Hitt and Hill 1991; Sirower 1997; King et al. 2004). When their findings were examined further, a wide variance was found in the relationship between the M&A antecedents and performance. This explains the inconclusive findings of relatedness–unrelatedness paradigm for M&A success. There are two main concerns with this paradigm: the ambiguity of its definition and its superficial observations. The former refers to the categorization of M&As in terms of product–market matrix, while the latter relates to the negligence of the real M&A motive behind the merger. These phenomena suggest a need for an integrative model able to incorporate multiple disciplines to compensate for the shortfall of fragmentation and to explain the M&A's complexity.

Of the available options to meet this need, understanding M&A motives and the moderator effects of the contextual factors offer a promising theoretical foundation for continued M&A research; it is also an under-researched topic (King et al. 2004; Homburg and Bucerius 2006). Thus, this research took M&A motive as an initial construct leading to subsequent integration activities (integration speed and scope), and employed synergy and diversification to define M&A motives. This definition integrates the tenets from the strategic management stream about resource relatedness (synergy) and from the capital markets stream about free cash flow attainment, co-insurance, and conglomeration (diversification). Thereafter, this research investigated the dynamics between integration process and M&A performance in various contexts. It built up the theoretical linkage between the constructs of M&A motives, integration process, contextual factors and M&A performance. Additional theorizing on such a match between integration strategy and different sets of internal and external contexts is encouraged.

Another implication worth addressing is that the rationales provided by case authors explain the research findings about the effect of Management Style on M&A performance during the PMI process. These rationales are contrary to the perceived notions from prior literature based on the similarity–attraction paradigm (organizational behavior stream), and suggest that a holistic view incorporating the agency problem and Managerialism from the capital markets and strategic management streams may work better. Hence, the process perspective that this work recommends could serve such requirements.

Figure 5-1 displays a revised model corresponding to the conceptual framework presented in Section 2.8. This integrative model is also the key contribution to the

body of knowledge on M&As. A few points contrast to the previously presented conceptual framework need to be addressed. First, the positive correlation between Synergy and integration scope and the negative correlation between Diversification and integration scope are identified, while there is no significant correlation between M&A motives and integration speed.

Second, the moderator effects of Management style on integration speed and of Size on both integration scope and speed are negated because no significant impact was found.

Third, the moderator effect of Management Style on integration scope is identified. The two +s represent a larger integration scope to possibly lead to a more satisfactory M&A performance in the context of a larger difference in management style.

Fourth, the moderator effect of Knowledge on integration scope is presented by two +s, demonstrating that the higher integration scope is beneficial to M&A performance when the difference in knowledge is large.

Fifth, the moderator effect of Knowledge on integration speed is also highlighted by two +s, indicating that a higher integration speed is required for a better M&A performance when a large difference in knowledge exists. Sixth, another line from Management Style to M&A performance with a + sign explains that, over the sample surveyed, the large difference in management style directly benefits M&A performance. Seventh, similarly, a line from Knowledge to M&A performance with – sign indicates that a large difference in knowledge directly leads to an unsatisfactory M&A result.

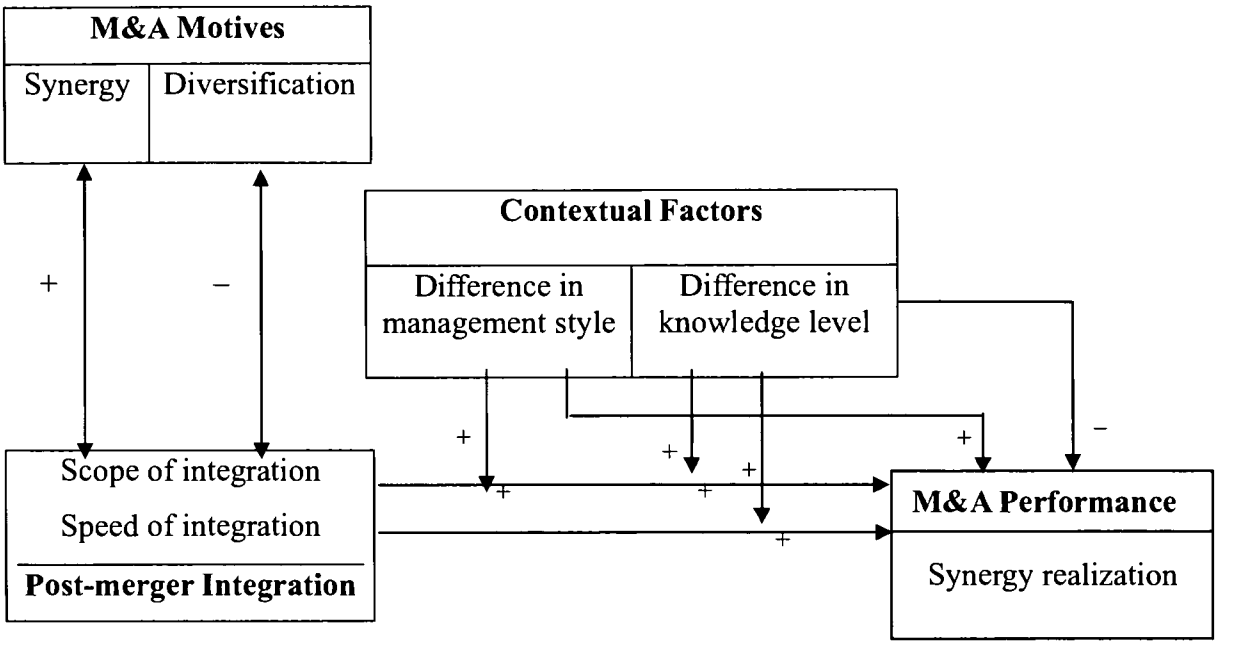



Figure 5-1. Modified framework as induced from case survey results

## 5.3 Implications for practice

Six managerial implications were derived from the research findings. First, the positive association between M&A motives and integration scope suggests that the decision-making on integration scope should be subject to the M&A motives at the beginning. This finding challenges the usual perception that larger integration scope is always beneficial to M&A success (which has been discussed in Section 2.6.1). It also reflects the observation that there are limited integration activities in those M&As for pursuing diversification, while they still achieve satisfactory results (Haspeslagh and Jemison 1991; Mercer Management Consulting 1997).

Second, the finding that there are positive effects from difference in management style which impact directly either on M&A performance or on integration scope through moderation is significant. This proposes an alternative idea to the common

management thinking (discussed in Section 2.7.1)—managers should not be constrained by the potential internal conflicts as a result of management style difference, and decrease or eliminate integration scope and activities which are supposed to be undertaken. Instead, this research suggests that management's integration strategy may have varying utility, subject to internal and external situations such as the job market, macroeconomic conditions, and corporate culture. More importantly, from the agency problem and corporate control viewpoints, management incompetence can be one of the original motives for the M&A. Thus, eliminating incompetence in the existing management capabilities (implying a large difference in management style) can be a source of M&A success.

Third, the inconclusive findings about the size difference imply that management should look beyond the myth of size when they establish the PMI strategy. This is also a reflection on varied findings in the literature discussed in Section 2.7.2.

Fourth, the mild positive effect of Knowledge directly on M&A performance could be a compromising result. On the one hand, it echoes the findings of prior research that there are difficulties in transferring tacit and complex knowledge capabilities, and the knowledge difference is a challenge to management during the PMI process (discussed in Section 2.7.3). On the other hand, it implies efforts dedicated to acquiring and transferring such knowledge capabilities for M&A value creation. Nevertheless, the positive effect of integration scope (in terms of total predictive power) on M&A performance through the moderator effect of Knowledge implies that management should take a larger integration scope to realize the expected synergy regardless of the existing gap in knowledge level between two combining organizations.

Fifth, similarly, the positive effect of integration speed (in terms of total predictive power) on M&A performance through the moderator effect of Knowledge indicates that management should speed up the integration process for a satisfactory M&A result though a negative impact has resulted from the large difference in knowledge level between two combining organizations.

Sixth, Speed is generally presented as having an insignificant effect on M&A performance in the context of small difference in management style, size, and knowledge (Table 4-8). This observation, different from prior literature that Speed is beneficial to an M&A success, suggests a warning that management must be cautious in setting the timetable for the PMI process (Haspeslagh and Jemison 1991).

Lastly, the division of integration process—task integration and human integration—is for sake of specific observation and measurement in terms of integration speed and scope. From the process perspective, it not only systemizes the complex and diverse conditions of M&As, but also provides managers with suggestions to follow.

In brief, in an overall consideration of difference in management style, size, and knowledge, managers should take the moderator effects of Management Style on Scope, Knowledge on Scope, and Knowledge on Speed as a path toward a superior M&A performance, but remain flexible and cautious in the other contexts where there is no statistical significance in directions indicated (Table 4-7). Therefore, the managerial implications resulting from this research are to provide clear and tangible guidance for management to establish an effective PMI strategy, instead of merely

vague rationalizations that go no further than the common 'synergy' arguments (King et al. 2004).

## 5.4 Implications for methodology

Three areas of improvement on methodology are suggested based on the research findings. First, this research uses synergy realization to gauge M&A performance (Larsson and Finkelstein 1999); this covers more diversified aspects to capture the degree of satisfaction with M&A performance than traditional accounting or stock price measures. However, the subjective measurements also raise concerns about the reliability and validity of the coding results. These shortfalls can be offset to a certain degree by the multiple raters' coding and authors' participation. Secondary document validation is suggested for triangulation purposes and reinforcement of validity requirements.

Second, in comparison with Larsson and Finkelstein's (1999) coding scheme which includes ten specific items and an open-ended question as the eleventh item (Section 3.5.3), most case reports measure M&A performance in a broader manner by four main aspects: operational synergy, managerial synergy, market synergy, and financial synergy. Though such a broad measurement approach could be claimed as a coarse-grained method (Datta 1991) that may lead to information loss, it helps the interpretation of the relationship between M&A antecedents and each specific aspect of M&A performance. Thus, this approach may give a more meaningful and applicable pattern for management as a path for a satisfactory M&A performance. Conversely, Larsson and Finkelstein's eleven items compensate for the shortfall of possible information loss as a result of the four-aspect classification of performance

measurement. This observation suggests a need to further analyze the compatibility between these two measurements of M&A performance.

Third, unlike in western countries, where the case survey method has been widely used (Table 3-1), its application is still limited in Taiwan, though it has drawn more attention in recent years (Lin 1998; Hsu 2001). Instead, most studies employ the case study method. While this phenomenon provides a large pool of case studies for the application of case survey method (Yin and Heald 1975), it also suggests that more use of this method in the study of M&A issues can accumulate more empirical results as a foundation for theory building.

In short, the current research is the first application of the case survey method on M&As in Taiwan retrieving information from a larger sample of case studies to answer questions of the developed coding scheme and produce cross-sectional empirical research results.

## 5.5 Limitations of the research

Three restrictions in this research need to be highlighted. First, due to resource constraints and possible interference as a result of country-specific conditions, this research is restricted to M&A cases in Taiwan. Hence, the theoretical reasoning and results are not necessarily generalizable and applicable to M&As in other countries.

Second, this research is restricted to case reports published from 2001 to 2005; most cases were from 2000 to 2005. This restriction avoided possible interference due to the regulatory changes in 2001 and concern about information accessibility and informants' memory capabilities. However, it also restricted sample size. As a result,

it impacts the statistical significance of the analytical results to some degree.

Third, during the interviews with the case authors, a distinction between overall integration approach and activity-specific approach in symbiosis (Haspeslagh and Jemison 1991) was often observed. This means that although the overall integration was rated as large or small, the integration activities in each department or function may vary. Thus, those who wish to apply these findings in their integration process must be aware of this limitation. This research gives only a general direction; managements must tailor their approaches contingently to suit the specific conditions in each department or function.

## 5.6 Suggestion for future research

Researchers should apply the case survey method in countries other than Taiwan. The emerging focus on regionalization, in addition to globalization, has been drawing more attention over the past decades, so cross-border flows of capital, labor and knowledge are faster and freer with the introduction of corresponding policies, deregulation and strategic alliances such as NAFTA, EU, APEC, and ASEAN further accelerating the progress. Thus, studies applying the same research method in other countries within the region would contribute useful knowledge for generating cross-sectional, cross-border, and cross-cultural patterns.

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## APPENDICES

### Appendix A: Summary of streams of thought on M&A

| | Central questions | Focus | Conclusion |
|---|---|---|---|
| Capital markets stream | Does M&A create value?<br>If so, for whom? | Acquiring and target firms in the period of M&A announcement. | M&As benefit acquired firm's shareholders but not acquiring firm's.<br>M&As create value for corporate control. |
| Strategic management stream | What types of M&A are likely to be successful?<br>How to search for and evaluate a proper strategic fit? | M&A's impact on individual firms.<br>The relationship between a whole series of characteristics (variables) of the firms and M&A success. | M&A is a method to realize synergy as a result of economies of scale, scope.<br>Address the difficulties of M&A implementation through a concern for better pre-acquisition analysis and post-merger planning. |
| Organizational behavior stream | What effects do M&As have on individuals and organizations? | The impact of M&As on individuals and organization culture. | The congruence between the cultures of two merged organizations will facilitate employee satisfaction and effective integration. |
| Process perspective | How does the integration process affect the attainment of strategic objectives? | Actions to be taken in the integration process.<br>The impact of M&As on firms and individuals. | The actions of management and the process of integration determine M&A performance (extent of synergy realization). |

Source: Organized by the researcher with reference to Haspeslagh and Jemison (1991), pp. 292–309

## Appendix B: Research tool

### Question about the degree of satisfaction with synergy realization of PMI:

Regarding the satisfaction with synergy realization of PMI, can you give your rating for the following items from 1 = low to 5 = high or an "insufficient information" when ratings could not be made based on the case report?

1. Consolidated purchase of input to reduce purchase price or cost per unit (e.g. volume rebates)
2. Consolidated production to reduce production cost per unit (e.g. utilization of excess capacity)
3. Consolidated marketing to reduce marketing cost per unit (e.g. integrated sales force with fewer employees)
4. Consolidation of competitor to increase market power by reducing competition, thereby being able to command higher prices (without losing corresponding volume)
5. Consolidated administration to reduce administrative overhead per unit (e.g. elimination of duplicated head counts)
6. Consolidation of possible supplier or customer to reduce transaction costs per unit (e.g. elimination of intermediate storage, marketing, and purchasing)
7. Access to new geographic market(s) through the other firm's established local sales organization to increase joint sales
8. Cross selling of complementary products to joint customers to increase sales
9. Transfer of current know-how (including R&D) from one firm to the other for more efficient and effective operations
10. Creation of new know how from the interaction between the joining firms that one firm can use to manage its operations more effectively
11. Financial synergy, i.e. free cash flow, risk diversion, and internal capital markets

### Question about M&A motives:

Is the motive of your studied case on M&A for synergy or diversification or mixed? Please code 5 = synergy, 1 = diversification and mixed = 4, 3, 2 subject to the weight carried by synergy or diversification.

**Questions about Contextual factors:**

Can you give your rating 0 as small and 1 as large according to the followings?

1. Difference in management styles between acquired and acquiring firms
2. Difference in size between acquired and acquiring firms
3. Difference in knowledge level between acquired and acquiring firms

**Questions about post merger integration (PMI):**

1. Can you give your rating from 1 being low to 5 being fast in terms of the speed of task integration?
2. Can you give your rating from 1 being low to 5 being fast in terms of the speed of human integration?
3. Can you give your rating from 1 being small to 5 being great in terms of the scope of task integration?
4. Can you give your rating from 1 being small to 5 being great in terms of the scope of human integration?

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- Task integration (Bower 2001): integration of the main functions and operations of the combination, e.g. organization structure (Datta 1991), delegation (Henderson 1989), and integration team/project management (Ashkenas and Francis 2000; Marks and Mirvis 2000).
- Human integration: activities such as redundancy, personnel rotation, reward system (Datta 1991).
- Scope: the degree of similarity achieved or change through the PMI process.
- Speed: the time needed to achieve the intended level of integration.

**Appendix C: Recruitment material for potential participants**

The following is the email correspondence that was sent to the potential participants:

Subject: Your participation in CHIU Hung's research project

Dear Sirs,

This is to invite you to participate in my DBA research, **Post-Merger Integration Strategies: An Integration Process Perspective".** Attached are the "Information Sheet" and the "Consent Form" for your perusal. Please carefully read through the Information Sheet and make your signature in the Consent Form if agreed.

Sincerely Yours

Jackie, CHIU Hung
(O) +65 6782 4907
(HP) +65 9109 3384
email: jc8021@pacific.net.sg

*The researcher will take every care to remove responses from any identifying material as early as possible. Likewise individuals' responses will be kept confidential by the researcher and not be identified in the reporting of the research. However the researcher cannot guarantee the confidentiality or anonymity of material transferred by email or the internet.*

**Appendix D: Information Sheet** (For interviewees)

University of South Australia
Division of Business
International Graduate School of Business

Research project title: Post-Merger Integration Strategies: An Integration Process Perspective

Researcher: Jackie, Hung CHIU, MBA Supervisor's name: Dr. Mark Goh
Telephone +65 6782 4907 Dr. Roland Yeo
Email: jc8021@pacific.net.sg

Name of the participant:

Dear

This is to invite you to participate in my DBA research project—**Post-Merger Integration Strategies: An Integration Process Perspective.** Please note the following:

- Your participation is voluntary.
- The purpose of this research is:
    1. To develop a model incorporating the M&A motives, post merger integration strategy, the contextual factors and M&A performance;
    2. To determine the relationship between post merger integration strategy and the M&A performance, given the M&A motives and contextual factors.
- You are expected to give comments on your own case report according to the research design and/or provide any missing or latent information unreported in the case report during the interview.
- You may withdraw from this research at any time without affecting your position, treatment or care.

- The possible benefits in participating in the research are to get comparative data and pattern analyses beyond individual case studies.
- The interview will be recorded on audiotape or/and written notes.
- The tape or a certified transcript of the tape is raw data and will be securely retained for seven years.
- Your identity can be masked if you request so.
- University of South Australia, my supervisors, those selected case authors, and people who directly involve in this project have rights of access to the data.
- All the information collected as part of the study will be retained for seven years.
- All the information will be stored both in hard copies and in soft copies, and will be kept in my office (435 Orchard Road, #20-05/06, Wisma Atria, Singapore), my portable laptop and my own house (5 Simei Street 3, #09-15, Singapore) separately.
- All records containing personal information will remain confidential and no information that could lead to identification of any individual will be released.
- If you have any ethical concerns about the conduct of this research, please contact

  Ms Gueck Tea, Executive Officer
  IGSB Human Research Ethics Committee
  University of South Australia
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- This project has been reviewed by the University's Human Research Ethics Committee.
- You will be provided with a copy of the final research report when it is finished (tentatively in March 2007)

**Researcher's signature and date:** **Jackie, Hung CHIU** **Apr 20, 2006**

**Interviewed case authors**

| Name | Case No. |
|---|---|
| Kang, H.R. | 1,2,3,4,5,6,7,8 |
| Hsu, S.H. | 11 |
| Wang, K.P. | 12 |
| Hsu, Z.W. | 13 |
| Hsin, Y.H. | 14,15,16 |
| Chen, Y.W. | 18,19 |
| Chen, Nicole | 19 |
| Wu, M.L. | 8,18 |
| Wei, C.C. | 21 |
| Chang, S.L. | 9,10,20,25 |
| Liu, C.L. | 26,27 |
| Hsu, H.K. | 24,28,29 |
| Si. S.C. | 17 |
| Chen, C.H. | 33,34,35,36 |
| Li, P.J. | 42,43,44 |
| Yang, Y. | 41,45 |
| Sung, P.C. | 40,48,46 |
| Hou, T.F. | 51 |

Source: Organized by the researcher

**Appendix E: Consent Form**

Project title: Post-Merger Integration Strategies: An Integration Process Perspective

Researcher's name: Jackie, Hung CHIU
Supervisor's name: Dr. Mark Goh, Dr. Roland Yeo

- I have read the Participant Information Sheet, and the nature and purpose of the research project has been explained to me. I understand and agree to take part.
- I understand the purpose of the research project and my involvement in it.
- I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future.
- I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.

**Name of participant** .....
**Signed**.....**Date**.....

I have provided information about this study to research participants and believe that he/she understands what is involved.

Researcher's signature and date: Jackie, Hung CHIU Apr 20, 2006

## Appendix F: Summary of selected case studies

| Case no. | Acquirer/acquiree | Reference | Year of M&A | Industry (a) |
|---|---|---|---|---|
| 1 | Acer Tech/Acer Comp | (Kang 2005) | 2002 | E |
| 2 | AUO/Unipac | (Kang 2005) | 2001 | E |
| 3 | Liteon/Silitech | (Kang 2005) | 2002 | E |
| 4 | Fareastone/KGT | (Kang 2005) | 2004 | O |
| 5 | Evergreen/UGL | (Kang 2005) | 2002 | O |
| 6 | Chinatrust/Zhuongshin | (Kang 2005) | 2001 | F |
| 7 | Cosmos Bank/Cosmos Note | (Kang 2005) | 2002 | F |
| 8 | Cathay/UWCCB | (Wu 2003; Kang 2005) | 2003 | F |
| 9 | Taisin/Daan | (Chang 2004; Kang 2005) | 2002 | F |
| 10 | UMC/SIS | (Kang 2005) | 2004 | E |
| 11 | HP/Compaq | (Hsu 2005) | 2002 | E |
| 12 | Solomon/Motorola | (Wang 2004) | 2000 | E |
| 13 | Yageo/Philippe | (Chiang 2001; Hsu 2003) | 2000 | E |
| 14 | Smartnet/HAA | (Hsin 2004) | 1999 | E |
| 15 | Smartnet/JI | (Hsin 2004) | 2000 | E |
| 16 | F/G (b) | (Hsin 2004) | 2004 | E |
| 17 | Sysware/Ulstek | (Si 2006) | 2005 | E |
| 18 | Fubon Bank/Taipei Bank | (Wu 2003; Cher 2004) | 2002 | F |
| 19 | SinoPac | (Chen 2004; Ch 2004) | 2001 | F |
| 20 | Huanan Bank/Huanan Note | (Chang 2004) | 2003 | F |
| 21 | Episil/Umchetai | (Wei 2002) | 2000 | E |
| 22 | A (b) | (Hsu 2004) | 1993 | O |
| 23 | A/B (b) | (Peng 2002) | 1998 | O |
| 24 | Yahoo/Kimo | (Hsu 2001; Liu 2002) | 2000 | E |
| 25 | UMC | (Chang 2004) | 2000 | E |
| 26 | RTMART/AP | (Liu 2001) | 1998 | O |

| | | | | |
|---|---|---|---|---|
| 27 | CPIC/SAVECOM | (Liu 2001) | 2000 | O |
| 28 | Digital/Huaguang | (Hsu 2001) | 1995 | E |
| 29 | Compaq/Digital | (Hsu 2001) | 1997 | E |
| 30 | Polygram/UFO | (Chang 2003) | 2003 | O |
| 31 | YL/ChinaUnion | (Hung 2003) | 2003 | F |
| 32 | G_B (b) | (Ho 2004) | 2001 | O |
| 33 | A1 (b) | (Chen 2002) | 1999 | O |
| 34 | T2 (b) | (Chen 2002) | 1999 | O |
| 35 | M3 (b) | (Chen 2002) | 2000 | O |
| 36 | M4 (b) | (Chen 2002) | 2000 | O |
| 37 | MOSEL/VITELIC | (Yu 2001) | 1991 | E |
| 38 | CDBC/GiaHua Bank | (Ku 2003) | 2002 | F |
| 39 | A/B (b) | (Chu 2005) | 2003 | E |
| 40 | B/S1 (b) | (Sung 2005) | 2002 | E |
| 41 | Philips/PPCK1 | (Yang 2001) | 2002 | E |
| 42 | A (b) | (Li 2005) | 2001 | F |
| 43 | B (b) | (Li 2005) | 2002 | F |
| 44 | C (b) | (Li 2005; Tsai 2005) | 2002 | F |
| 45 | Philips/PPCK2 | (Yang 2001) | 2002 | E |
| 46 | B/S3 (b) | (Sung 2005) | 2000 | E |
| 47 | M/C (b) | (Tsai 2005) | 2001 | F |
| 48 | B/S2 (b) | (Sung 2005) | 2000 | E |
| 49 | C/AW (b) | (Chang 2005) | 1998 | O |
| 50 | ASE/Motorala | (Tang 2001) | 2000 | E |
| 51 | Yuanda/Ginghua | (Hou 2001; Wu 2002) | 2000 | F |

Note: (a) E: Electronic/IT related,

F: Finance related,

O: others including transportation, pharmaceutical, FMCG (fast moving consumer goods), chemical, telecom, music, clock businesses.

(b) Fictitious name.

Source: Organized for this research

**Appendix G: Brief about raters**

| Name | Jennifer Yeh | Chi-Ling Liu |
|---|---|---|
| Education | MBA | MBA candidate |
| Experience in M&As | Assistant to CHIU Hung in the integration management of JCMAX (2006).<br>Involvement in the integration of ARCO–Lyondell (1998), Lyondell–Bayer (2000).<br>Integration team member in Lucky Group (1997). | Assistant to CHIU Hung in the integration management of JCMAX (2006).<br>Assistant in a project work on 'Impact of FHC act on Banking Industry in Taiwan' (2004). |

## Appendix H: Test of inter-rater reliability

### Inter-rater Reliability — APPA

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 51 | 100.0 |
| | Excluded (a) | 0 | 0.0 |
| | Total | 51 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| 0.792 | 19 |

**Item Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Purchase cost | 0.94 | 0.18 | 51 |
| Production cost | 0.97 | 0.13 | 51 |
| Marketing cost | 0.93 | 0.20 | 51 |
| Market power | 0.95 | 0.16 | 51 |
| Overheads | 0.91 | 0.22 | 51 |
| Vertical economies | 0.89 | 0.25 | 51 |
| New markets | 0.93 | 0.20 | 51 |
| Cross-selling | 0.89 | 0.25 | 51 |
| Knowledge transfer | 0.91 | 0.22 | 51 |
| Knowledge creation | 0.93 | 0.20 | 51 |
| Financial synergy | 0.75 | 0.32 | 51 |
| Motive | 0.93 | 0.20 | 51 |
| Knowledge | 0.86 | 0.27 | 51 |
| Size | 0.82 | 0.29 | 51 |
| Management style | 0.97 | 0.13 | 51 |
| Speed task | 0.94 | 0.18 | 51 |
| Speed human | 0.95 | 0.16 | 51 |
| Scope task | 0.90 | 0.23 | 51 |
| Scope human | 0.95 | 0.16 | 51 |

**Item-Total Statistics**

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| Purchase cost | 16.45 | 3.48 | 0.12 | 0.79 |
| Production cost | 16.42 | 3.56 | 0.04 | 0.79 |
| Marketing cost | 16.46 | 3.21 | 0.47 | 0.77 |
| Market power | 16.44 | 3.56 | 0.03 | 0.79 |
| Overhead | 16.48 | 3.10 | 0.58 | 0.76 |
| Vertical economies | 16.50 | 3.29 | 0.27 | 0.78 |
| New market | 16.46 | 3.23 | 0.44 | 0.77 |
| Cross-selling | 16.50 | 3.40 | 0.14 | 0.79 |
| Knowledge transfer | 16.48 | 3.15 | 0.50 | 0.77 |
| Knowledge creation | 16.46 | 3.10 | 0.63 | 0.76 |
| Financial synergy | 16.64 | 2.80 | 0.55 | 0.76 |
| Motive | 16.46 | 3.62 | -0.08 | 0.80 |
| Knowledge | 16.53 | 3.02 | 0.53 | 0.76 |
| Size | 16.57 | 2.94 | 0.55 | 0.76 |
| Management style | 16.42 | 3.43 | 0.31 | 0.78 |
| Speed task | 16.45 | 3.42 | 0.21 | 0.79 |
| Speed human | 16.44 | 3.16 | 0.71 | 0.76 |
| Scope task | 16.49 | 3.15 | 0.47 | 0.77 |
| Scope human | 16.44 | 3.41 | 0.28 | 0.78 |

**Scale Statistics**

| Mean | Variance | Std. Deviation | N of Items |
|---|---|---|---|
| 17.4002 | 3.606 | 1.89907 | 19 |

## Appendix I: MRA results

Regression — Baseline Model

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Performance | 2.835 | .619 | 50 |
| Management style | .780 | .418 | 50 |
| Size | .820 | .388 | 50 |
| Knowledge | .640 | .485 | 50 |
| Speed | 3.280 | 1.079 | 50 |
| Scope | 2.950 | .938 | 50 |

**Correlations**

| | Performance | Management style | Size | Knowledge | Speed | Scope |
|---|---|---|---|---|---|---|
| Performance | 1.000 | | | | | |
| Management style | .365** | 1.000 | | | | |
| Size | -.196 | .003 | 1.000 | | | |
| Knowledge | .267* | .105 | -.134 | 1.000 | | |
| Speed | -.019 | -.245* | -.023 | -.330** | 1.000 | |
| Scope | .295* | -.003 | -.109 | -.085 | .266* | 1.000 |

**Variables Entered/Removed[b]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| Baseline | Scope, Management style, Size, Knowledge, Speed[a] | . | Enter |

a. All requested variables entered.
b. Dependent Variable: Performance

**Model Summary**

| Model | R | $R^2$ | Adj. $R^2$ | Std. Error of The Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | F Change | dfl | df2 | Sig. F Change |
| B | .555[a] | .308 | .229 | .544 | .308 | 3.912 | 5 | 44 | .005 |

a. Predictors: (Constant), Scope, Management style, Size, Knowledge, Speed

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| B | Regression | 5.787 | 5 | 1.157 | 3.912 | .005[a] |
| | Residual | 13.017 | 44 | .296 | | |
| | Total | 18.805 | 49 | | | |

a. Predictors: (Constant), Knowledge, Scope, Management style, Size, Speed

b. Dependent Variable: Performance

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Beta | Std. Err. | Beta | | | Zero-order | Partial | Part | Tolerance | VIF |
| B (Constant) | 1.681 | .468 | | 3.591 | .001 | | | | | |
| Management style | .529 | .192 | .357 | 2.753 | .009 | .365 | .383 | .345 | .935 | 1.069 |
| Size | -.206 | .204 | -.129 | -1.008 | .319 | -.196 | -.150 | -.126 | .965 | 1.036 |
| Knowledge | .334 | .172 | .262 | 1.945 | .058 | .267 | .281 | .244 | .870 | 1.149 |
| Speed | .043 | .081 | .076 | .535 | .595 | -.019 | .080 | .067 | .787 | 1.270 |
| Scope | .188 | .087 | .284 | 2.166 | .036 | .295 | .310 | .272 | .914 | 1.094 |

a. Dependent Variable: Performance

**Collinearity Diagnostics[a]**

| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | (Constant) | Management style | Size | Knowledge | Speed | Scope |
| B | 1 | 5.164 | 1.000 | .00 | .01 | .01 | .01 | .00 | .00 |
| | 2 | .371 | 3.729 | .00 | .00 | .04 | .66 | .02 | .01 |
| | 3 | .208 | 4.979 | .00 | .79 | .01 | .09 | .04 | .01 |
| | 4 | .172 | 5.481 | .00 | .01 | .72 | .01 | .05 | .08 |
| | 5 | .063 | 9.068 | .00 | .03 | .03 | .02 | .48 | .75 |
| | 6 | .021 | 15.544 | .99 | .16 | .20 | .21 | .41 | .15 |

a. Dependent Variable: Performance

Regression — Model 1

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Performance | 2.835 | .619 | 50 |
| Management style | .780 | .418 | 50 |
| Size | .820 | .388 | 50 |
| Knowledge | .640 | .485 | 50 |
| Speed | 3.280 | 1.079 | 50 |
| Scope | 2.950 | .938 | 50 |
| Scope x MS | 2.300 | 1.521 | 50 |

**Correlations**

| | Performance | Management style | Size | Knowledge | Speed | Scope | Scope x MS |
|---|---|---|---|---|---|---|---|
| Performance | 1.000 | | | | | | |
| Management style | .365** | 1.000 | | | | | |
| Size | -.196 | .003 | 1.000 | | | | |
| Knowledge | .267* | .105 | -.134 | 1.000 | | | |
| Speed | -.019 | -.245* | -.023 | -.330** | 1.000 | | |
| Scope | .295* | -.003 | -.109 | -.085 | .266* | 1.000 | |
| Scope x MS | .475** | .811** | -.079 | -.017 | -.027 | .554** | 1.000 |

**Variables Entered/Removed[b]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 1 | Scope x MS, Knowledge, Size, Speed, Scope, Management style[a] | . | Enter |

a. All requested variables entered.
b. Dependent Variable: Performance

**Model Summary**

| Model | R | $R^2$ | Adj. $R^2$ | Std. Error of The Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | F Change | dfl | df2 | Sig. F Change |
| 1 | .572[a] | .327 | .233 | .542 | .327 | 3.487 | 6 | 43 | .007 |

a. Predictors : (Constant), Scope x MS, Knowledge, Size, Speed, Scope, Management style

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 6.155 | 6 | 1.026 | 3.487 | .007[a] |
| | Residual | 12.649 | 43 | .294 | | |
| | Total | 18.805 | 49 | | | |

a. Predictors: (Constant), Scope x MS, Knowledge, Size, Speed, Scope, Management style
b. Dependent Variable: Performance

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | Std. Err. | Beta | | | Zero-order | Partial | Part | Tolerance | VIF |
| 1 (Constant) | 2.498 | .867 | | 2.882 | .006 | | | | | |
| Management style | -.458 | .902 | -.309 | -.507 | .615 | .365 | -.077 | -.063 | .042 | 23.736 |
| Size | -.167 | .206 | -.105 | -.813 | .421 | -.196 | -.123 | -.102 | .939 | 1.065 |
| Knowledge | .393 | .179 | .308 | 2.194 | .034 | .267 | .317 | .274 | .795 | 1.258 |
| Speed | .039 | .081 | .068 | .485 | .630 | -.019 | .074 | .061 | .786 | 1.273 |
| Scope | -.105 | .275 | -.159 | -.381 | .705 | .295 | -.058 | -.048 | .090 | 11.118 |
| Scope x MS | .331 | .295 | .812 | 1.119 | .270 | .475 | .168 | .140 | .030 | 33.679 |

a. Dependent Variable: Performance

**Collinearity Diagnostics[a]**

| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (Constant) | Management style | Size | Knowledge | Speed | Scope | Scope x MS |
| 1 | 1 | 5.964 | 1.000 | .00 | .00 | .00 | .01 | .00 | .00 | .00 |
| | 2 | .388 | 3.922 | .00 | .00 | .00 | .49 | .00 | .00 | .01 |
| | 3 | .357 | 4.086 | .00 | .00 | .10 | .15 | .04 | .00 | .00 |
| | 4 | .179 | 5.770 | .00 | .01 | .49 | .00 | .07 | .01 | .00 |
| | 5 | .079 | 8.679 | .00 | .03 | .18 | .01 | .24 | .03 | .01 |
| | 6 | .031 | 13.942 | .12 | .01 | .21 | .29 | .64 | .02 | .03 |
| | 7 | .002 | 51.069 | .87 | .95 | .01 | .05 | .02 | .94 | .95 |

a. Dependent Variable: Performance

Regression — Model 2

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Performance | 2.835 | .619 | 50 |
| Management style | .780 | .418 | 50 |
| Size | .820 | .388 | 50 |
| Knowledge | .640 | .485 | 50 |
| Speed | 3.280 | 1.079 | 50 |
| Scope | 2.950 | .938 | 50 |
| Speed x MS | 2.450 | 1.654 | 50 |

**Correlations**

| | Performance | Management style | Size | Knowledge | Speed | Scope | Speed x MS |
|---|---|---|---|---|---|---|---|
| Performance | 1.000 | | | | | | |
| Management style | .365** | 1.000 | | | | | |
| Size | -.196 | .003 | 1.000 | | | | |
| Knowledge | .267* | .105 | -.134 | 1.000 | | | |
| Speed | -.019 | -.245* | -.023 | -.330** | 1.000 | | |
| Scope | .295* | -.003 | -.109 | -.085 | .266* | 1.000 | |
| Speed x MS | .356** | .794** | -.030 | -.074 | .371** | .179 | 1.000 |

**Variables Entered/Removed[b]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 2 | Speed x MS, Size, Knowledge, Scope, Speed, Management style[a] | . | Enter |

a. All requested variables entered.
b. Dependent Variable: Performance

**Model Summary**

| Model | R | $R^2$ | Adj. $R^2$ | Std. Error of The Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | F Change | df1 | df2 | Sig. F Change |
| 2 | .557[a] | .310 | .214 | .549 | .310 | 3.225 | 6 | 43 | .011 |

a. Predictors :(Constant), Speed x MS, Size, Knowledge, Scope, Speed, Management style

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 2 | Regression | 5.835 | 6 | .973 | 3.225 | .011[a] |
| | Residual | 12.969 | 43 | .302 | | |
| | Total | 18.805 | 49 | | | |

a. Predictors: (Constant), Speed x MS, Size, Knowledge, Scope, Speed, Scope, Management style
b. Dependent Variable: Performance

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | Std. Err. | Beta | | | Zero-order | Partial | Part | Tolerance | VIF |
| 2 (Constant) | 2.195 | 1.139 | | 1.838 | .073 | | | | | |
| Management style | .103 | 1.083 | .070 | .095 | .925 | .365 | .015 | .012 | .030 | 33.368 |
| Size | -.199 | .206 | -.125 | -.967 | .339 | -.196 | -.146 | -.122 | .960 | 1.041 |
| Knowledge | .324 | .176 | .253 | 1.843 | .072 | .267 | .271 | .233 | .850 | 1.177 |
| Speed | -.063 | .278 | -.109 | -.225 | .823 | -.019 | -.034 | -.029 | .068 | 14.613 |
| Scope | .183 | .088 | .277 | 2.078 | .044 | .295 | .302 | .263 | .900 | 1.111 |
| Speed x MS | .115 | .287 | .306 | .399 | .692 | .356 | .061 | .051 | .027 | 36.588 |

a. Dependent Variable: Performance

**Collinearity Diagnostics[a]**

| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (Constant) | Management style | Size | Knowledge | Speed | Scope | Speed x MS |
| 2 | 1 | 5.955 | 1.000 | .00 | .00 | .00 | .01 | .00 | .00 | .00 |
| | 2 | .408 | 3.822 | .00 | .00 | .00 | .51 | .00 | .00 | .00 |
| | 3 | .334 | 4.221 | .00 | .00 | .11 | .13 | .00 | .01 | .00 |
| | 4 | .178 | 5.779 | .00 | .00 | .54 | .00 | .01 | .07 | .00 |
| | 5 | .083 | 8.462 | .00 | .01 | .05 | .06 | .02 | .39 | .01 |
| | 6 | .039 | 12.283 | .05 | .02 | .30 | .14 | .01 | .50 | .02 |
| | 7 | .002 | 60.297 | .95 | .96 | .00 | .06 | .96 | .03 | .95 |

a. Dependent Variable: Performance

Regression — Model 3

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Performance | 2.835 | .619 | 50 |
| Management style | .780 | .418 | 50 |
| Size | .820 | .388 | 50 |
| Knowledge | .640 | .485 | 50 |
| Speed | 3.280 | 1.079 | 50 |
| Scope | 2.950 | .938 | 50 |
| Scope x Size | 2.380 | 1.394 | 50 |

**Correlations**

| | Performance | Management style | Size | Knowledge | Speed | Scope | Scope x Size |
|---|---|---|---|---|---|---|---|
| Performance | 1.000 | | | | | | |
| Management style | .365** | 1.000 | | | | | |
| Size | -.196 | .003 | 1.000 | | | | |
| Knowledge | .267* | .105 | -.134 | 1.000 | | | |
| Speed | -.019 | -.245* | -.023 | -.330** | 1.000 | | |
| Scope | .295* | -.003 | -.109 | -.085 | .266* | 1.000 | |
| Scope x Size | -.013 | -.029 | .808** | -.095 | .118 | .428** | 1.000 |

**Variables Entered/Removed[b]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 3 | Scope x Size, Management style Knowledge, Speed, Scope, Size[a] | . | Enter |

a. All requested variables entered.
b. Dependent Variable: Performance

**Model Summary**

| Model | R | $R^2$ | Adj. $R^2$ | Std. Error of The Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | F Change | dfl | df2 | Sig. F Change |
| 3 | .555[a] | .308 | .211 | .550 | .308 | 3.190 | 6 | 43 | .011 |

a. Predictors: (Constant), Scope x Size, Management style, Knowledge, Speed, Scope, Size

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 3 | Regression | 5.792 | 6 | .965 | 3.190 | .011[a] |
| | Residual | 13.013 | 43 | .303 | | |
| | Total | 18.805 | 49 | | | |

a. Predictors: (Constant), Scope x Size, Management style, Knowledge, Speed, Scope, Size

b. Dependent Variable: Performance

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | Std. Err. | Beta | | | Zero-order | Partial | Part | Tolerance | VIF |
| 3 (Constant) | 1.614 | .728 | | 2.217 | .032 | | | | | |
| Management style | .526 | .196 | .355 | 2.687 | .010 | .365 | .379 | .341 | .921 | 1.085 |
| Size | -.125 | .694 | -.078 | -.180 | .858 | -.196 | -.027 | -.023 | .085 | 11.761 |
| Knowledge | .340 | .180 | .266 | 1.891 | .065 | .267 | .277 | .240 | .813 | 1.229 |
| Speed | .044 | .082 | .077 | .535 | .596 | -.019 | .081 | .068 | .786 | 1.273 |
| Scope | .208 | .187 | .314 | 1.112 | .272 | .295 | .167 | .141 | .201 | 4.967 |
| Scope x Size | -.026 | .211 | -.058 | -.121 | .904 | -.013 | -.017 | -.015 | .072 | 13.979 |

a. Dependent Variable: Performance

**Collinearity Diagnostics[a]**

| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (Constant) | Management style | Size | Knowledge | Speed | Scope | Scope x Size |
| 3 | 1 | 6.995 | 1.000 | .00 | .00 | .00 | .01 | .00 | .00 | .00 |
| | 2 | .427 | 3.745 | .00 | .02 | .00 | .44 | .00 | .00 | .01 |
| | 3 | .248 | 4.916 | .00 | .23 | .01 | .26 | .03 | .00 | .01 |
| | 4 | .201 | 5.460 | .00 | .49 | .01 | .02 | .10 | .01 | .00 |
| | 5 | .092 | 8.092 | .01 | .01 | .03 | .00 | .13 | .08 | .03 |
| | 6 | .033 | 13.485 | .14 | .24 | .02 | .15 | .71 | .04 | .06 |
| | 7 | .004 | 37.319 | .85 | .00 | .92 | .13 | .03 | .86 | .89 |

a. Dependent Variable: Performance

Regression — Model 4

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Performance | 2.835 | .619 | 50 |
| Management style | .780 | .418 | 50 |
| Size | .820 | .388 | 50 |
| Knowledge | .640 | .485 | 50 |
| Speed | 3.280 | 1.079 | 50 |
| Scope | 2.950 | .938 | 50 |
| Speed x Size | 2.680 | 1.631 | 50 |

**Correlations**

| | Performance | Management style | Size | Knowledge | Speed | Scope | Scope x Size |
|---|---|---|---|---|---|---|---|
| Performance | 1.000 | | | | | | |
| Management style | .365** | 1.000 | | | | | |
| Size | -.196 | .003 | 1.000 | | | | |
| Knowledge | .267* | .105 | -.134 | 1.000 | | | |
| Speed | -.019 | -.245* | -.023 | -.330** | 1.000 | | |
| Scope | .295* | -.003 | -.109 | -.085 | .266* | 1.000 | |
| Speed x Size | -.146 | -.150 | .778** | -.265* | .579** | .049 | 1.000 |

**Variables Entered/Removed[b]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 4 | Speed x Size, Scope, Management style Knowledge, Speed, Size[a] | . | Enter |

a. All requested variables entered.
b. Dependent Variable: Performance

Model Summary

| Model | R | $R^2$ | Adj. $R^2$ | Std. Error of The Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | F Change | dfl | df2 | Sig. F Change |
| 4 | .564[a] | .318 | .223 | .546 | .318 | 3.338 | 6 | 43 | .009 |

a. Predictors: (Constant), Speed x Size, Scope, Management style, Knowledge, Speed, Size

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 4 | Regression | 5.975 | 6 | .996 | 3.338 | .009[a] |
| | Residual | 12.829 | 43 | .298 | | |
| | Total | 18.805 | 49 | | | |

a. Predictors: (Constant), Speed x Size, Scope, Management style, Knowledge, Speed, Size

b. Dependent Variable: Performance

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | Std. Err. | Beta | | | Zero-order | Partial | Part | Tolerance | VIF |
| 4 (Constant) | 2.299 | .909 | | 2.528 | .015 | | | | | |
| Management style | .533 | .193 | .360 | 2.763 | .008 | .365 | .388 | .348 | .934 | 1.070 |
| Size | -.877 | .870 | -.549 | -1.008 | .319 | -.196 | -.152 | -.127 | .053 | 18.713 |
| Knowledge | .304 | .177 | .238 | 1.722 | .092 | .267 | .254 | .217 | .830 | 1.205 |
| Speed | -.144 | .250 | -.251 | -.577 | .567 | -.019 | -.088 | -.073 | .084 | 11.934 |
| Scope | .196 | .088 | .297 | 2.238 | .030 | .295 | .323 | .282 | .901 | 1.110 |
| Speed x Size | .201 | .253 | .529 | .794 | .432 | -.146 | .120 | .100 | .036 | 27.943 |

a. Dependent Variable: Performance

**Collinearity Diagnostics[a]**

| Model Dimension | Eigenvalue | Condition Index | Variance Proportions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | (Constant) | Management style | Size | Knowledge | Speed | Scope | Speed x Size |
| 1 | 5.964 | 1.000 | .00 | .00 | .00 | .01 | .00 | .00 | .00 |
| | .486 | 3.503 | .00 | .03 | .00 | .33 | .00 | .00 | .01 |
| | .242 | 4.969 | .00 | .37 | .00 | .39 | .00 | .02 | .00 |
| | .192 | 5.572 | .00 | .28 | .01 | .00 | .01 | .09 | .00 |
| | .075 | 8.899 | .00 | .17 | .03 | .06 | .03 | .36 | .01 |
| | .038 | 12.482 | .09 | .13 | .01 | .11 | .01 | .53 | .04 |
| | .002 | 51.310 | .90 | .00 | .95 | .10 | .95 | .01 | .94 |

a. Dependent Variable: Performance

Regression — Model 5

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Performance | 2.835 | .619 | 50 |
| Management style | .780 | .418 | 50 |
| Size | .820 | .388 | 50 |
| Knowledge | .640 | .485 | 50 |
| Speed | 3.280 | 1.079 | 50 |
| Scope | 2.950 | .938 | 50 |
| Scope x Knowledge | 1.850 | 1.595 | 50 |

**Correlations**

| | Performance | Management style | Size | Knowledge | Speed | Scope | Scope x Knowledge |
|---|---|---|---|---|---|---|---|
| Performance | 1.000 | | | | | | |
| Management style | .365** | 1.000 | | | | | |
| Size | -.196 | .003 | 1.00 | | | | |
| Knowledge | .267* | .105 | 0 | 1.000 | | | |
| Speed | -.019 | -.245* | -.134 | -.330** | 1.000 | | |
| Scope | .295* | -.003 | -.023 | -.085 | .266* | 1.000 | |
| Scope x Knowledge | .375** | .026 | -.109 | .879** | -.263* | .312* | 1.000 |
| | | | -.094 | | | | |

**Variables Entered/Removed[b]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 5 | Scope x Knowledge, Management style, Size, Scope, Speed, Knowledge[a] | . | Enter |

a. All requested variables entered.
b. Dependent Variable: Performance

**Model Summary**

| Model | R | $R^2$ | Adj. $R^2$ | Std. Error of The Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | F Change | dfl | df2 | Sig. F Change |
| 5 | .600[a] | .359 | .270 | .529 | .359 | 4.021 | 6 | 43 | .003 |

a. Predictors: (Constant), Scope x Knowledge, Management, Size, Scope, Speed, Knowledge

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 5 | Regression | 6.759 | 6 | 1.127 | 4.021 | .003[a] |
| | Residual | 12.046 | 43 | .280 | | |
| | Total | 18.805 | 49 | | | |

a. Predictors: (Constant), Scope x Knowledge, Management style, Size, Scope, Speed, Knowledge
b. Dependent Variable: Performance

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | Std. Err. | Beta | | | Zero-order | Partial | Part | Tolerance | VIF |
| 5 (Constant) | 2.284 | .559 | | 4.087 | .000 | | | | | |
| Management style | .655 | .199 | .443 | 3.296 | .002 | .365 | .449 | .402 | .826 | 1.211 |
| Size | -.312 | .206 | -.196 | -1.512 | .138 | -.196 | -.225 | -.185 | .891 | 1.122 |
| Knowledge | -.744 | .602 | -.582 | -1.234 | .224 | .267 | -.185 | -.151 | .067 | 14.923 |
| Speed | .096 | .084 | .168 | 1.147 | .258 | -.019 | .172 | .140 | .697 | 1.434 |
| Scope | -.073 | .164 | -.111 | -.449 | .656 | .295 | -.068 | -.055 | .243 | 4.120 |
| Scope x Knowledg | .363 | .195 | .936 | 1.862 | .069 | .375 | .273 | .227 | .059 | 16.944 |

a. Dependent Variable: Performance

**Collinearity Diagnostics[a]**

| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (Constant) | Management style | Size | Knowledge | Speed | Scope | Scope x Knowledge |
| 5 | 1 | 5.858 | 1.000 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | 2 | .624 | 3.063 | .00 | .01 | .02 | .01 | .01 | .00 | .02 |
| | 3 | .223 | 5.128 | .00 | .63 | .01 | .00 | .04 | .01 | .00 |
| | 4 | .172 | 5.832 | .00 | .02 | .66 | .00 | .04 | .02 | .00 |
| | 5 | .089 | 8.127 | .01 | .01 | .05 | .07 | .18 | .08 | .04 |
| | 6 | .028 | 14.544 | .33 | .27 | .09 | .02 | .69 | .03 | .07 |
| | 7 | .007 | 29.675 | .66 | .06 | .17 | .90 | .05 | .87 | .87 |

a. Dependent Variable: Performance

Regression — Model 6

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Performance | 2.835 | .619 | 50 |
| Management style | .780 | .418 | 50 |
| Size | .820 | .388 | 50 |
| Knowledge | .640 | .485 | 50 |
| Speed | 3.280 | 1.079 | 50 |
| Scope | 2.950 | .938 | 50 |
| Speed x Knowledge | 1.930 | 1.678 | 50 |

**Correlations**

| | Performance | Management style | Size | Knowledge | Speed | Scope | Speed x Knowledge |
|---|---|---|---|---|---|---|---|
| Performance | 1.000 | | | | | | |
| Management style | .365** | 1.000 | | | | | |
| Size | -.196 | .003 | 1.000 | | | | |
| Knowledge | .267* | .105 | -.134 | 1.000 | | | |
| Speed | -.019 | -.245* | -.023 | -.330** | 1.000 | | |
| Scope | .295* | -.003 | -.109 | -.085 | .266* | 1.000 | |
| Speed x Knowledge | .367** | .007 | -.114 | .871** | .087 | -.044 | 1.000 |

**Variables Entered/Removed[b]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 6 | Speed x Knowledge, Management style, Scope, Size, Speed, Knowledge[a] | . | Enter |

a. All requested variables entered.
b. Dependent Variable: Performance

**Model Summary**

| Model | R | $R^2$ | Adj. $R^2$ | Std. Error of The Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | F Change | df1 | df2 | Sig. F Change |
| 6 | .721[a] | .519 | .452 | .459 | .519 | 7.742 | 6 | 43 | .000 |

a. Predictors: (Constant), Speed x Knowledge, Management, Scope, Size, Speed, Knowledge

**ANOVA[b]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 6 | Regression | 9.765 | 6 | 1.628 | 7.742 | .000[a] |
| | Residual | 9.040 | 43 | .210 | | |
| | Total | 18.805 | 49 | | | |

a. Predictors: (Constant), Speed x Knowledge, Management style, Scope, Size, Speed, Knowledge
b. Dependent Variable: Performance

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | Std. Err. | Beta | | | Zero-order | Partial | Part | Tolerance | VIF |
| 6 (Constant) | 3.090 | .510 | | 6.052 | .000 | | | | | |
| Management style | .506 | .162 | .342 | 3.127 | .003 | .365 | .430 | .331 | .934 | 1.070 |
| Size | -.271 | .172 | -.170 | -1.573 | .123 | -.196 | -.233 | -.166 | .958 | 1.044 |
| Knowledge | -1.806 | .513 | -1.414 | -3.521 | .001 | .267 | -.473 | -.372 | .069 | 14.415 |
| Speed | -.378 | .119 | -.658 | -3.186 | .003 | -.019 | -.437 | -.337 | .262 | 3.813 |
| Scope | .268 | .075 | .405 | 3.554 | .001 | .295 | .477 | .367 | .860 | 1.163 |
| Speed x Knowledge | .610 | .140 | 1.652 | 4.350 | .000 | .367 | .553 | .460 | .077 | 12.905 |

a. Dependent Variable: Performance

**Collinearity Diagnostics[a]**

| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (Constant) | Management style | Size | Knowledge | Speed | Scope | Speed x Knowledge |
| 6 | 1 | 5.850 | 1.000 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | 2 | .620 | 3.071 | .00 | .01 | .03 | .01 | .00 | .01 | .02 |
| | 3 | .230 | 5.049 | .00 | .64 | .01 | .00 | .02 | .01 | .01 |
| | 4 | .172 | 5.828 | .00 | .02 | .71 | .00 | .02 | .06 | .00 |
| | 5 | .085 | 8.283 | .00 | .19 | .00 | .05 | .07 | .33 | .06 |
| | 6 | .036 | 12.780 | .20 | .09 | .19 | .07 | .02 | .57 | .11 |
| | 7 | .007 | 29.030 | .80 | .04 | .06 | .87 | .87 | .02 | .80 |

a. Dependent Variable: Performance

Regression — Model 7

**Descriptive Statistics**

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Performance | 2.835 | .619 | 50 |
| Management style | .780 | .418 | 50 |
| Knowledge | .640 | .485 | 50 |
| Speed | 3.280 | 1.079 | 50 |
| Scope | 2.950 | .938 | 50 |
| Speed x MS | 2.450 | 1.654 | 50 |
| Scope x MS | 2.300 | 1.522 | 50 |
| Speed x Size | 2.680 | 1.631 | 50 |
| Scope x Size | 2.380 | 1.394 | 50 |
| Speed x Knowledge | 1.930 | 1.678 | 50 |
| Scope x Knowledge | 1.850 | 1.595 | 50 |

**Correlations**

| | Performance | Management style | Knowledge | Speed | Scope | Speed x MS | Scope x MS | Speed x Size | Scope x Size | Speed x Knowledge | Scope x Knowledge |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Performance | 1.000 | | | | | | | | | | |
| Management style | .365** | 1.000 | | | | | | | | | |
| Knowledge | .267* | .105 | 1.000 | | | | | | | | |
| Speed | -.019 | -.245* | -.330** | 1.000 | | | | | | | |
| Scope | .295* | -.003 | -.085 | .266* | 1.000 | | | | | | |
| Speed x MS | .356** | .794** | -.074 | .371** | .179 | 1.000 | | | | | |
| Scope x MS | .475** | .811** | -.017 | -.027 | .554** | .756** | 1.000 | | | | |
| Speed xSize | -.146 | -.150 | -.265* | .579** | .049 | .192 | -.096 | 1.000 | | | |
| Scope xSize | -.013 | -.029 | -.095 | .118 | .428** | .044 | .190 | .718** | 1.000 | | |
| Speed xKnowledge | .367** | .007 | .871** | .087 | -.044 | .094 | -.066 | .008 | -.052 | 1.000 | |
| Scope xKnowledge | .375** | .026 | .879** | -.263* | .312* | -.100 | .149 | -.189 | .150 | .783** | 1.000 |

**Variables Entered/Removed[b]**

| Model | Variables Entered | Variables Removed | Method |
|---|---|---|---|
| 7-1 | Scope, Management style, Knowledge, Speed[a] | . | Enter |
| 7-2 | Speed x Knowledge, | | Stepwise (Criteria: Probability – of-F-to-enter <=.100, Probability – of – F-to-remove >=.150) |
| 7-3 | Scope x MS | | Stepwise (Criteria: Probability – of-F-to-enter <=.100, Probability – of – F-to-remove >=.150) |

a. All requested variables entered.

b. Dependent Variable: Performance

**Model Summary**

| Model | R | $R^2$ | Adj. $R^2$ | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | $R^2$ Change | F Change | dfl | df2 | Sig. F Chang |
| 7-1 | .540[a] | .292 | .229 | .544 | .292 | 4.634 | 4 | 45 | .003 |
| 7-2 | .701[b] | .492 | .434 | .466 | .200 | 17.298 | 1 | 44 | .000 |
| 7-3 | .723[c] | .523 | .457 | .457 | .032 | 2.850 | 1 | 43 | .099 |

a. Predictors: (Constant), Scope, Management style, Knowledge, Speed

b. Predictors: (Constant), Scope, Management style, Knowledge, Speed, Speed x Knowledge

c. Predictors: (Constant), Scope, Management style, Knowledge, Speed, Speed x Knowledge, Scope x MS

**ANOVA[d]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 7-1 | Regression | 5.486 | 5 | 1.372 | 4.634 | .003[a] |
| | Residual | 13.318 | 44 | .296 | | |
| | Total | 18.805 | 49 | | | |
| 7-2 | Regression | 9.245 | 5 | 1.849 | 8.510 | .000[b] |
| | Residual | 9.560 | 44 | .217 | | |
| | Total | 18.805 | 49 | . | | |
| 7-3 | Regression | 9.839 | 6 | 1.640 | 7.865 | .000[c] |
| | Residual | 8.966 | 43 | .209 | | |
| | Total | 18.805 | 49 | | | |

a. Predictors: (Constant), Scope, Management style, Knowledge, Speed

b. Predictors: (Constant), Scope, Management style, Knowledge, Speed, Speed x Knowledge

c. Predictors: (Constant), Scope, Management style, Knowledge, Speed, Speed x Knowledge, Scope x MS

d. Dependent Variable: Performance

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | Std. Err. | Beta | | | Zero-order | Partial | Part | Tolerance | VIF |
| 7-1 (Constant) | 1.458 | .413 | | 3.532 | .001 | | | | | |
| Management style | .527 | .192 | .356 | 2.745 | .009 | .365 | .379 | .344 | .935 | 1.069 |
| Knowledge | .360 | .170 | .282 | 2.122 | .039 | .267 | .302 | .266 | .891 | 1.123 |
| Speed | .047 | .081 | .081 | .576 | .567 | -.019 | .086 | .072 | .789 | 1.268 |
| Scope | .197 | .086 | .298 | 2.288 | .027 | .295 | .323 | .287 | .925 | 1.081 |
| 7-2 (Constant) | 2.753 | .471 | | 5.842 | .000 | | | | | |
| Management style | .505 | .165 | .341 | 3.068 | .004 | .365 | .420 | .330 | .934 | 1.070 |
| Knowledge | -1.704 | .517 | -1.334 | -3.294 | .002 | .267 | -.445 | -.354 | .071 | 14.184 |
| Speed | -.360 | .120 | -.627 | -3.001 | .004 | -.019 | -.412 | -.323 | .265 | 3.779 |
| Scope | .277 | .076 | .420 | 3.637 | .001 | .295 | .481 | .391 | .866 | 1.155 |
| Speed x Knowledge | .591 | .142 | 1.600 | 4.159 | .000 | .367 | .531 | .447 | .078 | 12.806 |
| 7-3 (Constant) | 3.851 | .797 | | 4.829 | .000 | | | | | |
| Management style | -.732 | .750 | -.494 | -.975 | .335 | .365 | -.147 | -.103 | .043 | 23.160 |
| Knowledge | -1.670 | .507 | -1.307 | -3.294 | .002 | .267 | -.449 | -.347 | .070 | 14.206 |
| Speed | -.373 | .118 | -.649 | -3.165 | .003 | -.019 | -.435 | -.333 | .264 | 3.794 |
| Scope | -.090 | .230 | -.137 | -.392 | .697 | .295 | -.060 | -.041 | .091 | 10.969 |
| Speed x Knowledge | .600 | .139 | 1.626 | 4.313 | .000 | .367 | .549 | .454 | .078 | 12.828 |
| Scope x MS | .414 | .246 | 1.018 | 2.078 | .044 | .475 | .249 | .178 | .030 | 32.820 |

a. Dependent Variable: Performance

**Excluded Variables[d]**

| Model | | Beta in | t | Sig. | Partial Correlation | Collinearity Statistics | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | Tolerance | VIF | Minimum Tolerance |
| 1 | Speed x MS | .360[a] | .472 | .639 | .071 | .027 | 36.392 | .027 |
| | Scope x MS | .909[a] | 1.275 | .209 | .189 | .031 | 32.762 | .031 |
| | Speed x Size | -.124[a] | -.789 | .434 | -.118 | .646 | 1.547 | .558 |
| | Scope x Size | -.139[a] | -.999 | .323 | -.149 | .812 | 1.231 | .765 |
| | Speed x Knowledge | 1.600[a] | 4.159 | .000 | .531 | .078 | 12.806 | .071 |
| | Scope x Knowledge | .725[a] | 1.480 | .146 | .218 | .064 | 15.640 | .064 |
| 2 | Speed x MS | -.284[b] | -.423 | .675 | -.064 | .026 | 38.486 | .026 |
| | Scope x MS | 1.018[b] | 1.688 | .099 | .249 | .030 | 32.820 | .030 |
| | Speed x Size | -.186[b] | -1.400 | .169 | -.209 | .639 | 1.565 | .069 |
| | Scope x Size | -.191[b] | -1.624 | .112 | -.240 | .804 | 1.244 | .070 |
| | Scope x Knowledge | -.220[b] | -.442 | .660 | -.067 | .048 | 20.932 | .048 |
| 3 | Speed x MS | -.227[c] | -.344 | .733 | -.053 | .026 | 38.593 | .017 |
| | Speed x Size | -.158[c] | -1.197 | .238 | -.182 | .627 | 1.596 | .030 |
| | Scope x Size | -.162[c] | -1.374 | .177 | -.207 | .781 | 1.281 | .030 |
| | Scope x Knowledge | -.361[c] | -.736 | .466 | -.113 | .047 | 21.500 | .030 |

a. Predictors in the Model: (Constant), Scope, Management style, Knowledge, Speed
b. Predictors in the Model: (Constant), Scope, Management style, Knowledge, Speed, Speed x Knowledge
c. Predictors in the Model: (Constant), Scope, Management style, Knowledge, Speed, Speed x Knowledge, Scope x MS
d. Dependent Variable: Performance

**Collinearity Diagnostics[a]**

| Model | Dimension | Eigenvalue | Condition Index | Variance Proportions | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (Constant) | Management style | Knowledge | Speed | Scope | Speed x Knowledge | Scope x MS |
| 1 | 1 | 4.350 | 1.000 | .00 | .01 | .01 | .00 | .00 | | |
| | 2 | .352 | 3.516 | .00 | .00 | .69 | .03 | .02 | | |
| | 3 | .208 | 4.574 | .00 | .77 | .08 | .04 | .02 | | |
| | 4 | .064 | 8.229 | .01 | .02 | .01 | .39 | .84 | | |
| | 5 | .026 | 12.945 | 1.00 | .20 | .20 | .53 | .13 | | |
| 2 | 1 | 5.066 | 1.000 | .00 | .01 | .00 | .00 | .00 | .00 | |
| | 2 | .570 | 2.980 | .00 | .02 | .01 | .00 | .01 | .02 | |
| | 3 | .228 | 4.711 | .00 | .60 | .00 | .03 | .01 | .01 | |
| | 4 | .085 | 7.705 | .00 | .20 | .05 | .07 | .31 | .06 | |
| | 5 | .043 | 10.899 | .20 | .13 | .05 | .01 | .62 | .08 | |
| | 6 | .007 | 26.263 | .79 | .04 | .89 | .89 | .03 | .83 | |
| 3 | 1 | 5.844 | 1.000 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| | 2 | .663 | 2.969 | .00 | .00 | .01 | .00 | .00 | .02 | .00 |
| | 3 | .310 | 4.344 | .00 | .01 | .00 | .03 | .00 | .00 | .01 |
| | 4 | .093 | 7.938 | .01 | .03 | .00 | .02 | .03 | .00 | .01 |
| | 5 | .080 | 8.528 | .02 | .00 | .06 | .05 | .00 | .12 | .01 |
| | 6 | .008 | 26.975 | .11 | .02 | .90 | .85 | .07 | .83 | .03 |
| | 7 | .002 | 51.008 | .87 | .94 | .01 | .05 | .89 | .03 | .93 |

a. Dependent Variable: Performance