Developing a Decision Making Model for Selecting an IT Post-Merger Integration Strategy

Byung Wan Suh* · Seung Ik Baek**

Abstract

M&A (Merger and Acquisitions) is a standard corporate strategy frequently used by companies seeking to secure new growth engines and gain a solid foothold in their markets in order to become more globally competitive. To achieve the original goals of M&A, the two involved parties need to invest significant time and resources in integrating all aspects of the companies. A well-planned post-merger integration of information technology (IT PMI) by the two M&A parties is considered a crucial and difficult process because IT provides a fundamental infrastructure for integration. Considering various internal and external factors, the two parties normally formulate an IT PMI strategy. The many IT PMI strategies can be categorized into four major types: Renewal, Takeover, Standardization, and Synchronization. This study aims to develop a decision making model to help merger company and IT managers select the proper IT PMI strategy. More specifically, we identify key determinants that need to be considered when selecting a proper IT PMI strategy. The relative importance of each determinant is defined by analytic hierarchy process (AHP) analysis. Finally, this study evaluates each IT integration strategy under the identified determinants.

Keywords : Mergers and Acquisitions(M&A), Post Merger Integration, Decision Making Model, AHP

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* First Author, Ph.D. Candidate, Seoul School of Integrated Sciences and Technologies, e-mail : byungwan.suh@stud.assist.ac.kr
** Corresponding Author, Professor, School of Business, Hanyang University, e-mail : sbaek@hanyang.ac.kr

1. Introduction

In today's fast-changing business environment, corporations are constantly pressured to seek new growth strategies-mostly through mergers and acquisitions (M&A). Businesses have generally struck M&A deals to cut their production costs by achieving economies of scale, to bring about a synergy effect, to increase their market dominance, or to improve their capabilities for future business. In today's global market, corporations proactively use their M&A strategies to improve their global competitiveness by securing new growth engine and to gain a strong foothold in the market [Björkaman et al., 2007].

Corporations often face a variety of difficulties with integration through M&A, such as differences in organizational management styles, corporate cultures, and information systems. Many corporations have failed to maximize the intended synergy effect of post-merger integration (PMI), instead only suffer from its downsides - declining productivity, shrinking market share, falling profits, brain drain as their talents leave for other companies [Merali and McKiernan, 1993]. In particularly, it is often more difficult and risky to perform successful cross-border (international) M&A deals due to heterogeneous cultures, language barriers, external political clout, or different national regulations [Angwin and Savill, 1997]. The success of M&A heavily depends on how well the two companies identify, harmonize, and integrate their different aspects. The two parties of an M&A transaction should compose a comprehensive plan for their post-merger procedures to ensure mutually beneficial cooperation between the two complex entities. This process is the keystone of success in corporate M&A activities. Successful post-merger integration of information technology (IT PMI) have become extremely important because IT provides the fundamental infrastructure for integration [Giacomazzi et al., 1997; McKiernan and Merali, 1995; Robbins and Stylianou, 1999; Stylianou et al., 1996; Wijnhoven et al., 2006].

Through a methodical review of existing literature, this study has identified diverse determinants of IT PMI, prioritized the determinants, and analyzed IT PMI strategies under the identified determinants. The purpose of this study is to develop a decision making model help merger company and IT managers select the proper IT PMI strategy, using Delphi and Analytic Hierarchy Process (AHP) methods.

2. LIterature Review

2.1 Merger and Acquisitions (M&A)

Broadly, M&A indicates an activity of a corporation performed to influence another corporation's management control. M&A is one of the management strategies in foreign direct investment method often used by companies to improve global competitiveness. M&A can take place in any sector, regardless of size or industry [Balle, 2008]. In today's global business environment, M&A is considered a means to increase profits and reduce spending by obtaining and allocating new management resources [Wolf, 2003]. The increase in M&A occurrences

can be explained by diverse factors, such as fierce competition in the market, technological evolution, low interest rates, and legal changes in the financial market [Antila and Kakkonen, 2008].

All M&A companies have specific intentions for their M&A deals that vary depending on the strategic independence level and organizational environment of the two involved parties. M&A deals are normally performed (1) to merge two parties and reduce production costs by achieving economy of scale, (2) to achieve symbiosis or synergy effect, and enhance market dominance, and (3) to protect one of the parties in order to continue to strengthen its business capabilities down the road [Haspeslagh and Jemison, 1991; McKiernan and Merali, 1995; Wijnhoven et al., 2006]. Bower [2001] stated that the rationales of M&As could be placed into one of five categories determined by analyzing deals involving greater than USD 500 million in deals in the U.S. from 1997 to 1999. The five categories include overcapacity M&A, product or market extension M&A, geographic roll-up M&A, M&A as R&D, and industry convergence M&A.

Previous research on foreign direct investment (FDI) has largely been dominated by the theory of transaction cost economics, which emphasizes minimization of risks and inefficiencies when entering overseas markets. The research has also focused on the eclectic ownership-location-internalization theory, which focuses on the uncertainties and risks posed by cultural and institutional environments of vastly different nations [Dunning, 1993; Williamson, 1975]. Especially, Lajoux [2006] pointed out that cross-border M&A activities tend to fail because the parties do not integrate their corporate strategies or culturesproperly. For this sense, well-planned post-merger integration is gaining significance attention from M&A specialists [Ramaswamy, 1997].

2.2 Post-Merger Integration (PMI)

Post-Merger Integration (PMI) refers to post-merger management of a company that is acquired or merged with the other party of an M&A. This process is designed to meet the organization's post-M&A objectives in terms of procedural, physical, sociocultural, and managerial activities that facilitate the harmonious operation of each organizational component. Successful PMI should initiate proper control and resolution of conflicts [Shrivastava, 1986].

According to the definition of Borys and Jemison [1989], M&A creates a new organization by integrating two separate entities [Borys and Jemison, 1989]. In other words, two different companies are amalgamated into a complex new organization. To achieve synergy through post-merger value creation processes, M&A parties should construct a proper management mechanism that catalyzes interactions within the integrated organization and ensures organizational stability.

Birkinshaw et al. [2000] stated that post-merger integration is largely divided into two management processes: task integration and human integration. Task integration is designed to guarantee smooth transfer of corporate capabilities and successful resource sharing. Mean-

while, human integration focuses on employee satisfaction with M&A and the creation of shared identity. Communication skills and leadership are extremely important throughout the entire post-merger process. Haspeslagh and Jemison [1991] viewed task integration as a process that creates the proper environment for the seamless transfer of corporate capabilities. Through company mergers, an integrated organization is equipped with abundant resources and capabilities that can lead to much-needed synergy. Task integration hinges on the degree of similarity in business strategies formulated by both M&A parties. Other studies have described PMI as change in an organization's culture that ensures the effective moderation of functional operations while facilitating the integration of organizational structures, systems, and entire functions. PMI success or failure is determined by whether a change is unilaterally carried out by one M&A party or through the close coordination of both parties. In other words, successful PMI is achieved through complex, mutually complementary moderation processes between two companies [Datta et al., 1992].

There are not many researches in IT areas. Recently, Alaranta and Kautz [2012] tried to develop a theoretical framework for the integration of information systems after M&A. The framework integrates three perspectives : a structuralist, an individualist, and an interactive process perspective to analyze and understand such integration. Most researches on PMI have centered on case analysis because each M&A takes place in a unique context [Wolf, 2003]. PMI often involves a long process that requires significant time and effort in order to conductextensive data collection. In addition, secondary datais insufficient to support research statements [Suh and Baek, 2011].

2.3 IT Integration Strategies

Webber and Pliskin [1996] defined IT integration in the M&A context as the extent of the integration of IT and data processing functions with financial systems, which are usually critical components. The findings point to a positive relationship between IT integration and its performance. Robbins and Stylianou [1999] modified the IT integration success measure to fit with the post-merger system integration context. The improved IT capability construct was added. They argued that the measure relating to improved IT capabilities that helped support the underlying motives for the merger is important and should be included. Compared with previous conceptualized IT integration studies, these studies dealt with IT integration through various considerable factors between two entities. Because IT integration is very complex and difficult, their integration with different cultures and management styles from merging two companies presents enormous hurdles [Radcliff and LaPlante, 1999].

IT integration is mentioned as one of the crucial factors for successful mergers [Batelaan and Veltman, 2002]. When IT in mergers is discussed, it is typically to be found in industry and professional journals, where it focused on technical aspects of integration. Deciding on how to integrate the IT in merger contexts require a

comprehensive view that includes strategic, organizational and IT characteristics. According to Giacomazzi et al. [1997] and Johnson and Yetton [1996], there are three IT integration objectives, which we understand as three different IT integration ambition level: (1) complete integration is used to integrate two vastly different information systems fully, requiring an enormously ambitious plan; (2) partial integration prioritizes all the necessary work, first integrating the most important process and system and keeping the rest for later; and (3) marginal integration aims for co-existence so that the two parties of the integration can maintain their entities without many critical changes, only pursuing the necessary data exchanges or consolidation processes that are absolutely. In a nutshell, depending on the purpose of and the willingness for integration, information system integration can be implemented in the form of complete, partial, or co-existing integration [Johnston and Yetton, 1996; Wijnhoven et al., 2006].

There is no systematic guideline in determining a proper IT integration level. However, Wijnhoven et al. [2006] suggested four different IT integration strategies: Renewal, Takeover, Standardization, and Synchronization. A renewal strategy discards all IT systems of both parties and replaces them with a completely new IT system. The takeover strategy discards all corporate systems of one party and replaces them with systems of the other party. Standardization strategies select the better ofthe two parties involved and perform the newly integrated organization under this standard. Synchronization strategies are oriented toward coexistence that allows each party to retain its original systems, even if both parties should regularly synchronize unnecessary systems. Renewal and takeover methods show higher ambition for integration than the standardization method, while the synchronization method demonstrates lower ambition for integration than standardization. M&A parties choose one of the four IT integration strategies by considering their internal and external factors. However, other studies have described that these factors are weighted differently by M&A cases, depending industry characteristics, corporate or national cultural, and other M&A unique situations [Suh and Baek, 2012].

2.4 Framework for Determinants of IT PMI

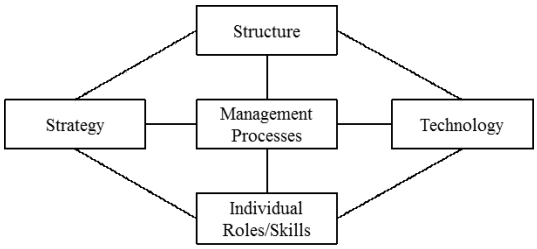
Many scholars have attempted to explain how the corporate innovations are strategically interwoven with information systems through M&A [Mehta and Hirschheim, 2007; Wijnhoven et al., 2006; Stylianou et al., 1996] have sought to understand PMI with regard to company management, information system resources, IT integration, and the preparedness for M&A.

In particular, Morton's "MIT90s Framework" has been found useful when considering the impacts of IT on organization. The "MIT90 Framework" comprises five forces that interact within an IT enabled organization in response to the external environment. These forces are (1) Strategy: defined in terms of choices pertaining to the position of the business in the competitive market arena, (2) Structure: the way the organization is partitioned and how the partitions in-

terrelate, (3) Individual roles/skills: concerned with people within the organization, tasks they undertake, and the education and training they require to perform their functions, (4) Management processes: standardized sequences of activities adopted by organizations to undertake the tasks they perform regularly, (5) Technology: IT that can be applied to facilitate business processes [Morton, 1991]. The "MIT90s Framework" illustrates the interrelationships of these five components, as shown in <Figure 1>. Essentially, changes to any of the components will result in compensatory changes in the others. Johnston and Yetton [1996] also applied the elements of the "MIT90s Framework" as an analytical framework to analyze the fit of IT PMI to a particular situation.

A number of recent studies have explored IT PMI determinants through case studies. Wijnhoven et al. [2006] looked into three M&A cases of Australian national hospitals and attempted to conceive an IT alignment model. Mehta and Hirschheim [2007] placed emphasis on the strategic alignment between business and IT in M&A cases and theorized about IT integration decisions by analyzing the M&A activities of U.S. based companies in three different industries.

We examine our decision making model by incorporating "MIT90s Framework" to create a structure to analyze the priority of key determinants in M&A. In doing so, we broaden the usual technical focus of the term 'key determinant' to define it as the organizational gestalt of strategy, structure, management processes, technology, and individual roles/skills which constitute the key determinants in M&A parties.



〈Figure 1〉 Simplified MIT Corporate Research Framework on Future Informatization ("MIT90s Framework") [Morton, 1991]

3. Research Method

3.1 Research Methodology

This research utilized the Delphi Analysis technique along with AHP. First, key IT PMI factors derived from previous studies were analyzed to identify objective determinants using the Delphi technique and criteria set by PMI/IT professionals. In the process of deriving key determinants and strategic alternatives for IT PMI, AHP analysis was used to arrive at the decision making process. As described by the purpose of this study, IT managers needs from PMI experts' option and experiences for driving a useful decision making. This analysis is suited for the use of multiple criteria to verify the determinants for Multi Criteria Decision Making.

Delphi method is a structured communication technique, originally developed as a systematic, interactive forecasting method which relies on a panel of experts. In addition, the decision making model was based on variables defined by AHP analysis conceived and developed by T. Saaty. Through hierarchical analysis on decision making problems, AHP analysis offers

the best alternative. In particular, this process can be used as a methodology for decision making and for prioritizing processes. Through pairwise comparison of factors that compose the decision making hierarchy, the knowledge, experience, and intuition of evaluators can be determined [Saaty, 1980]. Due to its ability to provide qualitative and quantitative data, AHP has proven beneficial for decision making when the factors are difficult to measure.

AHP can be harnessed in a variety of fields where a proper decision making process is needed to devise policies or strategies because its theories have already been mathematically proven, and it has various applications suited to many purposes. In particular, targeting a small number of proven experts in the specific field, even 9 experts, AHP is a valid social science research method [Kong et al, 2008]. Also, AHP method is commonly used not only in business management decision making processes, but also in various information system researches [Oh and Ha, 2006; Wei et al., 2005].

3.2 Variables

The variables were defined based on previous studies to analyze both key determinants and alternatives for IT PMI. As seen in <Table 1>, five of the first level criteria regarding crucial PMI variables are defined using the "MIT90s framework," which was used to construct the AHP-based research model. On this basis, 20 variables mentioned in previous research are defined as second level criteria.

The selection of a proper IT PMI strategy is affected by the M&A type, M&A purpose, and previous experience with M&A, along with the quality of the M&A plans. Depending on the existence of a well-defined M&A strategy, companies might select different IT integration methods. Similarities in the sizes, cultures, business types, and corporate strategies of the merging companies influence integration plans. A simpler IT PMI strategy can be easily conducted if the merging companies have many similarities and if fewer innovative methods can be used for IT integration. Furthermore, the capability of the M&A team, the participation of the IT department and end users, and the CEO (Chief Executive Officer)'s commitment also affect the decisions regarding the extent of IT integration after M&A. In addition, the complexity of merging the companies, the scope and depth of integration, and the merging speed influence the selection of IT PMI strategy. Moreover, the standardization, maturity, and compatibility of IT are key factors of IT integration.

This study categorized IT integration methods into four different kinds: Renewal, Standardization, Takeover, and Synchronization. Renewal involves discarding the IT systems of both merging companies and starting with a completely new system. With standardization, the standard for the new company is a combination of the best elements of the two existing systems. Takeover involves replacing the system of one company with that of the other. Synchronization realizes only marginal IT integration by creating software and hardware bridges to consolidate data or by periodically synchroni-

zing the different systems [Wijnhoven et al., 2006]. By considering the factors shown in <Table 1>, a merger company may choose one IT PMI strategy to use.

〈Table 1〉 Decision Factors in Selecting an IT PMI Strategy

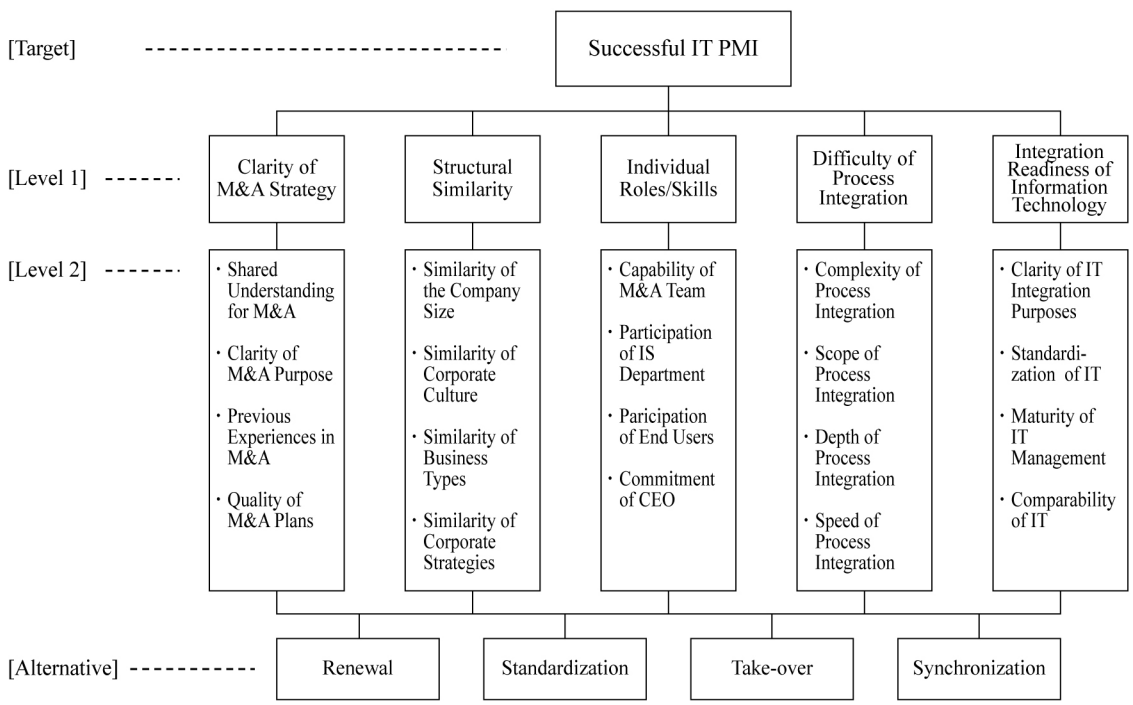
First Level Criteria	Second Level Criteria	Definition	Related References
Clarity of M&A Strategy	Shared Understanding of M&A	Understanding level about M&A	Conyon et al. [2002] Franks and Mayer [1996]
	Clarity of M&A Purpose	Clarity level of M&A purpose : Absorption, Symbiosis, or Preservation	Larsson and Finkelstein [1999] Seo and Hill [2005]
	Previous Experience in M&A	Existence of previous M&A experience	Schuler and Jackson [2001] Stylianou et al. [1996]
	Quality of M&A Plans	Quality of strategic M&A planning	Robbins and Stylianou [1999] Schuler and Jackson [2001] Stylianou et al. [1996]
Structural Similarity	Similarity of Company Sizes	Similarity in sales and number of employees from merging companies	Seo and Hill [2005] Shrivastava [1986]
	Similarity of Corporate Cultures	Similarity between corporate cultures of merging companies	Alaranta [2005] Teerikangas and Very [2006]
	Similarity of Business Types	Similarity between markets of merging companies	Giacomazzi et al. [1997] Robbins and Stylianou [1999]
	Similarity of Corporate Strategies	Similarity of strategies for operational procedures	Larsson and Finkelstein [1999]
Individual Roles/Skills	Capability of the M&A Team	Qualification and capability of the M&A team	Ashkenas and Francis [2000] Schuler and Jackson [2001]
	Participation of IT Department	Participation of IT department in M&A	Stylianou et al. [1996]
	Participation of End Users	Participation of field workers (and how much they understand)	Robbins and Stylianou [1999]
	Commitment of CEO	Leadership of the CEO in terms of PMI	Birkinshaw et al. [2000] Shrivastava [1986]
Difficulty of Process Integration	Complexity of Processes Integration	Routine work process between the merging companies	Birkinshaw et al. [2000] Pablo [1994]
	Scope of Process Integration	Scope of operational integration	Birkinshaw et al. [2000] Datta et al. [1992]
	Depth of Process Integration	Depth of operational integration	Birkinshaw et al. [2000] Datta et al. [1992]
	Speed of Process Integration	Speed of operational integration	Angwin [2004], Epstein [2004]
Integration Readiness of Information Technology	Clarity of IT Integration Purposes	Existence of well-defined goals of IT Integration	Stylianou et al. [1996] Wijnhoven et al. [2006]
	Standardization of IT	Degree of IT standardization	Robbins and Stylianou [1999]
	Maturity of IT Management	Maturity Level of IT management	Alaranta [2005]
	Compatibility of IT	Compatibility of H/W, S/W, network, database, and architecture'	Stylianou et al. [1996]

3.3 Research Model and the Steps of Analysis

The purpose of this research is to assist companies in establishing strategic IT PMI planning by suggesting a decision support model that analyzes the priorities of key determinants. According to the AHP based decision analysis process, a hierarchy is established for use in the model. The first level includes five criteria, while the second level includes 20 sub-level criteria. These two levels are followed by four alternatives. The proposed hierarchical research model is shown in <Figure 2>.

An AHP analysis process goes through five steps as follows [Saaty, 1980]: The first step establishes the problem of decision making as a hierarchy, which involves breaking down the decision making process into different levels. Then, pairwise comparison of decision elements takes place, comparing determinants that are at the same level to produce the results that become the input data. The third step imposes an eigenvalue to estimate the relative weights of the compared determinants. The next step involves checking for logical consistency and verifying a Consistency Ratio (CR). Usually, when the CR value is lower than 0.1, it is considered consistent. The fifth step includes prioritizing the bottom-most alternatives, which is achieved by aggregating the relative weights of the determinants.

Another basic consideration of AHP analysis is to evaluate and compare the importance of each factor. A geometric average was used to find the average value of the importance of many responders, as this value is well suited for measuring the average of different factors.



〈Figure 2〉 Research Model using AHP

3.4 Data Collection

Initial analysis using the Delphi technique began in October 2011, targeting professionals with experience in IT PMI to produce objective determinants. The second AHP survey lasted from December 1~23, 2011, with one-on-one, about 60 minute interviews of 16 people. A simplified AHP questionnaireis shown below in Appendix 1. Data sampling considered professionalism, so the interviewees were IT PMI professionals who had worked in related fields for at least five years. Demography data included 81.3% professionals who had worked in the related field for over 11 years and more than 62.5% who had Master's degrees.

The weights were evaluated by MS Excel 2000 software, and the questionnaires consisted of 11 questions. The responders' CR for all questionnaires was less than 0.1, which individual values of 0.0310, 0.0033, 0.0083, 0.0116, 0.0204, 0.0728, 0.0130, 0.0088, 0.0063, 0.0018, and 0.0093. These values less than 0.1 indicate that the answers were both logically consistent and meaningful.

〈Table 2〉 Demography Information

Characteristics		Frequency	Ratio(%)
Work Experience in the related field	5~10 years	3	18.8%
	11~15 years	5	31.3%
	Over 16 years	8	50.0%
Professional Area	Non-IT	8	50.0%
	IT	8	50.0%
Highest Education Received	Bachelor's degree	6	37.5%
	Master's degree	7	43.8%
	Doctoral degree	3	18.8%

4. Analysis Results

4.1 Comparison of the Evaluation Factors

The priority and weights of the evaluation areas, factors, and attributes of the proposed research model are shown in <Table 3>. In <Table 3>, local indicates the weights in each level, and global indicates the weights calculated by multiplying local values. Global values are used to rank the evaluation area, factor, and attributes.

According to the outcome for IT PMI determinant priority for first level criteria, Clarity of M&A Strategy (0.3653), Structural Similarity (0.2583), Individual Roles and Skills (0.1542), Difficulty of Process Integration (0.1340), and Integration Readiness of IT (0.0881) are the most essential factors, in that order. Henderson and Venkatraman [1993] have illustrated that the strategic alliance between operational strategies and IT strategy affects the company's success. Similarly, this research shows that, if the company's M&A strategy formed a close strategic alliance with IT, the business strategy would directly affect IT PMI success. Our research findings show consistent results.

The analysis results of the second level criteria for "Clarity of M&A Strategy" show that "Clarity of the M&A purpose (0.4612)" holds significant importance compared to "Previous experience in M&A (0.2007)," "Shared Understanding for M&A (0.1608)," and "Quality of M&A Plans (0.1774)." This clearly reveals that, for all M&A strategies, the purpose can play a more critical role than experience or plans.

The analyzed findings of second level criteria

〈Table 3〉 Weights and Priority of Evaluation Variables for IT PMI

First level Criteria	The weights of areas (Local)	Second Level Criteria	The weights of evaluation factors (Local)	Priority of attributes (Local)	The weights of evaluation attributes (Global)	Priority of attributes (Global)
Clarity of M&A Strategy	0.3653	Shared Understanding for M&A	0.1607	4	0.0587	6
		Clarity of M&A Purpose	0.4612	1	0.1685	1
		Previous Experience in M&A	0.2007	2	0.0733	4
		Quality of M&A Plans	0.1774	3	0.0648	5
Structural Similarity	0.2583	Similarity of the Company Sizes	0.1664	3	0.0430	9
		Similarity of Corporate Cultures	0.2098	2	0.0542	7
		Similarity of Business Types	0.1629	4	0.0421	11
		Similarity of Corporate Strategies	0.4609	1	0.1191	2
Individual Roles and Skills	0.1542	Capability of the M&A Team	0.1008	4	0.0155	18
		Participation of IT Department	0.1494	3	0.0230	17
		Participation of End Users	0.1857	2	0.0286	14
		Commitment of CEO	0.5641	1	0.0870	3
Difficulty of Process Integration	0.1340	Complexity of Process Integration	0.2191	3	0.0294	13
		Scope of Process Integration	0.3482	1	0.0466	8
		Depth of Process Integration	0.2397	2	0.0321	12
		Speed of Process Integration	0.1929	4	0.0258	15
Integration Readiness of Information Technology	0.0881	Clarity of IT Integration Purposes	0.4793	1	0.0422	10
		Standardization of IT	0.2762	2	0.0243	16
		Maturity of IT Management	0.1177	4	0.0104	20
		Compatibility of IT	0.1269	3	0.0112	19
Total	1.0000		5.0000		1.0000	

for “Structural Similarity” show that “Similarity of Corporate Strategies (0.4601)” is the most significant factor. Compared to “Similarity of Company Sizes (0.1664),” “Similarity of Cultures (0.2098),” and “Similarity of Business Types (0.1629),” “Similarity of Corporate Strategies” for both merging companies is the most important determinant within the criteria. The structural contexts of a company also involve important IT PMI determinants.

In the “Individual Roles and Skills” category, ”Commitment of CEO (0.5641)” was the most significant determinant compared to ”Capability of the M&A team (0.1008),” ”Participation of the IT Department (0.1494),” and ”Participation of End Users (0.1857).” As shown in the research results of Nah et al. [2001], the success or failure of a company-wide project such as IT PMI depends on the CEO’s dedication and role. Typically, PMI tends to be a top-down approach driven by top corporate management such as the Chief Information Office (CIO) or CEO. Because of this, high “Commitment of CEO” is essential for effective decision making.

According to the results regarding “Difficulty of Process Integration,” “Scope of Process Integration (0.3482)” was found to be the most important factor. The least influential factor was “Speed of Process Integration (0.1929),” whereas the importance of “Complexity of Pro-

cess Integration" and the "Depth of Process Integration" were 0.2191 and 0.2397, respectively.

In terms of "Integration Readiness of IT," the "Clarity of IT Integration Purposes" showed the highest significance value of 0.4792. In order of importance, the value of "Standardization of IT" was 0.2762, "Compatibility of IT" was 0.1269, and "Maturity of IT Management" was 0.1177. This finding is most likely due to recent swift advancements in IT, which made IT more of a tool than a goal. The result can also be explained by the fact that, once the purpose of IT integration is firmly established, IT standardization, compatibility, and maturity can be followed with off-shelf IT solutions such as ERP (Enterprise Resource Planning). "Clarity of IT Integration Purpose" becomes important when the alignment between business and IT strategy is emphasized for improving organizational performance [Henderson and Venkatraman, 1993; Mehta and Hirschheim, 2007; Johnston and Yetton, 1996; Wijnhoven et al., 2006].

The analysis for overall attributes and their priorities (Global) revealed that the "Clarity M&A Purpose," "Similarity of Corporate Strategies," and the "Commitment of CEO" were the most important determinants. Attributes such as "Maturity of IT Management," "Compatibility of IT," and the "Capability of the M&A Team," were relatively low in importance.

4.2 Evaluating Alternative IT PMI Methods

After identifying key determinants and comparing their importance in the selection of a proper IT PMI strategy, this research evaluated four major IT PMI strategies under each determinant. <Table 4> shows that "Takeover" and "Standardization" are preferred to "Renewal" and "Synchronization" strategies. In particular, companies might prefer "Takeover" or "Standardization" strategies if the M&A strategy is clear to both parties, their internal/external structures are similar, their employees have interest in M&A, process integrations are complicated, and their information systems are ready for integration.

"Takeover" involves using the IT of one of the merging parties as the system of the newly

〈Table 4〉 Results of Alternatives Priorities by First Level Criteria

Alternative	Clarity of M&A Strategy	Structural Similarity	Individual Roles and Skill	Difficulty of Process Integration	Integration Readiness of IT
Renewal	0.1167	0.0824	0.1456	0.1312	0.0829
	Fourth	Fourth	Fourth	Fourth	Fourth
Takeover	0.3621	0.3402	0.2891	0.3289	0.3038
	First	Second	Second	First	Second
Standardization	0.3309	0.3552	0.3348	0.3092	0.3462
	Second	First	First	Second	First
Synchronization	0.1903	0.2222	0.2405	0.2298	0.2671
	Third	Third	Third	Third	Third

formed company. In this strategy, fast integration is possible as no new processes or systems will be developed [Wijnhoven et al., 2006]. "Standardization" integrates similar IT functions, or only the software packages that support similar business processes across the whole company [Giacomazzi et al., 1997]. This is also called a common systems approach, in which one system is selected as preferential for a certain process without a clear statement of the objective superiority of that system. The other existing packages remain operational [Wijnhoven et al., 2006]. To quickly establish synergy and diminish PMI side effects, similar industry parties should be merged. The recent upsurge in demand for fast PMI can be realized with both methods.

"Synchronization" involves keeping an existing system intact for both of the merging companies. It was ranked third in all criteria. This method tends to cost the least and is generally adopted when ambition for M&A is weak. According to the research results, "Synchronization" is a mediocre choice compared to the other types of integration. "Renewal" ranked fourth among the alternatives because establishing a new IT system for both the target and the acquiring companies is very risky. Because massive investment ensues after an M&A, the companies would have to experience radical changes and make impractical investments. For these reasons, renewal is a less favorable option.

According to the analysis of each determinant and comparisons among them, "Takeover" and "Standardization" are the best options, while "Renewal" is the least favored option.

5. Conclusion

This study's purpose was to establish the priority of determinants that companies should consider for IT PMI when planning an M&A. For the managerial perspectives, they select an IT integration method after evaluating and prioritizing from various determinants, so that we hope that our study can give them efficient strategic insights for making a decision. We also suggest better ways to utilize appropriate IT integration methods to establish properly integrated strategic planning. First, 20 determinants of IT integration were verified through the literature. These factors were classified into second level criteria using the Delphi technique. The first level criteria were determined by a "MIT90s framework," which views the determinants related to strategies, process, structure, human resources, and technology.

Among the first criteria level, "Clarity of M&A Strategy" and "Structural Similarity" were analyzed to be of great importance. "Individual Roles and Skills," "Difficulty of Process Innovation," and "Integration Readiness of IT" were deemed highly important, in that order. "Takeover" and "Standardization" were deemed high priority alternatives for IT integration, while "Renewal" ranked low. The results show that "Clarity of M&A Purpose," "Similarity of Corporate Strategies," and "Commitment of CEO" are the key determinants for a successful IT PMI. For effective and successful IT integration, "Standardization" and "Takeover" integration methods should be considered.

This study used both the Delphi technique and

AHP analysis of professionals to study determinants. This research utilized professionals who have had experience in M&A or PMI and used AHP to analyze the factors that play significant roles in decision making regarding IT integration strategy. The research could be improved with the development of a method that increases statistical precision by using more samples when more companies undergo cross-border M&A. In addition, in order to evaluate the decision making model for an IT PMI strategy, future research such as observational methods such as ethnographies and study for the whole life cycle of IT PMI, starting from strategic planning, can be done. In this paper, we used a "MIT90s framework" and the resource-based view or technology-organization-environment framework, which is commonly used in recent information system research, could be utilized to consider external factors such as markets, clients, and competitors, which might influence decision making.

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<Appendix 1> A Simplified AHP Questionaire For Evaluating Weights of IT Post-Merger Integration

The fundamental scale of absolute numbers.

Intensity of Importance	Definition	Explanation
1	Equal Importance	Two activities contribute equally to the objective
2	Weak or slight	
3	Moderate importance	Experience and judgment slightly favor one activity over another
4	Moderate plus	
5	Strong importance	Experience and judgment strongly favor one activity over another
6	Strong plus	
7	Very strong or demonstrated importance	An activity is favored very strongly over another; its dominance demonstrated in practice
8	Very, very strong	
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation

When you select a proper IT PMI strategy, do you think what factor is the more important to be considered? Please check √ for the following questions.

Level 1. For the selection of proper IT PMI strategy :

Item A	←								→	Item B
Intensity of Importance	9	7	5	3	1	3	5	7	9	Intensity of Importance
Clarity of M&A Strategy										Structural Similarity
Clarity of M&A Strategy										Individual Roles/Skills
Clarity of M&A Strategy										Diff of Process Integration
Clarity of M&A Strategy										Integration Readiness of IT
Structural Similarity										Individual Roles/Skills
Structural Similarity										Diff of Process Integration
Structural Similarity										Integration Readiness of IT
Individual Roles/Skills										Diff of Process Integration
Individual Roles/Skills										Integration Readiness of IT
Diff of Process Integration										Integration Readiness of IT

Do you think what factor is more important than others in terms of “Clarity of M&A Strategy?” Please check √ for the following questions.

Level 2-1. For Clarity of M&A Strategy :

Item A	◀								▶	Item B
Intensity of Importance	9	7	5	3	1	3	5	7	9	Intensity of Importance
Shared Understanding for M&A										Clarity of M&A Purpose
Shared Understanding for M&A										Previous Experience in M&A
Type of M&A										Quality of Strategic M&A Plan
Clarity of M&A Purpose										Previous Experience in M&A
Clarity of M&A Purpose										Quality of M&A Plan
Previous Experience in M&A										Quality of M&A Plan

From each perspective, please compare four PMI strategies. Please check √ for the following questions.

Level 3-1. From the respective of M&A Strategy :

Item A	◀								▶	Item B
Intensity of Importance	9	7	5	3	1	3	5	7	9	Intensity of Importance
Renewal										Standardization
Renewal										Take-Over
Renewal										Synchronization
Standardization										Take-Over
Standardization										Synchronization
Take-Over										Synchronization

Author Profile

Byung Wan Suh

Byung Wan Suh is a doctoral candidate in management at Seoul School of Integrated Sciences and Technologies, Korea. He has a B. S. Information and Decision Science from University of Illinois at Chicago, USA and a M.S. Information System from George Washington University, USA. He was worked at Samsung SDS and Multinational IT Consulting Company for 15 years. He is now working at CIO Office, Doosan Holding Corporation in Seoul.

Seung Ik Baek

Seung Ik Baek is currently a professor at School of Business, Hanyang University, Seoul, Korea. Before joining in Hanyang University, he was a faculty member at Saint Joseph's University (Philadelphia, PA) and Georgia State University (Atlanta, GA). He received MBA and Ph.D from George Washington University (Washington, DC). He is interested in Service Innovation, Business Intelligence, and Social Networks.

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