

# Information System Integration after Merger and Acquisition in the Banking Industry

Shang-Ping Lin, Shi-Hwa Lo and Ho-Li Yang

**Abstract**—Company mergers and acquisitions reached their peak in the twenty-first century. Mergers and acquisitions have become one of the competitive strategies for external growth. In general, it is believed that mergers and acquisitions can create synergies. However, they require complete information technology system and service integration, especially in the banking industry. Much of the research has focused on performance evaluation, shareholder equity allocation, or even the increase of company market value after the merger and acquisition, whereas few scholars have focused on information system integration post merger and acquisition. This study indicates the role of information systems after a merger and acquisition, explaining the benefits of information system integration using a merger and acquisition case in the banking industry as an example. In addition, we discuss factors that affect the performance of information system integration, and utilize system dynamics to interpret the relationship among factors that affect information system integration performance in the banking industry after a merger and acquisition.

**Keywords**—Merger and Acquisition, Information System Integration, System Dynamics

## I. INTRODUCTION

COMPANY mergers and acquisitions (M&A) reached their peak in the twenty-first century, with this trend gradually spreading to Asia. In order for enterprises to meet the fierce external global competition and enhance their overall competitive advantage, mergers and acquisitions have become one of enterprises' competitive strategies for external growth. However, it may also be a company's fastest and most risky in terms of failure and local development strategy. In general, it is believed that mergers and acquisitions can create a synergy effect, thus enhancing the two companies' overall value after a merger. However, the completion of a merger often marks the beginning of integration pains. Acquisitions and mergers require complete integration in information technology system and services. Information integration within enterprises encompasses not only the control over traditional human resources, as utilizing the information system to achieve integration is the current trend for enterprises. In the process of a merger and acquisition, the success or failure of the information system integration is often a major factor that

determines the success of a merger or acquisition. The key factors that determine information system integration's success include not only the information system implementation factor, but also other relevant enterprise integration factors. However, there are also scholars who believe the risk of IT integration determines M&A's success or failure [1].

In the field of M&A, much of the research has focused on performance evaluation, shareholder equity allocation, or even the increase of company market value after M&A. Few scholars focus on information system integration after the M&A [2]. Many empirical researches indicated performance after M&A usually fell short of the expected objective before the transaction. This is caused by inappropriate speculation practice, inappropriate M&A strategy and target selection, and too great a focus on short-term profit [3]. Short-term financial performance before M&A is usually the focus of performance evaluation [4]. However, the integration process and the information system are usually neglected [5].

The information system is the least studied subject among all company M&A negotiation activities [5]. Meanwhile, Mckiernan and Merali's [3] study indicates only half of the acquirers have complete information about the software and communication system of the acquired entities. The study also indicates that the acquirers cannot freely obtain the necessary information content due to lack of time, lack of operation rights over information system functions, or because the information system cannot be carefully examined in the negotiation stage before M&A [5].

Due to the integration of operation activities, the focus is on cost reduction such as financial, product and market performance before the merger. Therefore, information system integration after the merger is not clearly defined [6].

In Mckiernan and Merali's [3] study, over 50% of acquirers (predators) believed information system or information technology are an indispensable part within the company, although it is not deliberated on during the M&A process. This shows that these organizations did not realize that making the best use of information technology in mergers can bring about competitive advantages for a company.

As the global financial sector is becoming international and liberalized, and in order to meet the market homogenization impacts and challenges, the financial industry has pursued the large-scale development. In the perspective of "big is beautiful" and on the premise of operational cost reduction, economies of scale, and future competitive advantage enhancement, the finance sector has revolutionized through M&A activities. Since the economic environment of the

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banking industry is changing rapidly and the competition is increasing, commercial banks face the problems of changes in customer habits and varied financial products. The establishment of information systems therefore becomes very important, as information technology progresses with each passing day. The development of online banking and electronic banking forces banks to utilize information technology (IT) to enhance their competitive abilities.

## II. INFORMATION SYSTEMS AFTER M&A

Successful information system integration can bring about broad positive effects, and increase the pace of M&A. For example, information systems can not only enhance a company's competitive status [7], but also assist companies in formulating important operational strategies [8]. In terms of the return on assets and return on investment, the integration of information systems will help enhance a company's overall financial performance. Successful information system integration will provide quality, accuracy, usefulness, and immediate information, and through the system's availability, reliability, and accurate response, the information system can be utilized more effectively [9]. Robbins and Stylianou [10] compiled the benefits of information system integration in details.

In the study of Stylianou et al. [11], it is not only organizational factors, but also information system factors, which can affect the successful integration of information systems. It is indicated in the study that many dimensions can be used to measure the level of success in information system integration, including (1) the ability to discover opportunities during M&A, (2) the ability to avoid problem creation during M&A, (3) end user satisfaction regarding the M&A process and system after M&A, (4) the ability to improve information system thus facilitating the M&A, and (5) resource utilization efficiency and effectiveness in the M&A process.

On the subject of M&A, information technology plays both the reactive and proactive roles. McKiernan and Merali's [3] study indicates that in the reactive role, there are four M&A types according to different degrees of strategic dependency and organization autonomy. They are absorption, reservation, possession, and coexistence types. In the reservation and possession types of M&A, as the strategy of relevance of the two is not obvious, the information system is relatively complete. In the absorption type, because they require high level of strategic dependency, and each has a low organization autonomy requirement, complete operation and culture integration is required. This also means that they share the same target market. Therefore, information system integration of this type is regarded as the priority consideration. In the coexistence type of M&A, because they require a high degree of dependency and autonomy, information system integration becomes difficult after M&A. There may be partial information system integration in this type. However, it will certainly affect each organization's autonomy requirement. Therefore, indirect methods will be applied to capture each other's original

information system content.

In regard to the proactive role, through competitive advantage creation or organization process change, information technology can play the proactive role in the M&A process, as well as the major facilitator of operational integration and organizational integration, such as office communication, e-mail, telephone facsimile, centralized order processing, automated storage, industry marketing, and so on.

## III. THE EFFECTS OF INFORMATION SYSTEM INTEGRATION

Because information system integration involves a trade off between the old system against the new system model, and management requirement implementation, information system integration in this stage is the realization of countless complicated technologies. The integration design project usually includes the following: systems which need to be merged, changed, or deleted; difference analysis of the new and old organization structures; development requirements of the application system; integration of hardware and internet environments; analogy tests of the new business logic; a complete set of new system processes and architecture; the switching mechanism between management and information systems; and transition strategy and method.

Integration difficulty implies the subject of heterogeneous information system (i.e. database) integration. Besides seeking a solution method on the technology side, the management model integration of information transmission among heterogeneous information systems is of great urgency. The technology side means that utilizing the same interface and establishing a compatible system are the fastest integration formulas and information sharing methods when two information systems are running at the same time [12]. Although integration is difficult, there are many benefits from information system integration, including document reduction; simplifying extra or contradicting systems; maintaining optimum resources under one single objective and a single system, or under a common objective but varied systems; integrating quality, organization and overall strategic operational goals; establishing architecture for continuous quality improvement and organizational management system improvement, and so on [13]. It also derives a corresponding management issue which are discussed among scholars, such as the soundness of interface design of the system required by end users; end users' administration and interface change rights; interface maintenance and agreement; business agent's responsibility regarding system implementation and the definition of maintenance scope; confidentiality, contractual licenses and other issues related to regulations may need to be determined [14].

## IV. THE PERSPECTIVE OF INFORMATION SYSTEM INTEGRATION

In terms of information system integration, Souder & Monaert [15] believed the goal of integration is to create "surplus benefit." In the viewpoint of integration, many scholars adopt the "function, information, and interface

integration” perspective, and the “computer application integration level” perspective. In the former case, Thomas and Neimeh [16] regarded information system integration as the combination of related tool attributes among each other. An integrated structure was provided for the information technology integration environment and mechanism. The focus of the latter is on the information flow in the application level among enterprise function interface activity. From an enterprise’s standpoint, utilizing information technology to gain profit and competitive advantages is the enterprise’s foremost consideration. In terms of the method of system integration, the simplest method is to integrate related applications into an information processing environment, so that users can conveniently pick the relevant application in the toolbar on the computer desktop environment. The other method is classified as a compact integration method, and is thus called the corresponding application integration. The integration focus is on the technology level, and not the process flow. In general, enterprises place most of their information budget on the work of integration among applications, in order to effectively enhance the quality and efficiency of information storage and retrieval.

Therefore, in a situation where old information technology still exists, with continuous introduction of advanced information technology into enterprise’s function departments, integrating the new and old information technologies has long been a problematic management information system problem in both the practical and academic arenas. Consequently, Zaillyk [17] believed information technology will cause a huge enterprise transformation, or each of the organization’s activities and structure will change.

#### V. M&A CASE STUDY IN THE BANKING INDUSTRY

The information integration between Bank of Taipei and Bank SinoPac was mainly about account integration, transaction and search function integration, and customer information integration. In terms of system usage, lowest risk, lowest cost, shortest time, and down-sizing were considered. Information system integration in fact is an improvement process. The best system integration strategy is to coexist with the original system, instead of substituting the system in operation, or even the total switch-over revolutionary approach. Every company needs to make its own decisions and select its own methods, based on the objective perspective in evaluating its unique challenges, environments, and needs. In regards to the merger between foreign and domestic banks, not only internal information system integration and financial strategy re-adjustment is required, but also the training of the acquired employee and the blending of corporate culture are the challenges which must be addressed after the merger between foreign and domestic banks. After Singapore’s DBS Bank Taipei branch acquired the Bowa Bank, including external decoration, internal information system establishment and integration, employee training and corporate culture integration. Jain [18], from an observation and experience of recent IT

developments in financial institutions, described the dozens of IT applications which would make it difficult to paint the full picture of a customer’s relationship with the bank. In the merger between English Standard Chartered Bank and Hsinchu International Bank, the information platform integration duration lasted for one year. Because there was a big difference between the two banks’ system infrastructure, logics and principles, the IT integration team was set up to resolve the problem. For the many differences between Standard Chartered Bank and Hsinchu International Bank’s information system platform, many conferences were held to determine the core banking and insurance business systems. For the credit card business system, the system of Standard Chartered Bank located in Malaysia was used, because its functions are more complete than the systems of Standard Chartered Bank located in Taiwan and Hsinchu International Bank. The business and financial services use Standard Chartered Bank’s transaction system. For the securities system, Hsinchu International Bank’s system was selected, because Standard Chartered Bank did not develop a securities-related business. Standard Chartered Bank does not have securities business in other countries, and thus Hsinchu International Bank employee’s experience and current system must be used. The “smaller impact level” and “more functions” criteria were the decision considerations in the system integration process.

#### VI. FACTORS THAT AFFECT THE RESULT INFORMATION SYSTEM INTEGRATION

##### A. Organization culture

Because companies have their own information systems before mergers, system function overlap will occur in the M&A process. This will cause the acquirer company to neglect the needs of the company being acquired, and consider its information system as the leading system. Therefore, lowering the culture’s impact on organization and balancing the powers between the acquirer company and the company being acquired are the conditions for integration success. The staying or leaving employees from the company being acquired and the acquirer company’s acceptance are also important factors that affect the success of integration [19]. In Bradley et al.’s [20] study, corporate culture types were added as the independent variable, and the variance of information system use was used as the dependent variable to measure the degree of success of information system integration.

##### B. Organization structure

Lin [21] argued that the bank merger brings the reformation to all parts of company, including IT integration and reconstruction. The organization structure that outsources information system development may affect the degree of information system integration. In addition, different designs of organization structure may also affect the degree of information system integration.

### C. The roles of information system personnel

The objective is not only to win the trust of the information system employees from the bank being acquired, but also to relieve the impression of the employees being acquired that the acquirer bank's information system employees as an intrusion of hegemonism. This will avoid the self-protection consciousness of the employees from the bank being acquired. In addition, if the relationship with each other can be improved, a better understanding regarding the information system of the bank being acquired could be achieved through information system personnel from the bank being acquired during the integration process. The reason is that information system personnel usually have a more accurate and deeper understanding of their own information system than the users. This will prove to be a great help in the information system design in the future.

### D. Education training

Through the Technology Acceptance Model (TAM), we know that to change end users' attitude and to make them willing to use new technology, there are two major factors, which are "perceived usefulness" and "perceived ease of use." Users' "perceived usefulness" perspective should first be obtained through consistent education training and explanation to allow them to know that the information system is helpful to their work. Users must recognize the system's "ease of use." Besides designing the easy-to-use appearance, operational habits are usually the factor which influences whether or not they can operate the system smoothly. This can achieve a change of their use attitudes and enhancing their use intentions through education training to reach the final objective of their use of the system.

### E. Support from the supervisors

Supervisors' prior integration consideration can prevent foreseeable problems in advance. They should lead with non-hegemony actions and adopt the soft approach, keeping the maximum enterprise profit in mind to complete the work of information system integration.

## VII. CONCLUSION AND SUGGESTIONS

Although different industries place varying degrees of focus on information technology, information system personnel in the banking industry participated in M&A activities much more actively than those in the mechanical engineering industry. This demonstrates the difference of industries' reliance on information technology. Klausner and White [22] even indicated information technology was one of the major factors that determine banks' operation success. Nevertheless, the integration of information systems usually does not start until the completion of the M&A process. Many studies also point out that many M&A topics focus on time and integration schedule planning only. Although many studies point out the importance of planning, many enterprises still only focus on the short-term operational profit after the merger, and neglect the necessary strategy for long-term information system planning. This article uses the System Dynamics perspective to explain the different factors that may affect information system

integration after M&A in the banking industry. System Dynamics was raised by the M.I.T. professor Forrester [23]. It is a method theory, tool, and concept, considering the world as an interaction cycle and reciprocal causation dynamic system. This study uses it to interpret the relation among different factors that affect the effectiveness of information system integration after M&A in the banking industry. As mentioned above, the factors that affect the integration of information system after banks' M&A include organizational culture, organization structure, the role of information system personnel, education training, and support from supervisors. Each factor can influence the effectiveness of information system integration. However, many management researches have indicated organization culture as affecting organization structure [24] [25]; organization culture and structure may both affect the role of information system personnel [26]; the degree of support from supervisors may also affect organization culture and organization structure, which may also affect the results of education training [27]. A casual loop diagram was drawn as in Figure 1, following the discussions above. It is hoped that the complete system concept can be referenced in the future banking M&A to enhance the information system integration effectiveness.

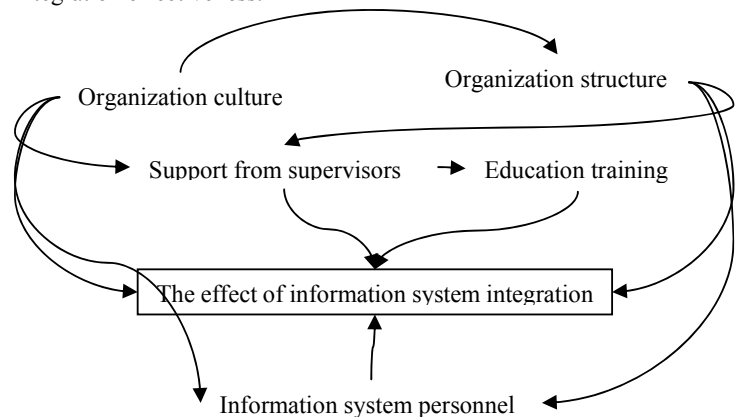


Fig. 1 Casual loop of effect of information system integration

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