

Merging Libraries and Computing Centers in Taiwan:

Factors Affecting Decision-making

by

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The research questions of this study are concerning the factors of decision-making of merging libraries and computing centers in Taiwan. The decision-makers on four campuses in Taiwan were interviewed by using the multiple-case study approach. The answers, responses, and feedback from the participants were compared, synthesized, and analyzed into the five categories of the researcher's theoretical framework, which combines the cognitive and psychological elements of Simon's bounded rational decision-making and Rogers' innovation-decision process. The five categories of factors that act as helpful but not restricting guides are: 1. factors of environment, 2. factors of decision-making units, 3.

factors of decision-makers' personality, 4. factors of innovation, and 5. factors of time.

The findings reveal that the mergers of libraries and computing centers on Taiwanese campuses is an authoritative and necessitated decision and the decision-makers' personality is a key factor which may be changed according to the school size and budget resources. All of the decisions of merging libraries and computing centers of schools are impacted by the factors of environment, decision-making unit, and time; no matter if the school is public, private, large, or small. The results of this study imply that Rogers' five stages of innovation decision process are not proper to explain Taiwanese mergers of libraries and computing centers and echoes three limitations of Simon's bounded rational decision-making process. This study suggests Library and Information Study to emphasize the importance of building a new legitimacy for adding accountability and consistency in this new organization, offering *The International Federation of Library Associations and Institutions* (IFLA) a cultural understanding regarding decision-making types in Taiwan, and improving curriculum of the Library and Information Study for involving the fields of management and law.

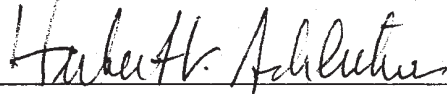
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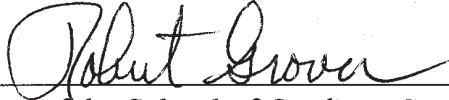
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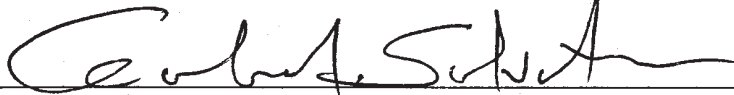
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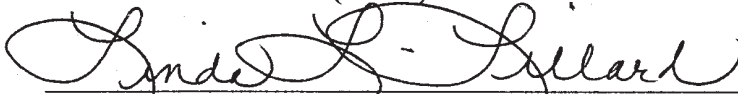
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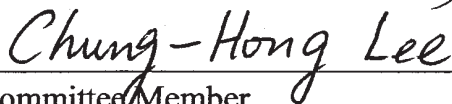
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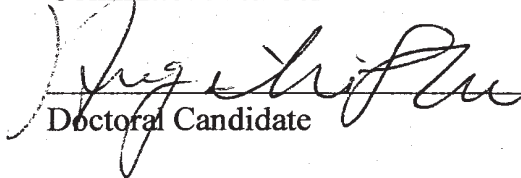
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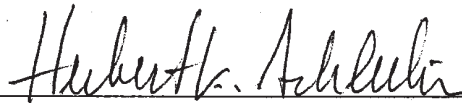
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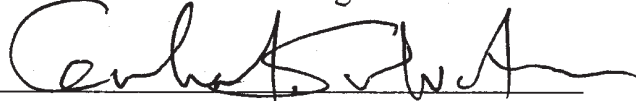
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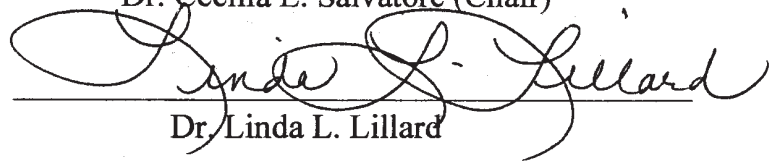
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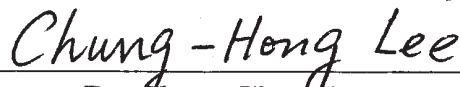
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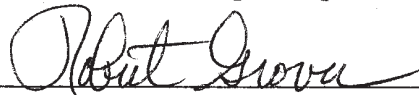
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To my daughter, Cecilia, who spent her pre-school, kindergarten, and first grade with me in Emporia. I remember her first month in pre-school while she could not speak English at all, and she cried and refused to go school every morning. My heart was broken. My husband also missed us very much because he had to stay in Taiwan

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CHAPTER 1

INTRODUCTION

According to Shapiro and Long (1994), “If the library of the 21st century is to be more than a warehouse of old books staffed by a cadre of reference librarians, user services librarians must take the lead in forging new directions and new relationships with colleagues on campus” (p. 290). They state further, “the transition will not be smooth because there are enormous cultural differences and mistrust between library and computing organizations that must be bridged”. The trend for academic libraries and computing centers in Taiwan to merge seems to be a realization of this need to forge new directions and develop new relationships so that libraries and computing centers can offer better information service. The question that emerges in light of this trend is how could the merging of these units occur? The two units have a lot in common as they are both concerned with information tools and information itself. At the same time, both units may be expected to have trepidations related to the takeover of one by the other, replacement of and prioritizing of services, and competition for legitimacy.

Hirshon’s 1998 study entitled *Integrating Computing and Library Services* was the first substantive work on the phenomenon of merging libraries and computing centers (hereafter referred to as MLCC). Hirschon conducts a survey of various

institutions and generally mapped answers to who, what, when, where, and why such mergers and integration take place. He described an integrated organization as one in which significant aspects of both the computing centers and the libraries report to the same management level. The aim of his study is “to provide a summary of best practices, pragmatism and local politics must always to be taken account” (p. 13). In other words, he offers the practical strategies for making MLCC, but the factors of making MLCC decision are not discussed.

In Taiwan, all of the colleges and universities are restricted by and guided by the same higher educational policy, share the same budgetary resources, and are located within the same social and economic environment. Therefore, they generally operate in the same institutional “context”. However, every campus has a different historical background, financial condition, personnel tradition, and organizational culture. The MLCC study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context (Yin, 1994, p. 23). The MLCC is the phenomenon, and the real-life context is the Taiwanese campus. In order to reveal the factors of the decision-making process of MLCC, a multiple-case study approach involving the decision-makers on four campuses in Taiwan will be used in this study.

Arrangement of the Study

There is no standard format for reporting qualitative research. Merriam (1998)

said, “The contents of a case study report depend on the audience’s interest as well as the investigator’s purpose in doing the research in the first place” (p. 227). This study presents the basic components of most qualitative reports which include three parts. The first part discusses the nature of the problem investigated, the way in which the investigation was conducted, and the findings that resulted. According to Merriam (1998), this part usually “includes references to the literature, the theoretical framework of the study, a problem statement, the purpose of the study and research questions that guided the study” (p. 228). The researcher presents this part into three chapters: introduction, literature review, and theoretical framework.

The second part is methodology which is arranged as the fourth chapter in this study. The methodology includes how the sample was selected, how data were collected and analyzed, and what measures were taken to ensure validity and reliability. According to Merriam (1998), “In forms of qualitative research where interviewing is the major or only source of data, a general description of the sample as a whole is given in the methodology section” (p. 228). Therefore, as well as explaining the research design, a brief history of selected schools will be introduced in this chapter.

The last part focuses on the outcome of the inquiry and what the researcher learned and came to understand about the MLCC. This is included in the fifth and

sixth chapters, the fifth chapter being a description of the researcher's findings and the sixth chapter being the concluding chapter.

In analyzing and describing the findings, the researcher follows the most common path in a qualitative report that the "findings are presented to organize them according to the categories, themes, or theory derived from the data analysis" (Merriam, 1998, p.229). Therefore, the chapter on the researcher's findings begins with a brief overview of the findings, followed by the presentation of individual findings supported by quotes from the interviewees or references to documentary evidence. The overview serves as a map so that the reader can follow the presentation. In order to avoid the dilemma of how much concrete description to include and how to integrate results so that the narrative remains interesting and informative, the researcher accepts Erickson's (1986) differentiation among particular description, general description, and interpretive commentary. These three components are units in the process of data analysis, and they also can become "basic elements of the written report of the study" (p. 149). In other words, "the raw data are reported as particular description, patterns discovered in the data are reported as general description, and ever higher levels of abstraction become interpretive commentary" (p. 149). The raw data and patterned data are presented in the fifth chapter. The higher levels of

abstraction become interpretive commentary to make the connection between the particular and general descriptions and are presented in the sixth chapter.

As to the placement of charts, tables, and figures, the researcher considers the view of Miles and Huberman (1994) that the typical mode of displaying qualitative research has been through words in a narrative text, and Merriam's (1998) crisis, "used by itself, narrative text is a weak and cumbersome form of display" (p. 231). As a result this researcher believes that displaying qualitative data in the form of a chart, matrix, table, or figure can be an aid in analyzing the findings. In order to save readers' time and help them to grasp complexities in the analysis quickly, the research displays the charts, matrix, tables, or figures within relative paragraphs. In other words, the researcher does not prepare a separated section to display those charts, matrix, tables, or figures.

Audience

Since this study is going to reveal the factors of making the MLCC decision, there are three groups who will be the main audience for this study: librarians, information technology (IT) specialists, and campus administrators. This study will be of benefit to librarianship and the future professionalism of library and information study (LIS), the interaction between librarians and IT specialists, and will aid to

improve the inter-communication between librarians, IT specialists, and campus decision-makers who are also administrators.

Focus

There are three reasons to investigate the topic. The first reason is to provide beneficial information to the leaders of the merging units. Because there are two different organizational cultures that are affected by the merger (i.e., the academic library culture and the computing center culture), understanding the decision-making process of Taiwanese campus administrators for merging academic libraries and computing centers can provide leaders with organizational foresight and vision, and therefore produce a congruous workplace.

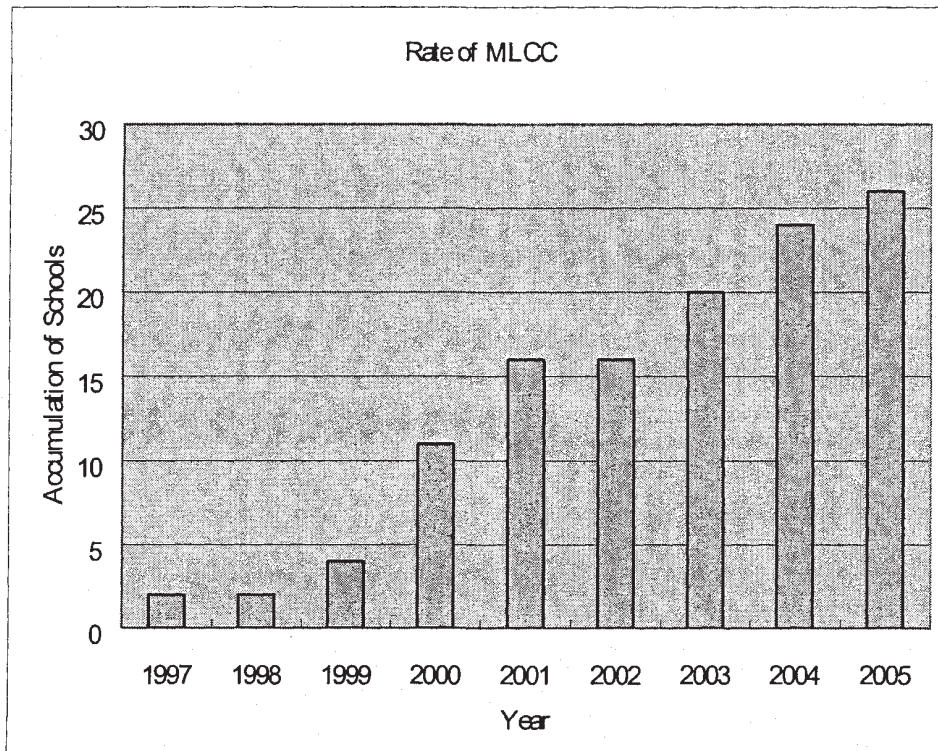
Concern with the incongruent voices from both librarians and information technology (IT) specialists of both institutions that have merged units and institutions that have non-merged units (Yang, 2004) is another reason to investigate this topic. Many opposing questions arise when the two units are merged into one. For example, Hirshon (1998) asked if the new unit be designed as discipline-based or client-based? Should it be centrally-based or distributed? Hierarchical or matrix style? Evolution-based or revolution-based? (pp. 20-21). It is safe to assume that the different units of an institution consider themselves to be culturally and fundamentally different from each other. The decision to merge one unit with another will have an

impact on the day-to-day operation and work-life of both. Thus, there are many challenges in the MLCC, such as re-defining the professional roles for the librarians and information technical IT specialists, re-allocating the existing personnel, and re-conceptualizing the organizational culture (Fulton, 2001). It is not difficult to speculate on the incongruent voices that are heard after merging. The incongruent voices may have an impact on the efficiency of the new unit. Therefore, the purpose of this study is to explore the decision-making process of merging libraries and computing centers, which may offer a solution or suggestion to lessen the incongruent voices.

The final reason for the interest in this topic is that this type of merger is becoming more popular in colleges in Taiwan (see Figure 1). Liao (1996), Hsueh (1997), Ting (1997), Lian (1997), and Yang (2004) discuss such issues as library re-engineering, role definitions of computing centers, relationships between the two organizations, and internal management after merging. However, there a dearth of literature that discusses the decision-making process of MLCC in the Taiwanese academic environment. Since there are many issues involved in the MLCC, the library professional would not be out of line to question why and how the campus administrator decided to merge the two departments, and what factors were considered to make the MLCC.

Rate of MLCC on Taiwanese Campuses

Figure 1. MLCC is getting more popular in Taiwan.



Libraries and Computing Centers in Taiwan

Academic computing centers and libraries evolved from radically different cultures at different periods of history. Academic library history is as long as university history and the library has been seen as the heart of the university. The academic library has well established standards, philosophies, procedures, and connections with the book trade. In contrast to library history, the age of the academic computing centers is roughly 40 years old. Their history started around the late 1960s

when academic libraries began to apply computer technology to their operations (Hardesty, 1997).

In Taiwan, librarianship emerged as a profession in the middle of the 1960s.

The Library Association of Republic of China was organized in 1925 and the first school of librarianship was established at National Taiwan University in 1960.

Centralized computing services on campuses, on the other hand, are a relatively new phenomenon, appearing around the late 1970s. Although several professional associations have emerged, unlike librarianship, the field is not degree-bound. The candidates for positions in computing centers tend to be evaluated more on their competencies than on the field in which the degree has been attained (Hsueh, 1997).

The missions of the two units are unique and somewhat contradictory in nature.

According to Hsueh (1997, pp. 5-6), the missions of university libraries in Taiwan include offering a friendly environment to users, collecting and classifying files and information, and using a standard catalogue and search skills. They are both client-oriented and research-oriented. The mission of computing centers is academic and administrative. The information technology (IT) specialists who work in the computing centers take care of computing hardware and software. They provide and maintain networking to enhance electronic information used by students, faculty, and staff for instructional and research purposes (Hsueh, 1997; Liao, 1996). Additionally,

they enhance institutional record-keeping of administrative departments in the higher education system, such as admission offices, development offices, and registrar's offices.

In Taiwan, according to "*The Decree of Establishment and Management of the University (DEMU)*" (Retrieved from Chinese website

<http://host.cc.ntu.edu.tw/sec/lawindex.htm>), a library must be established on every campus, but the computing center is not necessary. The *DEMU* is a standard for all of the colleges and university to manage their staff, academic departments, and administrative units. According to the *DEMU*, every campus has the library, but not every campus has the computing center. Therefore, the librarians have a more lawful and orthodox status in the academic environment than computing center specialists.

The librarians also have more permanent positions than the IT specialists.

Furthermore, the director of the library is on the same administrative level with the Dean of academic affairs and the Dean of student affairs; whereas the director of computing centers is not. As a result, the two units are not parallel (see Table 1).

Table 1

The Status of Librarians and IT specialists on Taiwanese Campuses

	Librarians	IT Specialists
<i>Legal Status</i>	Essential unit	Dependent unit
<i>Organizational Hierarchy Status</i>	Highest unit	Second-layered unit
<i>Personnel</i>	National examination and LIS degree required	IT background and experience required
<i>Establishment Law</i>	Must follow the "DEMUL"	Depends on individual campus
<i>Characteristics</i>	Unique and academic value	Mostly Administrative value
<i>Director Requirement</i>	Faculty who is assigned by the president	Hired from related professionals
<i>Mission Statement</i>	Proclamation on the "DEMUL"	No formal proclamation
<i>Salary</i>	Higher	Lower
<i>Position Status</i>	Tenure	By yearly contract

Note. Translated by the researcher from "An Investigation into the Issue of the Merging or Dividing of Library and Computer Center in Universities" by Liao, Yu-sheng. (1996), *Bulletin of the Library Association of China*, 56, p. 5.

Hsueh (1997) says that three categories can be used to compare the differences between library/librarians and computing center/IT specialists: the staff, the budget and the work ethic (pp. 7-8). The background of most librarians is in library and information science or LIS, whereas the background of most IT specialists is in computer sciences or other related fields. The librarians are hired and paid as government agents with tenure status, but the IT specialists are hired and paid as technicians without tenure status. Furthermore, the numbers of staff in libraries are higher than the staff in computing centers. The budget of the library includes the salary of the staff, the purchasing fees of equipment, and other resources. In most

universities of Taiwan, the library always has a higher budget than the computing center due to the larger staff who earn a higher salary. Regarding the difference in work ethic, the professional attitude of library/librarians is service-oriented, whereas the professional attitude of computing center/IT specialists is technical-oriented.

Both the librarians with tenure status and IT specialists are not faculty in Taiwan, which differs from the United States. But, on public campuses, the librarians have tenure status. In general, there are significant cultural differences that exist between the two professional environments. Academic librarianship is defined by stability, conservatism, and resistance to change and its administrative structure characterized by hierarchy, authority, and bureaucracy. According to Pitter and Oberg (1994, *The Past as Prelude* section, ¶3), “the individuals attracted to librarianship, by and large, have been motivated by altruism and a desire to improve society”. On the other hand, the IT specialists of computing centers have been defined from their inception by flexibility, innovation, and responsiveness to change. Like Pitter and Oberg (1994, *The Past as Prelude* section, ¶4) mention, “computing has attracted entrepreneurial individuals who demand flexibility in their work schedules and exercise a considerable degree of independence in their functioning”. To sum up, the values of librarianship may appear to be an orientation to service, group-oriented work, a high value and use of training and standardization; whereas the values of IT professionals

may appear to be an orientation to technology, and be more independent, aggressive, and decisive.

Statement of Research Problem

From the trend of merging libraries and computing centers on Taiwanese campuses (see Figure 1), there is no way to avoid the need to discuss the joining of the library and the computing center. Although the MLCC is a decision and decision-making is typically described as choosing among alternatives, this view is overly simplistic. Decision-making is a process rather than the simple act of choosing among alternatives. There are many philosophic elements involved. It is no wonder that Molholt (1985) comments in detail about the merging paths of libraries and computing centers, and observed that decision-makers faced two problems with the merger for which they were ill-determined and ill-equipped: "first, misunderstanding the needs and habits of information seekers; second, misunderstanding the nature of information itself" (pp. 287-288).

The reasons for MLCC are many and have been elaborated upon by authors such as West and Katz (1990), Battin (1984), and Jones (1995). Some of them consider personnel cost savings as a reason to converge, but this is usually not the case in reality. Hardesty (1998) asked, "How can you save money by combining the old bottomless pit [the library] with the new black hole [the computing center]?"

(p.40). Some authors described another reason for merging academic libraries and computing centers as that it is then clear to the end users where to go for service and the institution saves by reducing redundant staff time and access points. However, there are so many similar units on campus for using computing and information systems to serve the end users, why only choosing to combine libraries and computing centers to reflect this trend?

Based on those concerns, this study has one primary research question and three sub-questions. The primary question is:

RQ: What factors affect the decision-making process regarding the merger of libraries and computing centers on Taiwanese campuses?

The three sub-questions are:

SQ1: Where does the idea for merging originate?

SQ2: Why is the decision necessary?

SQ3: How is the decision-making process conducted?

Purpose and Contribution to Library and Information Study (LIS)

The decision-making process is generally applied to task management rather than library organizational change. The MLCC is an administrative decision of organizational management which involves libraries and computing centers, and the MLCC issue relates to organizational environments, modes of decision-making, uses

of information, and performance. The purpose of this research is to understand the decision-making process of Taiwanese campus administrators during the merging of academic libraries and computing centers.

This study deliberates on the case of MLCC by examining the factors of decision-making. There are many case studies in LIS which focus on professionalism (Alemna, 1995), librarians' attitudes (Chen, 1995), library and information services (Cheunwattana, 1998), and library and information education (Tran & Gorman, 1999). However, few of them focus on the decision making process of organizational management.

Since the 1980s, most of the attention that has been paid to the issue of MLCC in LIS is on organizational structure and control, funding sources and implications of the organizational benefits (Van Horn, 1995; Neff, 1985; Hughes, 1990; Flowers & Martin, 1994; Weber, 1988; Waters, 1990); however, according to Edem and Lawal (1997, p. 53), the most typical applications of decision-making process in LIS are: personnel management, acquisition, storage and circulation of information materials, information retrieval activities, performance/service evaluation/measure, and goal setting.

Most discussions of decision-making in LIS are related to the information retrieval system and information need, and the decision-making process is seldom

applied to library organizational management. There is very little literature that mentions both the issue of MLCC and the issue of decision-making in LIS.

The assumption of this study is that every single campus has a particular history, background, financial condition, personnel tradition, and culture; therefore, the decision made by the administrators will likely involve the entire context. A great deal of literature has demonstrated a variety of reasons for merging academic libraries and computing centers, however, different administrators in different institutions may have unique considerations for making the decision of their own merger.

The researcher assumes that the MLCC is an innovation on Taiwanese campuses, and thus creates a conceptual framework by combining Rogers' innovation-decision model and Simon's bounded rationality decision making model to reveal the factors of how and why the administrators made the decision of MLCC.

It is expected that identifying the factors concerning the merging of the two departments will offer two benefits. First, it benefits librarianship and the future professionalism of LIS. The findings of this study can inform the design of future LIS courses that will prepare LIS students to be leaders of the merger, and to handle the inter-disciplinary organization. Although the librarians should cooperate with IT specialists on campuses, they are quite different. The factors of the MLCC decision may benefit librarianship not only to change long-term perceptions to fit the need of

the inter /multi disciplinary environment, but also to re-orient professional identity, eligibility, and prestige. Second, it benefits the interaction between the librarians and IT specialists. Exploring the factors of the MLCC decision is also helpful in improving the inter-communication between the librarians, the IT specialists, and the campus decision-makers, then re-establishing the relationship with the decision-makers and IT specialists.

Descriptions of Terms

Merger and MLCC

In business or economics, a merger is a combination of two companies into one larger company. Most people in business enterprises refer to merging as “M & A” (merger and acquisition), a concept or activity that involves marriages among organizations in the same area of business. A merger can resemble a takeover, but the result is a new company name and a new branding; in some cases, terming the combination a “merger” rather than an acquisition is done purely for political or marketing reasons. According to Marks and Mirvis (1998), “the concept is alluring: combine the strengths of two organizations to achieve strategic and financial objectives that neither side can accomplish as easily or affordably on its own” (p. 3).

According to Battin (1984), the paths of libraries and computing centers in terms of mission and function have been converging since the early 1980s.

Information technology (IT) has a great impact after its application in libraries; not only does it change the way they function, but also causes organizational re-structuring. Therefore, in this study, the term “merger” means “bringing together at least two organizations that had previously been separate” (Fulton, 2001, p. 14), which in this case are the library and computing center on Taiwanese campuses. A broad concept of merger is used in this study. It will refer to all the similar relations between libraries and computing centers, such as collaboration, convergence, and integration. In this study, the MLCC means a formal re-organization and under one leader.

Based on the researcher’s investigation, there were 26 MLCC in Taiwan from 1997 to 2005 (refer to the Figure 1). According to Yang (2004), this was partly as a result of a consensus reached in the 1995 Directors’ Meeting of University Computing Centers. In this meeting, they discussed the issues of downsizing of staff, change of structure, and system reform on campuses. Yang (2004) finds that these MLCC have some things in common, such as diverse academic background of the staff, limited working experiences, and more flexible names and structures of the organization. According to her investigation, after merging, the IT director usually takes over the leadership, and the library leaders disappear are fired, or just remain as teachers:

...however, the internal operation procedures and assignment of work are usually

not thoroughly re-organized and adjusted before merging. Generally speaking, the middle managers involved do not see the merger as successful as the decision-makers do. In communication and negotiation, the relationships among staff of the two units are fairly well, but the understanding of each side's professionals does not show much improvement (p. 30-32).

Yang's thesis was published in 2004; therefore, her investigation may present the current situation of the MLCC in Taiwan.

MLCC and Decisions

When a corporation or firm recognizes the need to improve its "ability to deal with changing realities in its business setting and achieve a more effective deployment of key management talent" (Allen, 1979, p. 641) it may announce decisions to change significantly the way in which it is organized. This is called reorganization and is a similar notion to the merging of libraries and computing centers considered in this study.

Indeed, reorganization, just like MLCC, is a complex phenomenon with potentially devastating consequences, and it will seriously damage campuses if not performed and implemented correctly. Some of the consequences of reorganization "include such issues as downsizing, de-layering and the introduction of new plant and /or technology, reason for changes, and who decided to introduce the changes"

(Savery & Luks, 2000, p. 1). The serious consequence of MLCC decision makes this study important and meaningful. Besides, “the execution and refinement of a reorganization is expensive and time consuming and usually involves fundamental changes in role requirements, power positions, and career status of the whole corporation” (Savery & Luks, 2000, p. 1). The process involved in deciding to reorganize is important to understand. The characteristics, beliefs, and strategies of decision-makers and decision-making units should be considered as important as contextual factors in determining re-organization or MLCC choices. Therefore, MLCC is a choice that involves understanding the situations common to administrators, the information which is used to inform the decision and the decision-making processes itself.

The literature that is available on the topics of MLCC, decision-making, and innovation in both the library and computing fields is limited in America and in Taiwan. Naturally, the researcher has borrowed from the subfield of “decision studies” out of the organization theory and business management fields, where a number of models of decision making have been proposed. Of course, none of them provides a specific framework for understanding the decision-making of MLCC on campuses. Most of the issues related to the MLCC are the organizational environment/structure, modes of decision making, and uses of information to form the decision.

Decision-makers and Culture

According to Robbins and Decenzo (2003), decision-makers are “ones who can identify critical problems, assimilate the appropriate data, make sense of the information, and choose the best course of action to take for resolving the problem” (p. 12). These are the people with the highest position and most responsibility in the institution. In Taiwan, the decision-makers on campuses may be the board chairman, the president, the vice-president of academic affairs, the vice-president of administrative affairs, and sometimes the academic deans, depending on the institution, which may vary from campus to campus.

As cultural background is an important element in the decision-making process, it is necessary to offer a brief understanding of Taiwanese culture. Cultural differences may affect the ways in which individuals interact and the ways in which they make decisions. Different countries produce their own cultures based on distinctive beliefs and practices. The administrative culture could be viewed as a kind of culture and is a common attitude of public officials. These differences of administrative cultures may include world view, family boundaries, quality of life, importance of religion, meaning of work, meaning of education, belief in change, and decision-making style. Hall (1990) claims “culture is man’s medium: there is not one aspect of human life that is not touched and altered by culture” (p. 19). That idea is

similar to Simon's (1976) claim, that decision-making "takes place in an environment of givens" (p. 79). Within the limits set by these givens, certain stimuli and certain items of information will impact or impinge upon the decisions of organizations or individuals.

Taiwan was colonized for fifty years by Japan, and has been its geographical neighbor for thousands of years. The Taiwanese culture is very similar to Japanese culture. Therefore, it is helpful to apply Hall's (1990) concept which explains Japanese culture to understand Taiwanese culture. According to Hall (1990), the Japanese culture is a high-context culture. The high-context cultures are those that "call for considerable programming of individuals to each other" (p. 53). Deep involvement is one the characteristics of high-context cultured societies, where "there is a deep need to be close, and it is only when they are close that they are comfortable" (p. 66). He further explains: "in high-context cultures, syncing is very noticeable. It functions on a high level of awareness, and is consciously valued" (p. 79). That means, in high-context cultural societies. People will feel unsafe if they are different from others. Hall also explains that the Japanese are pulled in two directions: "The first is a very high-context, deeply involved, enveloping intimacy that begins at home in childhood but is extended far beyond the home. There is a deep need to be close, and it is only when they are close that they are comfortable. The

other pole is as far away as one can get. In public and during ceremonial occasions, there is great emphasis on self-control, distance, and high inner feelings”(pp. 66-67).

In light of the above explanation and being a Taiwanese, the researcher can understand that there is not conflict between the two poles. Since Taiwanese culture is similar to a high-context culture, it is reasonable to understand that the decision-makers of MLCC on Taiwanese campuses may consider following the other campuses' merger decisions and may also keep a distance away from the related employees who are librarians and information technology (IT) specialists, because it is not proper to show their inner feelings in public occasions. In other words, the Taiwanese decision-makers tend to keep a distance from the staff (such as librarians and IT specialists); however, they tend to keep a close relationship with their peers (such as the presidents of other campuses). Therefore, it is possible that some of their decisions are impacted by the suggestions of their peers but without asking or consulting with their staff.

The above brief introduction of Taiwanese culture offers the readers a basic understanding that decision-making process of MLCC in Taiwan may differ from the decision-making process in United States or other Western countries.

CHAPTER 2

LITERATURE REVIEW

Relationship of Libraries and Computing Centers

Libraries and computing centers share primary responsibility for the dissemination of information on our campuses today. Just like Dougherty (1987) states, “libraries and computing centers could operate virtually independently without fear of disturbing each other” (p. 293). Thus when these two disparate units are merged, they are not prepared for their charge and they often co-exist in uneasy juxtaposition. Librarianship traces its history back to the paper-intensive nineteenth century; while computing centers evolved comparatively recently from a computational background in mathematics and engineering. Neff (1985) sees the commonalities for bringing the two units together: the library is a repository and acquires and borrows the packaged information, and the computing center stores, retrieves, inputs, and distributes the digital information. In one form of service or another, storage, retrieval, input, and output of information are common to both. Creth (1993) states:

They also have the most to lose. In order to be leaders—and not losers—librarians and computer professionals will have to be willing to make fundamental changes in all aspects of their roles and responsibilities, skills and

knowledge, working relationships and organizational cultures (p. 113).

However, according to Martin (1992):

The library is a repository of packaged information and computer center stores and retrieves information; the library lends information and the center displays it; the library acquires and borrows information and the center inputs information. In one form of service or another, storage, retrieval, input and output of information are common to both (p. 77).

Whatever their respective missions were in the past, the roles of the two units are changing. According to the analysis of Pitter and Oberg (1994, ¶2):

The computing center has ceased being merely a place where one manipulates large sets of data and prints reports. Increasingly, it is charged with providing and managing access to networked information resources. The library, in turn, has ceased being merely a warehouse that stores and circulates the printed records of scholarship.

Indeed, today librarians select, classify, and organize information from all sources in all formats, actively integrating electronic and print resources.

The Phenomenon: Merger of Libraries and Computing Centers

Origin of the Merger and MLCC

Most people in business enterprises may call merger as “M & A” (merger and acquisition), which is a concept or activity that involves organizational marriages

between organizations in the same area of business. The merger of academic libraries and computing centers is not new. The reasons for merging companies may partly differ from the reasons of merging libraries computing centers; however, there is no reason for the LIS to ignore the trend of M & A. According to Marks and Mirvis (1998), there are five distinct waves of merger and acquisition that took place in the United States of America.

Beginning in the 1890s, the first wave witnessed thousands of horizontal mergers, which brought together companies in the same industry. Small and medium-sized companies combined to form such giants as United States Steel and General Electric. A second wave of buying and selling surged from 1925 through to the 1950s. Vertical combinations mostly happened during this wave, in which a buyer acquired a major supplier or customer. The strong postwar economy of the mid-1950s led large corporations to seek a new avenue of growth. With regulation and enforcement inhibiting deals within industries, motivation and money were redirected towards diversification. Conglomerate mergers defined the third merger wave which swelled in the 1960s with the rise of inflation and the preeminence of portfolio models of corporate finance. The events were ushered in the fourth wave of combination activities which were characterized by financially driven opportunistic deals during the 1960s through the late 1980s. The mid-1990s have seen a merger wave of tsunami

proportions crash ashore. During this wave, companies doing deals seek to do business together rather than merely boost share prices or create a portfolio of assets to reduce risk (p. 24-27).

It is not clear if the above merger waves had an impact on the merger of academic libraries and computing centers. Furthermore, the literature does not irrefutably prove that the notion of merging campus libraries and computing centers came from the notion of industry mergers. However, a number of authors have suggested that the idea of MLCC was influenced or inspired by the views from the business literature.

In describing institutions in the early 1990s, Seiden and Kathman (2000) state, "During this period, individual institutions began to look at and adopt business model such as Total Quality Management (TQM)" (p. 9). While reorganization seemed to be a fact of life in computing centers, many libraries also began to look at reengineering streamline operations or absorb losses of positions.

Bunker and Horgan (1996) also suggest that the MLCC phenomenon may be affected by some management theories which claim to have solutions to difficulties facing organizations in the information age. "These include the learning organization, the use of teams, Total Quality Management (TQM), and Business Process reengineering (BPR)" (p. 1). Bunker and Horgan further suggest that while none of

these theories is a panacea, “there are elements in each which can promote collaboration between libraries and information technology organizations and can foster their continued growth as learning organizations” (p. 1).

This notion is very similar to the notion of Lian and Cheng. In Taiwan, Lian and Cheng (1997) thought the MLCC was inspired by business’ reengineering, organizational change (OC), Total Quality Management (TQM), and other related management theories.

In America, according to Fulton (2001), “once a decision has been made to create an Information Services (IS) department, the actual restructuring is accomplished through the leadership of an individual referred to as a Chief Information Officer (CIO)” (p. 4), and then “the higher education transformational changes mimicked and followed this business models”. She proposes that the MLCC was inspired by the notion of CIO.

Historical Development of MLCC

Throughout history, the academic library has been seen as the heart of the university and as a central component of a university. In contrast, academic computing centers are fairly young components of universities. According to Fulton (2001), academic computing centers have been around roughly 40 years, starting around the late 1960s when academic librarians began to apply computer technology to

their operations. Therefore, it is interesting to survey the historical development of the merger of libraries and computing centers. Following is the synthesis from Hardesty (1997), Hirshon (1998), and Fulton (2001).

1. 1980-1988 early years. Mostly focus on the similarities of missions, electronic information provision, the proliferation of networks, and digitization of information as likely trends to the merger of the two units.
2. 1988-1992: After several cases of merger, scholars and practitioners turn the attention to the cultural differences of the two units.
3. 1992-1996: This was the merging momentum and the growth was now evident at the smaller institutions (Hardesty, 1997). After the late-1990s, the trend of merger began to take shape. This is a period of turnover point.
4. 1997-2000: University used cross-functional teams to redesign and implement a truly merged organizational model; scholars (Hirshon, 1998) began to think of merger as in the statement “changing the organizational structure involved many logistical, political, emotional, and practical problems” (p. ix).

The MLCC history in Taiwan, compared to that on American campuses, is a relatively short one. The starting point for the merging of academic libraries and computing centers in Taiwan was in February 1997 at Fooyin University. At that time, this school was called Fooyin Junior College. However, the private Yuan Ze

University was known by most Taiwanese campuses as the first MLCC. After the MLCC of Yuan Ze University in August 1997, there has been a trend of merging libraries and computing centers in many Taiwanese colleges and universities. Table 2 details an investigation of the MLCC in Taiwan from 1997 to 2005. The investigation was completed in September 2005 by the researcher. From this investigation one can see that in 2004 there were a total of 24 MLCC out of a total of 158 colleges and universities in Taiwan. This means 15 % of campuses had mergers. In 2005, the total number of MLCC was 26 out of 159 colleges and universities in Taiwan, meaning that 16% of campuses have undergone mergers.

Table 2

Investigation of MLCC in Taiwan

<i>Year</i>	<i>Total Numbers of Schools</i>	<i>Accumulation of Schools of MLCC</i>
1997	Data not available	2
1998	Data not available	2
1999	Data not available	4
2000	Data not available	11
2002	Data not available	16
2002	Data not available	16
2003	Data not available	20
2004	158	24
2005	159	26

Models of MLCC

Various working relationships between academic libraries and computing centers have been proposed by several researchers. One of these is proposed by Cimbala (1987). She believes that the administrative merger is based on the increase in automated functions in libraries and the growing service orientation of computing centers. She also proposes an information service consisting of two groups: public and technical services. The differences between goals and orientation, she also admitted, would be problematic in creating a merged organization.

On the other hand, Dougherty (1987) proposes that the libraries and computing centers can best serve the users through programs of collaboration that recognize both their common links in information science and their historically different missions. However, he suggests that the specific organizational structure should more appropriately reflect the history, traditions, and institutional personalities of individual campuses.

Higginbotham (1986) discusses three models of organization for libraries and computing centers. First, the library director reports to the provost or vice-president for academic affairs, while the computing center reports to the vice-president for finance and administration. This is a weak model, for its bad communication and duplication of services. Second, the library and computing center report in parallel to

the same office. There is no need to worry about the duplication of services, however, there is little to eliminate faculty and students confusion about where to go for service. Third, according to Higginbotham, would be the most daring approach, to merge the two units and form a new scholarly information unit.

Similar to Higginbotham's analysis, Weber (1988) describes several merger models:

1. Columbia model. The title of the merged new organization is "Scholarly Information Center", and the library director is in charge.
2. Carnegie Mellon model. The title of the merged new organization is "Academic Services Division", and the computing center director is in charge.
3. Stanford model. This is a mingled model. The title of the new mingled organization is "Vice-President for Information Resources", and the library and computing directors are in charge collaboratively.

However, in Taiwan, most of merger types are classified and executed by the following considerations (Lian & Cheng, 1997; Liao, 1996; Hsueh, 1997).

1. Timing: On the timing of elevating or establishing. It means that some of MLCC were made by according to the time point, not any other reasons.
2. Purpose: For the needs of simplifying personnel or campus digitalization.

3. Title of mergers. There are three types of titles of MLCC in Taiwan: library, library and information center, and department of library and information.

Similar to the Carnegie Mellon model, the merged new organization is almost always lead by the director of computing center.

MLCC in LIS

Most discussions of decision-making in LIS are related to the information retrieval system and information need, and the process is seldom applied to library organizational management. According to Edem and Lawal (1997, p. 53), the most common applications of decision-making process in LIS are: (1) Personnel management, (2) Acquisition, storage and circulation of information materials, (3) Information retrieval activities, (4) Performance/service evaluation, and (5), Goal setting.

It is evident that the decision-making issues in LIS are generally applied to task management rather than organizational change, and the MLCC is an administrative decision related to information service. Hirshon's 1998 study entitled *Integrating Computing and Library Services* was the first substantive work on the MLCC phenomenon which is mentioned at the very beginning of the first chapter.

Innovation

According to Rogers (2003), innovation is “an idea perceived as new by the individual or other unit of adoption” (p. 12). Innovations are usually conceptualized as new products, goods, and technology which are often used as a synonym of innovation. Innovations, however, can simply be an idea. An innovation usually has both a physical format and conceptual component. Rogers (2003) refers to these two parts as the “hardware” and “software”. The hardware aspect “consists of the tool that embodies the technology as a material or physical object” (Rogers, 2003, p. 13), whereas the software aspect “consists of the information base for the tool” (p. 13). The software could be a political philosophy, religious idea, a new event, or a policy. Therefore, whether ideas or practical products, an innovation consists of a combination of hardware and software aspects. In other words, if an idea seems new to the individual it is an innovation.

According to Robbins and Decenzo (2003), “Innovation is the process of taking a creative idea and turning it into a useful product, service, or method of operation”(p. 217). Innovation involves a threefold process consisting of perception, incubation, and inspiration.

Perception means the way people see things. People see things from different perspectives, and some creative people may think about things in a unique way. The

movement from perception to reality, however, does not occur instantaneously.

Instead, ideas go through a process of incubation. According to Robbins and Decenzo (2003), “during the incubation period, people collect massive amounts of data that are stored, retrieved, studied, reshaped, and finally molded into something new. It is common for years to pass during this period. Then suddenly, all of the efforts successfully come together---it is called inspiration” (pp. 217-219).

However, the movements from perception to inspiration are not enough to form an “innovation” because there is nothing visible. Robbins and Decenzo (2003) claim, “innovation involves taking that inspiration and turning it into a useful product, service, or way of doing things” (p. 218). They use the words of Thomas Edison to explain it--- creativity is 1 percent inspiration and 99 percent perspiration. They think that the 99 percent is the innovation which involves testing, evaluating, and retesting what the inspiration found. It is obvious that innovation is a process and a serial movement.

MLCC and Innovation

The notion of MLCC does not have roots in Taiwanese higher education environment, and there is no Chinese literature that mentions it. Therefore, the researcher assumes that the MLCC is a type of innovation that is new to Taiwan; and adopts a conceptual framework by applying Rogers’(2003) innovation-decision model

and Simon's (1976, 1997) bounded rational decision making theory in hopes of revealing the factors of how and why the campus administrators made the decision of MLCC.

As previously explained in this section, innovation is an idea perceived as new by the individual or other unit of adoption with an idea component and an object component (the material or physical aspect of the idea). Therefore, when a campus recognizes that there is a need to improve "a firm's (campus) ability to deal with changing realities in its business setting and achieve a more effective deployment of key management talent" (Allen, 1979, p. 641), the campus administrators may announce decisions to change significantly the way in which they are organized. In the field of business this is called reorganization and is referred to as an MLCC on campuses; the MLCC is not only reorganization, but also an innovation.

To summarize, it is found by comparing the concept of an innovation with the concept of reorganization that reorganization is similar to innovation. Reorganization deals with an idea or a decision which significantly changes the way firms are organized. It involves changing the external (visible) structure and internal (invisible) structure as well. Therefore, reorganization has both a physical and conceptual component, so has the MLCC; where an innovation has hardware and software aspects, so has the MLCC.

There were no campuses which combined the libraries and computing centers in Taiwan until Fooyin Junior College did so in February 1997, followed by the Yuan Ze University in August 1997. This MLCC stirred up a wave of discussion in the higher educational system, because it was a totally new campus structure in Taiwan. Although the MLCC notion had been known and introduced into Taiwan by some literature and scholars, this was the first time it was put into "real practice". The Yun-ze University was viewed as an idea-diffuser, because it is more famous and well known than Fooyin Junior College. This makes the MLCC on Taiwanese campuses both an idea and a practice. Therefore, the MLCC could be viewed an innovation.

Hence, here the notion of MLCC is communicated through certain channels into the Taiwanese academic system over a period of time, and this notion is similar to Rogers' diffusion model in which there are innovation, communication channels, time, and the social system. Rogers (2003) points out that diffusion is the process by which "(1) an innovation (2) is communicated through certain channels (3) over time (4) among the members of a social system" (p. 11). Therefore, if the limited definition of MLCC in this study is equal to Rogers' diffusion definition, it is not difficult to find that the MLCC in Taiwan is an innovation.

Furthermore, the MLCC can be seen as an innovation by examining the five attributes of an innovation: relative advantage, compatibility, complexity, trialability,

and observability. According to Rogers (2003), the five attributes are used to understand the rate of adopting an innovation.

1. Relative advantage is defined as “the degree to which an innovation is perceived as better than the idea it supersedes” (Rogers 2003, p. 15). There are several factors included in this attribute, such as economic and status factors. “Relative advantage is a ratio of the expected benefits and the costs of adoption of an innovation” (p. 233). Just like Marks and Mirvis (1998) explain, in mergers, the leaders are looking for economy of scale, elimination of redundancy, and operational flexibility (pp. 5-8). Besides, he also mentions, “one motivation for many individuals to adopt an innovation is the desire to gain social status” (p. 230). Using Yuan-ze University as an example, after merging its library and computing center, it became the target of discussion on Taiwanese campuses. After merging, the Yuan Ze University became famous, which is another relative advantage to attract students to apply to this school. But there is no proof to support that Yuan Ze University choose the MLCC purposefully. However, there is no doubt that the MLCC, indeed, has the relative advantage, such as academic status and expected benefit, than not being merged.

2. Compatibility is defined as “the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential

adopters” (Rogers, 2003, p. 15). The similarities of mission, electronic information provision, the proliferation of networks, and digitization of information between libraries and computing centers causes people to believe that combining libraries and computing centers will benefit information users (Liao, 1996; Hsueh, 1997). With this growing trend of MLCC in Taiwan, there is no doubt that MLCC is an innovation with the existing values.

3. Complexity is “the degree to which an innovation is perceived as relatively difficult to understand and use” (Rogers 2003, p. 16). If the differences between the libraries and computing centers (e. g. organizational culture and workplace terminology) are ignored by the campus decision-makers, the notion of merger is not difficult for them to accept. Because of the overlapped areas of offering efficient service and similar supporting roles toward information services, the MLCC is an innovation that is not difficult to practice.

4. Trialability is the “degree to which an innovation may be experimented with on a limited basis” (Rogers, 2003, p. 16). These examples are a few of the ways in which MLCC it can be tried out. There can be both practical and psychological trials. Some campuses (e. g. Meiho Institution of Technology) have opted for partial combination (e. g. exchanging some staff); some have changed physical office design in order to offer more and easier information services; some (e. g. University of

Sun-yen Sun) have added different professional practices into the two units; and some campuses eventually returned to the old structures because their trials failed. It does not matter what the size of organization is or the numbers of staff, the MLCC is easy to try.

5. Observability is “the degree to which the results of an innovation are visible to others” (Rogers, 2003, p. 16). Observability may be one of the most powerful incentives for the diffusion of an innovation, and the biggest factor to attract decision-makers to adopt the innovation. The re-allocation of the existing personnel, the organizational re-design of the MLCC, and the ways of information services are easily observed after merging.

To summarize, then, MLCC is like other kinds of innovations in many respects. It is perceived to offer better campus information service advantages relative to the old organizational design. It is trialable; that is, adopters are able to “try” to see its effects. It is observable from the changes in personnel, formal organizational design, and the new way of offering information services. It is compatible with the values, beliefs and needs of potential adopter campuses. It is not complicated, because of the overlapped areas of the two units with similar supporting roles toward information services. Therefore, it is not doubtful that MLCC is an innovation.

Types of Perspective toward the Innovation

In order to understand the factors of the MLCC decision-making, it is necessary to know the attitudes toward the MLCC of different campus. The MLCC decision made by individual campuses inherently affects the whole campus context, such as the particular history, background, financial condition, personnel tradition, organizational perspective, and organizational culture. In other words, different administrators on different campuses may have different considerations for making the decision for their own merger. How does the organizational context affect the sequence of adopting MLCC? According to Robbins and Decenzo (2003), an organization with the innovative culture is likely to have several characteristics, such as acceptance of ambiguity, tolerance of the impractical, low external controls, focus on ends rather than on means, and open systems focus (p. 219).

However, not all of the organizational cultures or structures positively influence innovation, not all of the resources support managers or decision-makers, and not all of the possible barriers can break down. According to Abrahamson's (1991) assumption, different pro-innovation biases exist in different organizations which may impact the decision of adopting or rejecting the innovation. He advances four perspectives for understanding when organizational processes impel the acceptance or rejection of innovations among groups or organizations, whether or not these

innovations are technically efficient for these organizations---this is what he called “pro-innovation biases”. The term of “administrative technology” may differ from the “merger of libraries and computing centers”, however, in Abrahamson’s article, it indicates an efficient innovation which has the similar meaning of the MLCC in this study; both of the innovations happened in the administrative organization.

The efficient-choice perspective. This perspective explains that usually organizations or their top management teams have little uncertainty about their preferences or goals or about innovations’ technical efficiency. Therefore, “given existing resources constraints, organizations rationally choose the innovation that will allow them on most efficiently produce the outputs that are useful for attaining their goals” (Abrahamson, 1991, p. 592).

The forced-selection perspective. This perspective explains that there are powerful organizations outside the group among which an administrative technology diffuses. According to Abrahamson’s viewpoint, these powerful organizations may have an interest in forcing a technically inefficient innovation to diffuse or an efficient innovation to be rejected, despite organizations’ resistance to adoption or rejection.

The fashion perspective. This perspective assumes there are conditions of uncertainty concerning environmental forces, goals, and technical efficiency and claims that under these conditions organizations will tend to imitate other

organizations. According to such perspectives, organizations' decisions center less on which technology they should adopt, and more around which organization they should imitate (Abrahamson, 1991).

The fad perspective. This perspective is similar to the fashion perspective.

Both of the perspectives assume that the diffusion of innovations occurs under conditions of uncertainty because organizations imitate other organizations' adoption decisions. However, the fad perspective differs, because it assumes that the diffusion of innovations occurs when organizations within a group imitate other organizations within that group (Abrahamson, 1991).

Abrahamson's article offers an opportunity to think about the organizations' adoption or rejection of an innovation with multiple considerations, and raises the problem that researching this innovation-decision process could better be explained through multiple perspectives, which emphasizes the structural and cultural logic of diffusion processes. This notion is helpful for the researcher to investigate the paths of how the MLCC innovation spreads on Taiwanese campuses, and what factors impact the decision of MLCC, since it was not originally developed in Taiwan.

Decision-making Approaches/Theories

The normal procedure of decision-making consists of "segregating certain elements in the decision of members of the organization, and establishing regular

organizational procedures to select and determine these elements and to communicate them to the members concerned” (Simon, 1976, p.8). Although there are many different approaches for describing the decision-making process, it is still generally accepted that the decision-making process is a set of several steps to reach a solution. According to Robbins and Decenzo (2003), the decision-making process is “a set of eight steps that includes identifying a problem, selecting a solution, and evaluating the effectiveness of the solution” (p. 105).

Decision-making is typically described as choosing among alternatives, but this view is overly simplistic. Decision-making is a process rather than the simple act of choosing among alternatives. Decision making is the cognitive process of selecting a course of action from among multiple alternatives. Common examples include shopping, deciding what to eat, and deciding who or what to vote for in an election or referendum. Decision making is also said to be a psychological construct. This means that although people can never "see" a decision, people can infer from observable behavior that a decision has been made. Therefore the theorists conclude that a psychological event that people call "decision making" has occurred (Schroder, 1971). It is a construction that imputes commitment to action. That is, based on the observable actions it is assumed that people have made a commitment which results in observable behavior. Therefore, understanding the cognitive and the psychological

elements of a decision-making process is helpful to discover the factors of MLCC decision process.

Rational Decision-making Approach

Robbins (1991) describes this approach with a classical model.

Decision-making in terms of rationality involves identifying a problem, searching for pertinent information, evaluating alternative solutions to find which one is the best, and, finally, making a choice. Therefore the following is a series of standard procedures involved: (1) ascertain the need for a decision, (2) identify the decision criteria, (3) allocate weights to the criteria, (4) develop the alternatives, and (5) evaluate the alternatives, and (6) select the best alternative (Robbins, 1991, pp. 137-140). Four assumptions of the rational decision-making approach are:

1. Goal-oriented--- it assumes that there is no conflict over the goal.
2. All options are known--- it is assumed that the decision maker can identify all the relevant criteria and can list all viable alternatives.
3. Criteria are clear---it assumes that the criteria and alternatives can be assigned numerical values and ranked in a preferential order.
4. Preferences are constant--- it assumes that the specific decision criteria are constant and the weights assigned to them are stable over time.

Then the final choice will maximize the outcome--- it assumes the decision-maker will choose the alternative that rates highest, and get the maximum benefits (Robbins & Decenzo, 2003, pp. 141-142). The rational decision-making approach often ignores individual decision-makers' characteristics and assumes the individuals process information and arrive at a decision in a similar manner. They also ignore the actual decision process and how individual differences affect that process.

Political Decision-making Approach

According to Dean (1993), decisions are arenas where individuals compete to satisfy their interests. "Problem definition, data collection, and evaluation criteria are weapons used to manipulate decision outcomes towards personal ends rather than tools to inform a final decision" (p. 1071). This approach views the organization as an aggregation of individuals, or coalitions of individuals, who are pursuing their own self-interests rather than acting in an internally consistent way to achieve shared goals. Consequently, all decisions are the outcomes brought about by interested parties through negotiating and bargaining. As Yang (2003) claims, "this model posits that decision is largely determined by organizational political factors, which includes power and conflict of interests" (p. 461). The key concept underlying this model is power. Arnt (1970) defines power as the ability to cause others to behave according to one's own preferences and to impose sanctions if they do not.

The most well-known political decision-making approach is the one proposed by Forester (1984), which he calls “the politics of muddling through”. This model includes two dimensions. The first is the autonomy of the source of distortion, which can be viewed either as “socially ad hoc” or systematic. The second is the contingency of distortion, which appears as inevitable or socially unnecessary. Foster (1984, p. 28) details this model into four types of situations.

1. The situation is ad hoc, random, or spontaneous and is socially inevitable. The decision-making process tends to seek a satisficing solution or lower expectations.
2. The situation involves the world with more than two actors whose skills and insights vary but who are assumed to be cooperative. The decision-making process is comprised of social intelligence networks.
3. The situation is a pluralist world in which different interest groups have different senses and valuations of the problem at hand. The decision-making process is interpersonal bargaining and adjustment.
4. The situation is characterized not by random plurality, but by highly structured plurality, in which structure and power are rarely neatly separable. The decision-making process is working on more structural and effective equality.

The political model extends the vision in terms of understanding agency and social factors. It moves from decision makers' individual discretion into more broad social and institutional contexts. Jonsson (1982) summarizes:

“political decisions are a series of small changes shaped in the interstices between the old structures built up of earlier decisions and the changes of assembling a majority in favor of change” (p. 101).

Indeed, political decisions are concerned with the distribution of resources, the expansion of public sector production, the build up of institutions, and/or systems of rules to protect the individual.

Garbage Can Decision-making Model

This model was developed by Cohen, March, and Olsen in 1972. Their belief is that in an environment characterized by complex interactions among managers, solutions, problems, and choice opportunities, the simplest source of order is that of time. They claim that “activities can be ordered in time and connected by their temporal relations” (p. 198). Temporal sorting is commonplace in human affairs, and this is the original idea of the garbage can decision-making model.

The general ideas of temporal sorting have been used to deal with flows of solutions and problems, as well as with participants in what has come to be called a garbage can decision process. March (1994) suggests that there are four streams

pouring in the garbage can model: (1) a stream of choices, (2) a stream of problems, (3) a rate of flow of solutions, and (4) a stream of energy from participants. A decision is an outcome of the combination of the four streams. Therefore, within the context of organized analysis, any decision will involve the matching of choice, problem, solution, and participants. "Problems and solutions are attached to choices, and thus to each other, not because of any means-ends linkage but because of their temporal proximity" (p. 200).

This model offers a decision-making approach best suited for organized anarchy, which means high uncertainty in both problem identification and problem solution. Therefore, the problem usually is ill-identified. There are three characteristics in the organized anarchy: (1) problematic preferences, (2) unclear technology, and (3) fluid participation. In these situations, the participants have no particular goal, and have poor information or technology to base the decision upon. They don't have a particular decision to make, and the participants or decision-makers are not stable in their desirability. They continuously change in and out of the decision-making committee.

Bounded Rationality Decision-making Theory

Studies of decision-making in the real world suggest that not all alternatives can be known, that not all consequences are considered, and that not all preferences

are evoked at the same time. This has led some theorists to modify the rational model to a “limited (bounded) rationality” model. “Herbert Simon (1955) introduced the concepts of satisficing and bounded rationality, which can be interpreted as defining a realistic normative standard for an organism with a finite mind” (Kahneman, 2003, p. 163). Simon’s deferent viewpoint toward the decision-making process won him a Nobel Memorial Prize in 1987.

In 1955, Herbert Simon introduced the concepts of satisficing and bounded rationality, which can be interpreted as defining a realistic normative standard for an organism with a finite mind. He has proposed that decision-makers should be viewed as holding bounded rational thinking, and offers a model in which utility maximization was replaced by satisficing.

This limited rationality perspective on decision-making recognizes that the rational model is often inapplicable, because of bounded rationality (limited time and mental capacity, limited information, and limited resources), and personal and social constraints on the individuals and organizations. Therefore, individuals or decision-making units (or firms), just like most people, “are constrained by limited cognitive capabilities and incomplete information, and thus their actions may be less than completely rational in spite of their best intentions and efforts” (March, 1994, p. 9).

There are several differences between pure rationality and limited rationality.

The limited rationality viewpoint admits “(1) man’s limited intellectual capacities, (2) the inadequacy of information, (3) the high cost of analysis, and (4) learning from failures” (Lindblom, 1959, p. 81). Simon (1997) details the limited rational decision-making process, which he called “bounded rational decision-making”, as the following:

(1) Rationality requires a complete knowledge and anticipation of the consequences that will follow each choice. In fact, knowledge of consequences is always fragmentary.

(2) Since these consequences lie in the future, imagination must supply the lack of experienced feeling in attaching value to them. Values, however, can be only imperfectly anticipated.

(3) Rationality requires a choice among all possible alternative behaviors. In actual behavior, only a few of all these possible alternatives ever come to mind (pp. 93-94).

Therefore, Simon focuses on the limitations of decision-making, which are: incompleteness of knowledge; difficulties of anticipation; and the scope of behavior possibilities. Thus, the decision-making “takes place in an environment of givens” (Simon, 1976, p. 79). Within the limits set by these givens, certain stimuli and certain

items of information will impinge on the organizations or individuals. Choosing apparently better alternatives may be affected by ambiguity or uncertainty and by the social norms of intelligent choice in organizations.

The whole decision-making process in Simon's model includes three limitations and four articulations. The three limitations are incompleteness of knowledge, difficulties of anticipation, and the scope of behavior possibilities; the four articulations are from receiving the positive stimuli, impacted by the individual characteristics, digested by the two mechanisms of behavior-initiating and behavior-persistence, and completed by integrating three planning procedures.

Comparison of Decision-making Approaches

From the above description, there are four main differences between the four decision-making approaches.

The Role of Decision-Makers

The decision-makers play an important role during the decision process. In the rational decision-making approach, the decision-makers are viewed as rational actors with unlimited time, sufficient resources, proper capacity, and are objective in making a decision. In the bounded rationality decision-making model, the decision-makers are limited by time, mental capacity, information and resources, and are only able to make a sufficient decision. In the political decision-making model, the decision-makers are

viewed as political actors who are struggling among conflicting interests and unjust procedure, and are subjected to make a compromised decision. In the garbage can decision-making model, under the chaotic circumstance, the decision-makers are unstable and are likely a mere coincidental result.

The Identification of Problem

The identification of problem is the initial step in the decision process. The quality of the identification of a problem always leads to the goal and decision. In the rationality decision-making model, the problem is well-defined. Because there is so much uncertainty in the given environment, the problem is ambiguous in the bounded rational decision-making model. The problem in the political decision-making model, because the existence of a lot of interests and conflicts, is ideologically-defined. Because of the notion of temporal sorting, in the garbage can decision-making model, the problem is ill-defined.

Rates of Identifying the Problem and Problem-Solving

Different models have different focuses regarding the problem and its solution. In the rational decision-making model, the rates of identifying the problem and solving the problem are most equal. The bounded rationality and political decision-making models focus on solving the problem more than identifying the problem, because they stress the uncertainty and conflicts in the environment. Since

the problem is ill-defined in the garbage can decision-making model, there is insufficient literature to indicate the rates.

Attitude toward the Final Result

Attempting to find an optimum decision is the attitude of the rational decision-making model. However, in the bounded rationality decision-making model, a choice which is proper and sufficient is satisficing. In the political decision-making model, the final result is compromised and produced by negotiating. The garbage can decision-making model views decision as just a coincidental result, which is sometimes temporal.

The model of decision-making affects the attitudes of decision-makers toward goals and goal setting; influencing the decisions as well. The comparison for the four decision-making models is shown as Table 3.

Table 3

A Comparison of Decision-Making Approaches/Theories

Decision-making Approaches	Assumptions	Main Characteristics
Rational Decision-making	Decision-makers with a well-defined problem are viewed as rational actors who have unlimited time and resources and are objective finding an optimum alternative.	Optimal Creative Reasonable Logic Maximal
Bounded Rationality Decision-making	Decision-makers with an ambiguous problem have limited time and mental capacity, limited information and resources to discover a choice which is satisfactory and sufficient.	Satisfactory Muddle through
Political Decision-making	Decision-makers with an ideologically-defined problem are viewed as political actors who probably are subjective in finding a compromise among conflicting interests and unjust procedures.	Compromise Negotiable Bargained Pressure Counteractive

Decision-making Approaches	Assumptions	Main Characteristics
Garbage Can Decision-making	Unstable decision-makers with an ill-defined problem under chaotic circumstance are usually intuitive in reaching a coincidental result.	Intuitive Chaotic Coincidental Temporal

CHAPTER 3

THEORETICAL FRAMEWORK

The chapter is separated into three parts. The first part describes Simon's (1976, 1997) bounded rationality decision-making process. The second part describes Rogers' (2003) innovation-decision process, and the third part details the five categories of factors which are the main content of the theoretical framework.

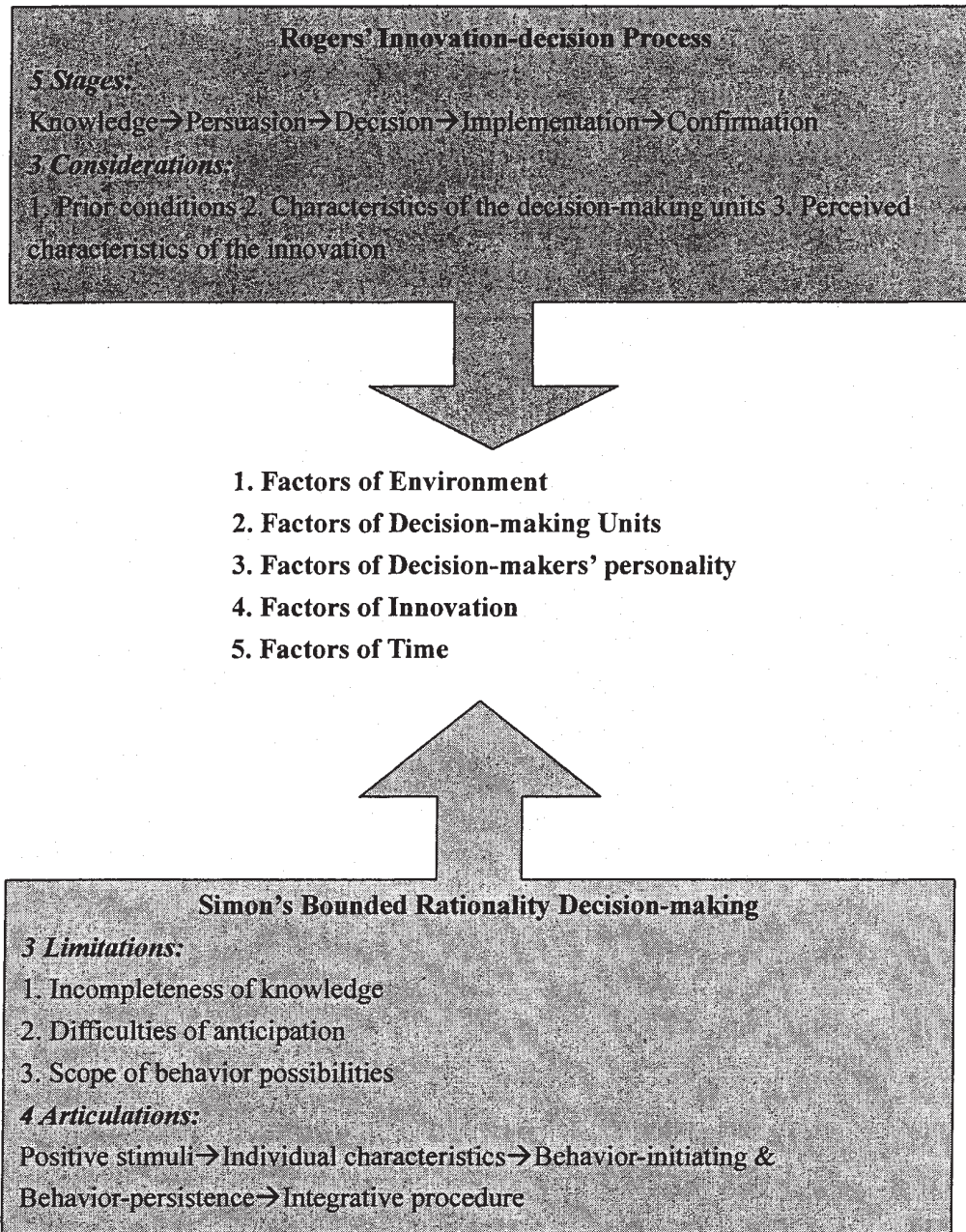
In this study, the researcher seeks to understand the decision-making process regarding the merger of two departments within one organization. The researcher assumes that the MLCC is an innovation to Taiwanese campuses. The process of MLCC decision-making has an impact on the day-to-day operation of the two departments and the work-life of librarians and information technology (IT) specialists. The characteristics, beliefs, and strategies of decision-makers and decision-making units should be considered as important as contextual factors in determining re-organizational (MLCC) choices.

In order to explore the factors of decision-making of MLCC, the theoretical framework of this study combines Rogers' (2003) explanation of the three stages of the innovation-decision process, which includes three considerations: prior conditions, characteristics of the decision-making units, and perceived characteristics of the innovation; and Simon's description of three limitations of decision-making, which

include incompleteness of knowledge, difficulties of anticipation, and scope of behavior possibilities. This theoretical framework is illustrated on Figure 2.

Conceptual Framework

Figure 2. The theoretical framework combines Rogers' (2003) innovation decision process and Simon's (1976, 1997) bounded rationality decision making.



Simon's Bounded Rationality Decision-Making Theory

Within the limits set by these givens, certain stimuli and certain items of information will impinge on the organizations or individuals. Ambiguity or uncertainty and the social norms of intelligent choice in organizations may impact choosing apparently better alternatives. Therefore, the researcher chooses the bounded rational decision making approach by considering Simon's (1976) idea that "the decision-making takes place in an environment of givens" (p. 79). The real situations in Taiwan are (1) every single campus has a particular atmosphere, (2) different campus administrators have different knowledge backgrounds and personalities, and (3) decision-making process may be affected by the whole environment in Taiwan. Therefore, Simon's three limitations of rationality are helpful in investigating the MLCC decision-making process in Taiwan.

The first limitation is the incompleteness of knowledge of human beings.

Simon (1976) believes:

A human being never has more than a fragmentary knowledge of the conditions surrounding his action, nor more than a slight insight into the regularities and laws that would permit him to induce future consequences from knowledge of present circumstances (p. 94).

The second limitation is the difficulties of anticipation. Simon (1976)

explains:

The mind cannot at a single moment grasp the consequences in their entirety.

Instead, attention shifts from one value to another with consequent shifts in preference (pp. 95-96).

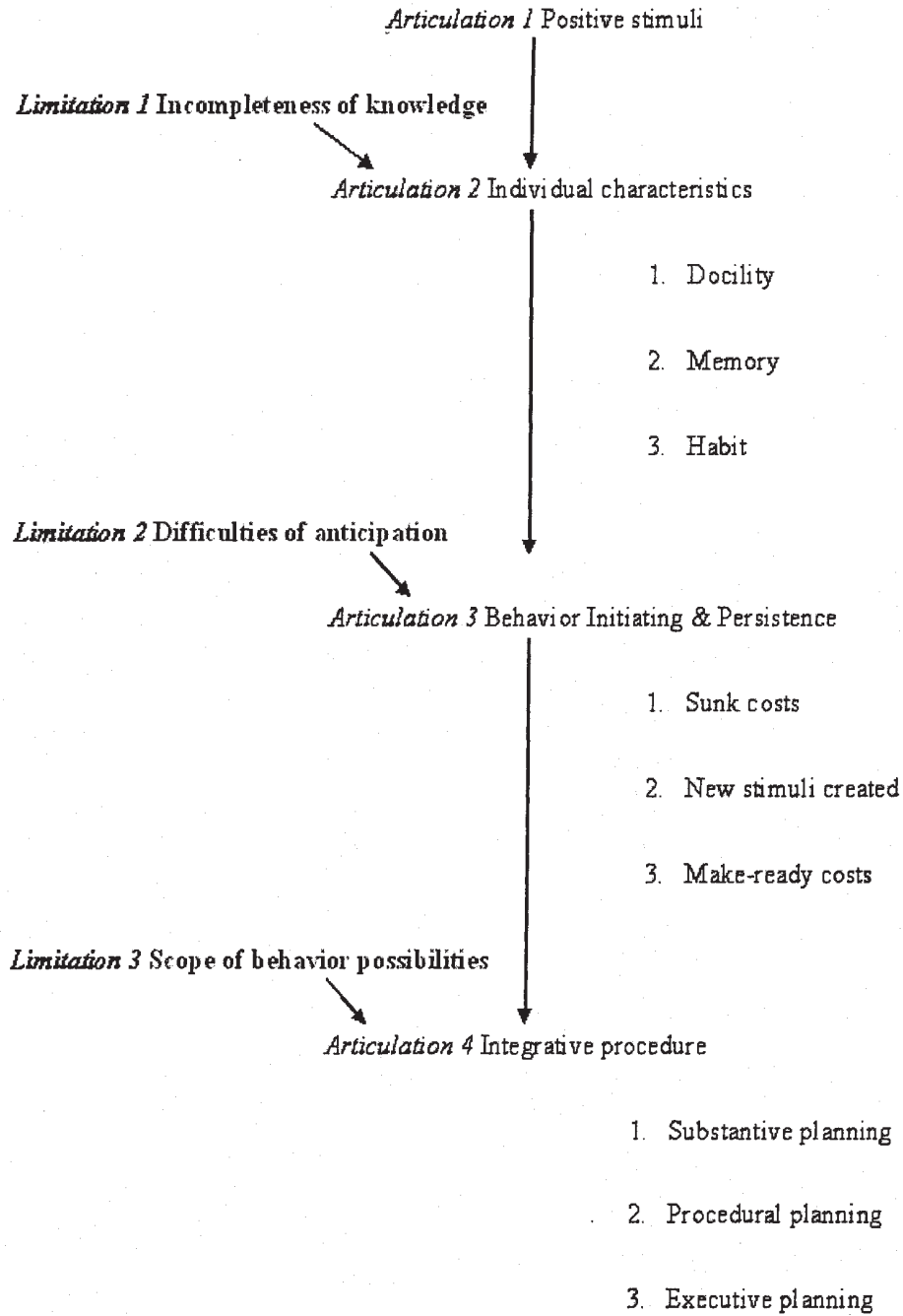
The third limitation is the scope of behavior possibilities, which means that “Of all these possible movements, only a very few come to mind at any moment as possible behavior alternatives” (Simon, 1976, p. 96). In other words, human beings have difficulty figuring out the possible consequences of available behavior alternatives.

From these three aspects of rational limitations, the research may reveal the factors through interviewing the different campus administrators with different knowledge backgrounds to question what affected the decision-making process of MLCC in the environment of Taiwan, and what caused the MLCC decision to take place. There are four articulations in the bounded rational decision-making approach, which are (1) positive stimuli, (2) individual characteristics that includes personal docility, memory, and habit, (3) the two mechanisms which are behavior-initiating and behavior-persistence, and (4) the integrative procedure that starts from the substantive planning, the procedural planning, and through to the executive planning (Simon,

1997, pp. 97-108). The whole process of decision-making is continuously explained in the following paragraphs and shown as Figure 3.

Simon's Bounded Rationality Decision-making

Figure 3. Simon's whole process of bounded rationality decision making.



When an individual (or an organization) gets the positive stimuli, he/she will hesitate for a while, or make a decision at once; both behaviors depend on his/her training (docility), his/her memory, and habit. Therefore, the reflection given to the positive stimuli depends on inference and inerratic habit of a particular individual.

The stimuli plays an important role in the very beginning of the decision making process. Simon (1997, p. 103) says, “not only do the stimuli determine what decisions the administrator is likely to make, but they also have a considerable influence on the conclusion he reaches. An important reason for this is that the very stimulus which initiates the decision also directs attention to selected aspects of the situation, with the exclusion of others”.

After receiving the stimuli, the decision making process is impacted continually by the characteristics of the decision makers, which includes docility, memory, and habit. “In achieving the integration the human being exhibits docility; that is, he observes the consequences of his movements and adjusts them to achieve the desired purpose” (Simon, 1997, p. 97), and with the characteristic of docility, “a previous experience with other choices (of the same sort) may enable him to infer something about the character of the particular choice with which he is faced” (p. 98). When similar problems recur, “it is memory that stores up the information gathered, or even the conclusions reached, in solving the first problem, and makes these

available. Without new inquiry, when the next problem of the same kind is encountered” (p. 99). “Habit performs an extremely important task in purposive behavior, for it permits similar stimuli or situations to be met with similar responses or reactions, without the need for a conscious rethinking of the decision to bring about the proper action” (p. 100). However, those characteristics may vary in different decision makers and with different personalities.

Individual decision-making not only depends on inference and non-erratic habit, but also on his/her considerations toward the goal, which can be viewed separately as value judgments and factual judgments. “In so far as decisions lead toward the selection of final goals, they will be called “value judgments”; so far as they involve the implementation of such goals they will be called “factual judgments” (Simon, 1997, pp. 4-5).

From the consideration of the positive stimuli, the individual is able to make judgments regarding the values toward which to direct activities; the general methods to use to attain these values; the knowledge, skills, and information necessary to make particular decisions within the limits of the policy laid down; and the methods to be used to carry out the decision. This thinking and conducting phase, according to Simon (1997), is called “the substantive planning” procedure (pp. 99-100).

Although the stimulus initiates the decision and directs attention to selected aspects of the situation, there are two mechanisms that bring about the integration of decision-making behavior in a particular pattern: persist mechanism and initiate mechanism. They “cause behavior to persist in a particular direction once it has been turned in that direction, and initiate behavior in a particular direction” (Simon, 1997, p. 105). The two mechanisms determine the completion of the decision making process and are affected by personal, organizational, social, and economic factors. In other words, an individual may or may not react to all stimuli. Some people may be attracted by a particular stimulus, some may not. The behaviors of being attracted or being repelled are largely external to the individual. Being external, they can be interpersonal---they can be invoked by someone other than the person they are intended to influence, and consequently, they play a central role in administrative organization. This kind of influence is determined by individuals’ “behavior-initiating mechanism” (Simon, 1997, p. 94).

Particular activities (i.e. the activity of substantive planning) happen after receiving the stimulus. However, an individual may determine to continue or discontinue the activities. It all depends on the human beings’ “behavior-persistence mechanism”, which causes behavior to persist in a particular direction once it has

been turned in that direction (p. 94). There are three reasons for behavior to persist in one direction (pp. 95-96):

1. Sunk costs: An administrator may feel considerable doubt that a particular activity should be undertaken; but, once the responsibility has been assumed, it may be advantageous to continue rather than lose the time and effort that have already been expended.
2. New stimuli created: The particular activity itself creates stimuli that direct attention toward its continuance and completion.
3. Make-ready costs: In the case of many repetitive tasks, the time of preparing to perform the task, and the time required to turn from that task to another, make it advantageous to persist in the performance of the one task rather than to perform a variety.

Through the above three reasons, it may be seen that a large part of this mechanism is “internal” and proceeds along the associational paths that have been built up in the mind.

Along with the complex operation of stimuli, personal characteristics and the two mechanisms of behaviors, the decision making process is a set of integrative procedures. These integrative procedures move from the substantive planning, to the procedural planning, and through to executive planning (Simon, 1997). Simon (1997,

pp. 106-107) details, that substantive planning is an activity when an individual or organization uses to attain values, knowledge, skills, and formation to make particular decisions. The procedural planning is an activity that an individual or organization uses to design and establish mechanisms to direct the attention, channel information and knowledge. The purpose is to cause the specific day-to-day decisions to conform to the substantive plan. Then, the individual or organization may execute an activity called, executive planning, based on the above two activities. The process of adopting an innovation, in nature, is a process of decision-making. Rogers (2003) explains that “this process consists of a series of choices and actions over time through which an individual or a system evaluates a new idea and decides whether or not to incorporate the innovation into ongoing practice (p. 168). The whole decision-making process is completed by following the four articulations.

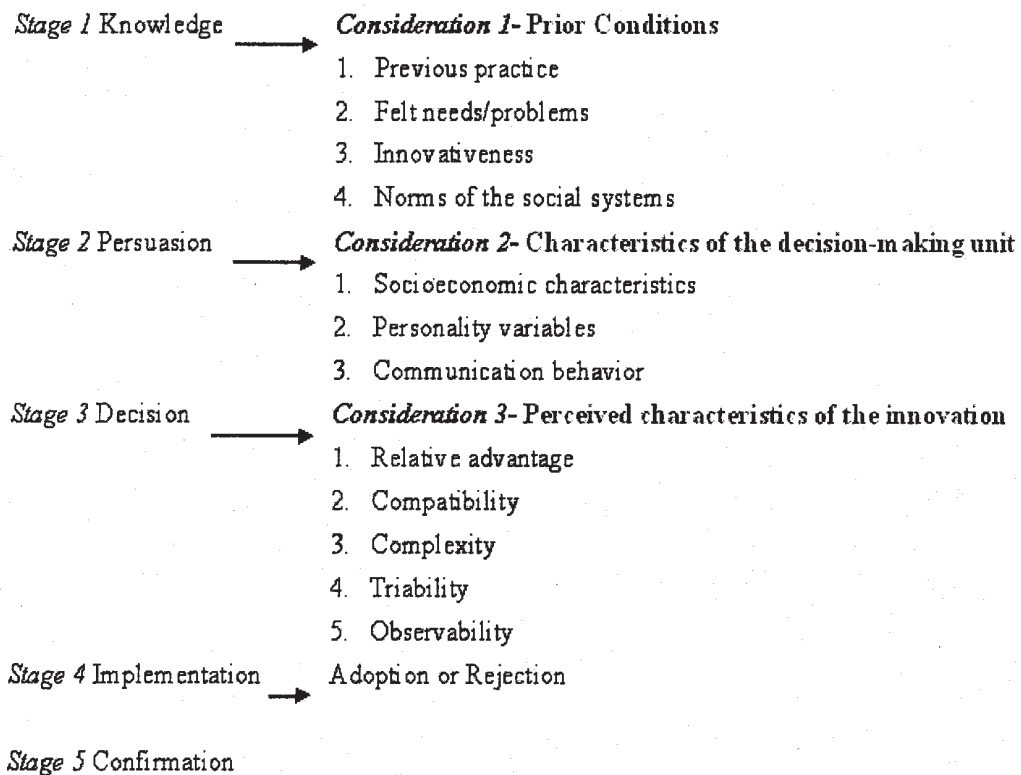
Rogers' Innovation-Decision Process

According to Savery and Luks (2000), changes involved in reorganization “include such issues as downsizing, de-layering and the introduction of new plant and/or technology, reason for changes, and who decided to introduce the changes” (p. 1). Indeed, reorganization, like MLCC, is a complex phenomenon with potentially devastating consequences, and it will seriously damage firms if not performed and implemented correctly, as does the merger of libraries and computing centers. The

MLCC as Robbins and Decenzo (2003) explain is “an alteration of an organization’s environment, structure, technology, or people” (p. 203). Therefore, the innovation-decision process theory provides a theoretical path to explore the factors of MLCC. See Figure 4.

Five Stages of Rogers’ Innovation-decision Process

Figure 4. Detailed explanation of Rogers’ innovation decision process



Note. Description of Rogers’ (2003) innovation-decision process, and reorganized from *Diffusion of innovations* (5th Ed.) p. 170.

According to Rogers (2003), the definition of innovation-decision process, from his first published book in 1962 through the newest edition in 2003, has consistently been:

The process through which an individual (other decision-making unit) passes from first knowledge of innovation, to forming an attitude toward the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision (p. 170).

Therefore, innovation-decision is a process of determining to adopt or reject an innovation. Rogers (2003) reports the processes of an innovation-decision model as five sequential stages. The five stages are the following:

1. Knowledge stage “occurs when an individual (or the decision-making unit) is exposed to an innovation’s existence and gains an understanding of how it functions” (p. 169). Three types of knowledge refer to this stage: awareness-knowledge, how-to -knowledge, and principles-knowledge. In this stage, the individuals or decision-making units become aware of the innovation and learn an understanding of how it functions. The individuals or decision-making units purposely seek the conceptual (software) information of the innovation. In this stage, the decision-makers’ previous knowledge and the decision-making units’ characteristics will effect the understanding of the conceptual (software) information.
2. Persuasion stage “occurs when an individual (or the decision-making unit) forms a favorable or an unfavorable attitude towards the innovation” (p. 169). The

individuals or decision-making units seek innovation-evaluation information by using the attributes of an innovation as standards. The innovation-decision, therefore, relies on the attributes of the innovation. The attributes of the innovation are viewed as the considerations for adopting or rejecting the innovation.

3. Decision stage “takes place when an individual (or the decision-making unit) engages in activities that lead to a choice to adopt or reject the innovation”(p. 169). Since the decision is made in this stage, this paper will not explore the factors that impact the decision-making in this stage.
4. Implementation stage “occurs when an individual (or the decision-making unit) puts a new idea into use” (p. 169). However, based on the real needs or the real situations, some individuals or decision-making units may adjust the original concept of the innovation and turn it into re-invention.
5. Confirmation stage “takes place when an individual seeks reinforcement of an innovation-decision already made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation” (p. 169). He or she may also reverse the decision leading to either adoption (if the previous decision was to reject) or discontinuance (if the previous decision was to adopt).

Since the five stages are a sequential process, they need to pass through time.

The situation, of course, may change over time. It may force one to think or to act differently, and it may diminish a particular thought or action. Therefore, time is another important factor for the decision of MLCC.

In every decision-making theory, the decision-making process always includes: goal orientation, knowledge of all options, clear preferences, constant preferences, and a final choice which will maximize the outcome. This process is similar to Rogers' innovation-decision process, especially to the first three stages: knowledge, persuasion, and decision stages. In these three stages, individuals or decision-making units (firms) relocate their previous practice/knowledge, define their needs/problems, and make a list of considerations based on the characteristics of the innovation, decision-making units (firms), and environmental situation. They then determine to adopt or reject it.

The Five Categories of Factors

By combining the cognitive and psychological elements involved in Simon's bounded rational decision making theory and Rogers' innovation-decision process theory, the five categories of factors to consider in the MLCC decision-making process are the followings: 1. factors of environment, 2. factors of decision-making units, 3. factors of decision-makers' personalities, 4. factors of innovation, and 5.

factors of time. These categories may illuminate the research questions, acting as helpful but not restricting guides. See Table 4.

Table 4

Five Categories of Factors

Main Categories of Factors	Sub-categories of Factors
Factors of environment	
Factors of decision-making units	Decision-making types of innovation Organizational context Expectation
Factors of decision-makers' personality	Cognitive style Knowledge Judgment Tolerance of ambiguity Decision-makers' proposition to the problem
Factors of innovations	Five attributes of an innovation Perceptions Types of innovation
Factors of time	Timing Time constraint Time pressure

Factors of Environment

An environment is a complex of external factors. It acts on a system and determines its course and form of existence. An environment may have one or more parameters, physical or otherwise. The environment of a given system must interact with that system in order for it to sustain and develop. Generally, the environment or milieu of some object or action consists of the substances, circumstances, objects, or

conditions by which it is surrounded or in which it occurs. Therefore, the effect of the environment cannot be ignored while studying the factors of decision-making. Rogers (2003) states that, “a system’s norms can be a barrier to change” (p. 26). Norms are the established behavior patterns for the members of a social structure, such as organizational culture and group mindset, etc. Strang and Soule (1998) also emphasize the structural and cultural logic of reorganization processes. They state that diffusion “refers to the spread of something within a social system” (1998, p. 266). In their study, Strang and Soule use the term “practice” to denote the diffusion item, a very close concept to Rogers’ innovation, which might be a behavior, strategy, belief, technology, or structure. In this study, it refers to the MLCC.

Rogers (2003) further suggests that social structure will influence the innovation-decision, and cites the study of “Family Planning in Korea” as an example. In that study, two Korean women live in different villages. Both women are illiterate, married, have two children, and are twenty-nine years of age. The husbands of both women are high school graduates. From their same individual background, one might expect that they would be equally likely, or equally unlikely, to adopt a new contraceptive method. However, in Rogers’ experiment this is not the case. He uses this study to show how a social structure of this village can affect the adoption of innovation. The structure can have an impact over and above the effect of other

variables such as the individual characteristics of the members of the society.

Emphasizing the social structural and cultural logic of the innovation-decision process is the focus in this category of factors. Therefore, an understanding of the social structure will help one understand the innovation-decision process.

Factors of Decision-making Units

Different decision-making units on different campuses have different considerations for making the decision for their own merger. How do the characteristics of the decision-making unit affect the sequence of adopting MLCC? In other words, a decision is made and affected by the thinking of the decision-making group. Groupthink is a term coined by psychologist Janis in 1972 to describe a process by which a group can make bad or irrational decisions. In a groupthink situation, each member of the group attempts conform his or her opinions to what they believe to be the consensus of the group. In a general sense this seems to be a rational way to approach the situation. However this results in a situation in which the group ultimately agrees upon an action which each member might individually consider being unwise. Rogers (2003) also mentions that the characteristics of decision-making units of innovations have important influences on the decision. Therefore, there are three aspects that will be considered by this researcher in regard to the characteristics of the decision-making unit toward the decision. The three

aspects are the decision-making types, the organizational context, and the expectation toward goals of the decision-making unit.

Decision-making types of innovation. Different decision-making units in different organizations have different attitudes or styles toward the decision, which is similar to Rogers' (2003) focus on decision-making types. The first type is optional innovation-decisions, which are made by individuals but may be influenced by the organizational norms of the firm. The second type is collective innovation-decisions, which are made by consensus among the members of a firm. The third is authority innovation-decisions, which are made by a relative few individuals in a firm.

Although the decision is made by the decision-making unit; the whole organizational culture has an impact on this unit. For this reason, the decision-making unit and its organizational context can not be discussed separately.

Organizational context. It is the fundamental structure that an organization must have in order to attend to a particular rhetorical situation. It focuses on format features and abstract patterns of an organization and creates somewhat of an agenda for the individuals involved in the organization. The notion of organizational context is very similar to Schein's organizational culture. According to Schein (2004, 3rd. ed.), organizational culture is the most difficult organizational attribute to change that

exists, outlasting organizational products, services, founders and leadership and all other physical attributes of the organization (pp. 5-9).

As to the decision-making issue, Leonard et al. (1999) proposes that organizations develop a preference for decision-making based on its culture and context, and these preferences are reflected in a “collective cognitive style” (p. 11). The organizational behavior and decision-making literature is replete with examples of collectives versus individual cognition. Collective cognition is displayed by such phenomenon as “groupthink” (Janis, 1972), which refers to organizational level bias. Hoffman and Maier (1967) discuss the “solution-mindedness”, in which group decision makers were found to agree on a solution very early in the decision-making process, regardless of their initial differences of opinion. The distinction between individual and collective cognition is essential to understanding the concept of organizational cognitive style. The organizational cognitive style, as the social decision scheme theorist Davis (1973) mentions, examines the effects of various individual preferences on organizational decision-making. It demonstrates how organizational preferences differ from those of individuals within the organization. Therefore, the organizational contextual variables have a significant impact on organizational decision-making, such as rules, regulations, policies, and standardized

operational procedures (pp. 105-107). The organizational contextual variables consist of the following set of factors.

1. The numbers of persons who are involved in the decision-making process. Situations differ because some decisions are made at the individual level, whereas others involve a group of people.
2. The organizational politics under which the problem is merged and solved. Politics can be viewed as a process of searching for a consensus on underlying values to foster a sense of community among involved parties.
3. The organizational culture. This reflects a complex web of shared values, beliefs, and social norms among organizational members.

Expectation. It is “a belief that something will happen or be the case, or it is a thing that is expected to happen” (Retried from <http://www.askoxford.com/?view=uk>).

In other words, if something happens that is not at all expected it is a surprise.

Therefore, expectation is what is considered the most likely to happen, it may or may not be realistic.

Robbins and Decenzo (2003) explain expectation or expectancy as, “the strength of a person’s motivation to perform (effort) depends on how strongly that individual believes that he or she can achieve what is being attempted” (p. 289). It is

important to be aware that different decision-making theories propose different expectations toward the goal. This, in turn, results in a different decision.

The most comprehensive and widely accepted explanation of expectation to date is Vroom's (1964) expectancy theory. Although the theory has its critics, most of the decision-making theories are influenced by it. Expectancy theory states that an individual tends to act in a certain way on the basis of the expectation that the act will be followed by a given outcome and on the basis of the attractiveness of that outcome to the individual. Therefore, the expectation will determine the effectiveness of an achieved goal. In this case, expectation implies the belief that a decision-making unit has about the outcome exists prior to goal setting. The major function of expectation in the decision-making process is its assistance in creating alternatives. Although the expectation data are an important element in the decision-making process, they are not used for making the decision.

According to Cyert et al. (1958), there are three aspects to the attitudes of decision-making units of the expectation.

1. Resource allocation. Within the organization, the resource allocation "reflects gross comparisons of marginal advantages of alternatives" (Cyert et al., 1958, p. 337). Most of the decisions are made within budgetary constraints and to that extent reflected any marginal calculations that entered into the formation

of a general budget. Any alternatives that satisfies, the general cost and constraints, and secures powerful support within the organization is likely to be adopted. Resources, in this study, are defined broadly and may include symbols of acceptance and positive reinforcement of one's self concept, as well as more tangible resources such as a product or money.

2. Search activity. If a problem is recognized, there is ordinarily a search for possible alternatives. Search activity is not viewed as simply another use of internal resources. Nutt (1984) studied 87 cases and discovered there are five types of organizational search activity toward a decision. The search activity is affected by the notions of the four decision-making approaches. For example, the search activity of the bounded rational decision-making theory will be limited by the notion of the insufficiency of human capacity. The political decision-making approach may be bounded by the relative power of the claimant groups in its environment. However, from the viewpoint of the garbage can decision-making approach model, the search activity may opposite---“Not only are organizations looking for alternatives; alternatives are also looking for organizations” (Cyert et al., 1958, p. 338).
3. Computations. It is a similar solution to a problem from given inputs by means of an algorithm. “Expected value (EV) is a central principle in the

theory of probability. It is used for average estimation of some random value. Expected value is similar to a center of gravity assuming that the values of probability are the masses of solid point” (Retrieved from <http://www.gamblecraft.com/tutorial/expval.htm>). Therefore, the computational data is quantitative. Note that the value itself may not be expected in the general sense; it may be unlikely or even impossible. The computations of anticipated consequences used by the organizations seem to be quite simple. There is no particularly strong evidence of computational data used explicitly in making a decision. There are two reasons to criticize the proper usage of computational data. Cyert et al. (1958) explain that the first is the budgetary constraint. One must consider whether there is money available for supporting the decision even though the computational data supports it. The second is an improvement criterion: is the future decision that is supported by the computational data better than the existing situation?

Summarily, the expectation has an impact on the ways of allocating resources, searching activity and attitudes toward the computational data of a decision-making unit. Therefore, expectation can not be ignored when exploring the factors of the decision-making of the MLCC.

Factors of Decision-makers' Personality

In discussing decision-making theories, the personality of a decision-maker must be discussed, just like what Leonard et al. (1999) state, "a personality or individual characteristic which is often linked to differences in decision-making behavior" (p. 407). The cognitive style is another issue for discussing the decision-making. The cognitive style has been defined as the way in which people process and organize information and arrive at judgments or conclusions based on their observations (Hunt et al., 1989). The concept of cognitive style has been mentioned as a factor to consider in studying a number of organizational issues such as decision processes, assessment of risk (Henderson & Nutt, 1980), strategic problem formulation, organizational design and organizational change (Hamilton, 1988; Hellriegel & Slocum, 1978).

Cognitive style. According to Simon (1997), cognitive style influences the decision-making process when an individual or an organization is presented with a new idea (e. g. reorganization). He/she will hesitate for a while or make a decision at once. Both behaviors depend on his/her training (docility), memory, and habits. The reflection given to the new idea depends on the inference and inerratic habit of a particular individual. Cognitive style has received a great deal of attention in the decision-making literature, and is defined as how people process information and how

information is evaluated. For example, Wilson's (1973) change-seeking propensity, Jung's (1923) personality ways of thinking style (i. e. intuitive vs. thinking, sensing vs. judging), and Ackhoff (1962) and Churchman (1961) who were the pioneers linking cognitive style and decision behavior.

The cognitive style varies according to the cognitive complexity and knowledge of a particular individual. Whereas cognitive complexity is concerned with the structure of cognition, knowledge deals with the content of cognition. Structure refers to the manner in which our thinking is organized, whereas content refers to the information available. Therefore, the two concepts complement each other.

According to Schroder (1971), the concept of cognitive complexity measures the structure of cognition and includes two primary components: differentiation, which refers to the number of dimensions used by individuals to perceive environment stimuli, and integration, which refers to the complexity of rules used by individuals in organizing the differentiated dimension. Cognitively simple decision-makers tend to perceive stimuli in simple and minimally differentiated dimensions. They usually apply fixed rules for organizing stimuli. On the contrary, cognitively complex decision-makers tend to perceive several dimensions of stimuli and apply more complex rules to interpret phenomena (Bartuned & Loius, 1988).

Attitudes and knowledge. According to Rogers (2003), “attitude is a relatively enduring organization of an individual’s beliefs about an object that predisposes his or her actions” (pp. 174-175), and a person holding a type of attitude can have different mental postures towards a proposition, for example, believing, desiring or hoping which therefore implies intentionality.

Usually the decision-makers want to know whether their thinking is on the right track and they try to seek social reinforcement from others. In other words, the attitude of a decision-maker toward the innovation will be influenced by peers or others. Until an individual knows about a new idea, of course, he or she cannot begin to form an attitude toward adoption or rejection; therefore, the individual’s knowledge plays an important role in the innovation-decision.

Knowledge of pre-decision making develops primarily from educational background and work experience. Decision-makers’ knowledge influences their ability to recognize the relevance and importance of the stimuli. That means, in order to readily receive new information and ideas, they must to be fairly consistent and compatible with what is already known and understood. The notion is similar to Rogers’ (2003) awareness knowledge in “knowledge stage” of innovation-decision process. With the awareness knowledge, individuals may have the ability of receiving the notion of an innovation. Simon (1997) also mentions the incompleteness of

knowledge. He argues that the knowledge toward anticipated value and consequences is always fragmentary and imperfect, and the knowledge is never sufficient enough to create an awareness of all possible alternatives.

Judgment. Individual decision-making not only depends on inerratic habit, but also on considerations toward the goal. Considerations are value judgments and factual judgments. "In so far as decisions lead toward the selection of final goals, they will be called "value judgments". If they involve the implementation of such goals they will be called "factual judgments" (Simon, 1997, pp. 4-5).

However, those judgments depend on individuals' values. According to England (1967), personal values affect the selection, filtering, and interpretation of what an individual "sees" and "hears". Some writers on strategic management (e. g. Sturdivant et al., 1985) indicate that the personal values of decision-makers influence the recognition and interpretation of environmental forces. Change-seeking propensity is an aspect of personal values which may have an effect on decision-makers' behavior. In his study of conservatism/liberalism, Wilson (1973) defined conservatism as resistance to change and liberalism as preference for change. He concluded that top managers who resist change do not like to search for novel information.

Tolerance of ambiguity. According to Gul (1984), tolerance for ambiguity "measures the extent to which one feels threatened by ambiguity or ambiguous

situations and the relationship of ambiguity to confidence in decisions” (p. 267); in other words, tolerance for ambiguity is concerned with the behavior-initiating mechanism. It refers to the degree to which people can hold back their need for an action. Individuals with low tolerance for ambiguity prefer definiteness and regularity. In other words, they like to deal with hard (quantitative) data. In contrast, individuals with high tolerance for ambiguity feel more comfortable with handling soft (qualitative) and vague data.

Decision-maker's proposition to the problem. The concept of decision-maker's proposition has been mentioned as a factor to consider in studying a number of organizational issues such as decision processes, assessment of risk (Henderson and Nutt, 1980), strategic problem formulation, organizational design and organizational change (Hamilton, 1989). Yang (2003) summarizes the effective elements of decision-making as the following:

1. Decision-maker's knowledge and understanding of the nature of the problem is a major factor that influences the decision-making process.
2. Decision-maker's problem-solving ability includes skills, such as rapidly grasping the essential issues under difficult situations and creatively generating viable options for a tough problem.
3. Decision-maker's expected objectives and desired outcomes also impact his

or her approach to determine the preference for alternative.

4. Decision-maker's personality. It is indicated by overall ways in which individuals react and interact with the world and other people.

Factors of Innovations

Five attributes. Since there is an obvious adoption rate of MLCC on Taiwanese campuses, the notion of MLCC in this study is viewed as an adoptive/adaptable innovation through the decision-making process, which by Rogers calls the innovation-decision process. Rogers (2003) describes five attributes to indicate the adoption rate of an innovation; however, the five characteristics may also be considered in conjunction with the other factors that affect the innovation-decision process. The five characteristics of the MLCC are relative advantage, compatibility, complexity, trialability, and observability. During the decision-making process, have the five characteristics been considered by decision-makers/unit? How and what impact to they have on the decision-making process?

Perceptions. It is "the ability to see, hear, or become aware of something through the senses, the process of perceiving, a way of understanding or interpreting something, or intuitive understanding and insight" (Retrieved from http://www.askoxford.com/concise_oed/perception?view=uk). It can be viewed as the process of acquiring, interpreting, selecting, and organizing sensory information.

According to Sitkin and Weingart (1995), "...perception as a crucial influence on individual risk-taking behavior" (p. 1589); therefore, the perceptions of an innovation by members of an organization's decision-makers/unit also affect their evaluation of and propensity to adopt the innovation (Ostlund, 1974; Tornatzky & Klein, 1982; Holak et al., 1987). Indeed, the perceived benefits of adopting the innovation should exceed that of the alternatives, if organizations are to consider adopting (Anderson & Narus, 1999). Therefore, the perception toward the MLCC is another factor in this category.

Types of innovation. Past research has argued that distinguishing types of innovation is necessary for understanding organizational adoption behavior and identifying the determinate of innovation in them (Downs & Mohr, 1976; Kingt, 1967; Rowe & Boise, 1974). According to Damanpour (1991), there are three pairs of types of innovation: administrative and technical, product and process, and radical and incremental. Technical innovations pertain to products, services, and productive process technology; administrative innovations involve organizational structure and administrative processes. Production innovations are new products or services introduced to meet an external user or market need; process innovations are new elements introduced into an organization's production or service operations. Reorientation, non-routine and ultimate innovations are radical innovations; variation,

routine and instrumental innovations are incremental innovations (pp. 560-561).

There is no literature to determine what type of innovation the MLCC is; however, the different types of and attitudes toward the innovation affect the relationship between organizational variables and innovation and act as a factor for making decisions.

Factors of Time

“Time dimension is involved in the (1) innovation-decision process by which an individual passes from first knowledge of an innovation through its adoption or rejection, (2) the innovativeness of an individual or other unit of adoption compared with other members of a system, and (3) an innovation’s rate of adoption in a system” (Rogers, 2003, p. 20). Indeed, most new innovations involve a high degree of risk in terms of potential payoff, but the innovator or early adopter also typically has the highest potential to capture the most revenue or benefit from that innovation; therefore, time is an important factor in the innovation-decision process. Therefore, challenge for decision-makers is not simply to decide where the stability is and then replicate it as if time has suddenly come to a standstill, but rather to make appropriate adaptive choices at those frequent times of both uncertainty and opportunity when the system is re-organizing to accommodate change.

Timing. In this section, timing means the point on which the MLCC was made, and the suitable point of making the MLCC decision. One must consider whether the time available is sufficient to make an informed decision, the best timing for adopting innovation, and the most beneficial period for evaluating the appropriateness of the decision. Therefore, timing is very important while studying the factors of the innovation-decision process.

Time pressure. Previous research has shown that when presented with a choice set alternative conflict, time pressure will reduce the likelihood of choice deferral (Dhar & Nowlis, 1999). Lin and Wu (2005) found that time pressure is often viewed as the key factor in affecting decision-making behavior. "As time pressure will limit the quantity of information processed, it is often believed that with the increase of time pressure, the decision difficulty will also increase" (Lin & Wu, 2005, p. 220).

Time constraint. Fisher et al. (2003) claim that researchers typically study decision-making without time constraints. Some researchers (e. g. Ahituv et al. 1998) studied "time pressure" as measured by only simply allocating a specific time to perform a task. Therefore, Fisher et al. (2003) distinguish between time constraints and time pressure: "a time constraint is a specific allotment of time for making a decision, while time pressure is a subjective reaction to the amount of time allotted. Time pressure is experienced whenever the time available for the completion of a task

is perceived as being shorter than normally required for the activity” (p. 178).

Some people may feel pressure in a long time constraint while others may not feel time pressure in a short time constraint. Some might say that time pressure decreases decision accuracy, whereas others might say that increasing time pressure may increase quality in decision-making. Time constraints may have more impact on decision making for novices than for the sophisticated decision-makers (Dukerich & Nichols, 1991). Ahituv et al. (1998) find that time pressure impaired the performance of middle-level field commanders more than it affected top-level commanders. Therefore, the time factors, constraint or pressure, should be considered during the decision-making process.

This chapter describes the theoretical framework which combines Rogers’ (2003) innovation-decision process and Simon’s (1976, 1997) bounded rationality decision-making process. Based on this theoretical framework, there are five categories of factors to be examined by the researcher. The five categories of factors are: (1) factors of environment, (2) factors of decision-making units, (3) factors of decision-makers’ personalities, (4) factors of innovation, and (5) factors of time. These categories may illuminate the research questions, acting as helpful but not restricting guides.

CHAPTER 4

METHODOLOGY

Approach of Multiple-case Study

Multiple-case study is one of the qualitative research methods. The term 'qualitative research' has different meanings in different fields, with the social science usage being the most well-known. In the social sciences, qualitative research is often a broad term that describes research that focuses on how individuals and groups view and understand the world and construct meaning out of their experiences. It essentially is narrative-oriented and uses content analysis methods on selected levels of communication content. Other researchers consider it simply to be research whose goal is not to estimate statistical parameters but to generate hypotheses to be tested quantitatively (Creswell, 1998; Merriam, 1998). Unlike quantitative methods, qualitative research methods place little importance on developing statistically valid samples, or on searching for conclusive proof of hypotheses.

Instead, qualitative research focuses on the understanding of research phenomena in situ; that is, within their naturally-occurring contexts. One aim of the qualitative researcher is to tease out the meaning the phenomena have for the actors or participants. Quantitative studies, however, may also observe phenomena in situ and address issues of meaning, and one criticism of this approach to qualitative research is

that the definitions offered of it do not distinguish it adequately from quantitative research.

Qualitative research has gained in popularity, especially due to the linguistic or subjective turn taking hold across the globe (Giddens, 1990). Its practitioners in the social sciences often believe that qualitative research is especially well-suited to getting at the subjective qualities of the lived world, although this belief is far from universally accepted.

Because of its emphasis on in-depth knowledge and elaboration of images and concepts, qualitative methods have been viewed as particularly useful for the areas of social research like "giving voice" to marginalized groups, formulation of new interpretations of historical and cultural significance of various events and advancing theory. Empirical qualitative studies may capture important facts missed by more general, quantitative studies. Such investigations usually focus on a primary case, on the commonalities among separate instances of the same phenomenon identified through analytic induction, or on parallel phenomena identified through theoretical sampling (Ragin, 1994).

The case study offers a method of learning about a complex instance through extensive description and contextual analysis. The product will articulate why the instance occurred as it did, and what one might explore in similar situations.

Case studies can generate a great deal of data that may defy straightforward analysis. The case study method, as one of the traditional approaches of qualitative research, tries to capture the full complexity of a single event, program, or phenomenon. The case study can have both qualitative and quantitative orientation. However, according to Stake (1995, p. 37), there are three major distinctions between the qualitative and quantitative research methodologies:

1. The distinction between description and explanation as the purpose of inquiry.
2. The distinction between the personal and impersonal roles for the researchers.
3. The distinction between the knowledge discovered and knowledge conducted.

The biggest difference between the qualitative and quantitative research methodologies is the search for happenings versus the search for causes. This study tries to understand the decision-making process and the factors for making MLCC; in other words, it is searching for happenings, not causes. In order to discover the factors of MLCC decision-making process, this study conducts personal conversations between the researcher and the interviewees to explore and describe the relationship between findings and the research question.

According to Yin (2003), there are three reasons for adopting the case study strategy to study the MLCC topic. First, the case study strategy is preferable when “why” and “how” questions are posed. Second, the case is a contemporary

phenomenon in its real social life. Third, the investigator has little control over the event (pp. 6-7). The MLCC topic is a contemporary phenomenon on Taiwanese campuses, concerned with “why” and “how” questions, and has already happened; therefore, the researcher has little control over it.

Rather than using large samples and following a rigid protocol to examine limited variables, case study method focuses on an in-depth and longitudinal examination of a single event, program, or phenomenon. According to Lin (2000, p. 242), case study method is a systematic way of looking at what happened as it did, collecting data, analyzing information, and reporting the result. The product of a case study is a sharpened understanding of why the instance happened as it did and an insight into important factors that ought to be considered.

There are many case studies in LIS; however, few of them focus on the decision making process of organizational management, most of them, for instance, focus on professionalism (Alemna, 1995), librarians’ attitudes (Chen, 1995), library and information services (Cheunwattana, 1998), and library and information education (Tran & Gorman, 1999). Therefore, it is hoped that this study will contribute the organizational management regarding the decision-making issue in LIS.

Stake (1995) defines that “the case study as a bounded system or a case studied over time through an in-depth and detailed examination of multiple sources of

information rich in context. Stake explains that “a bounded system is an integrated system” (p. 2). The parts do not have to be working well, the purpose may be irrational, but it is a system. As to the “context”, Creswell (1998) explains that the context of a case involves situating the case within its setting, which may be the physical, social, historical, or economic setting. In Taiwan, the colleges and universities are restricted and guided by the same higher educational policy, the same budget sources, and the same social and economic environment. Therefore, they are in the same “context”, and the MLCC is a prospective case.

Every campus has a different history, background, financial condition, personnel tradition, and organizational culture. The MLCC study is like an empirical inquiry in that it investigates a contemporary phenomenon within its real-life context in which the boundaries between phenomenon and context are not clearly evident and multiple sources of evidence are used (Yin, 1994, p. 23).

Yin (2003) claims the single- and multiple- case study methods are within the same methodological framework, and no broad distinction is made between them. He suggests there are two aspects for selecting each case when using the multiple-case study method. One must decide whether each case either predicts a similar result (a literal replication) or whether it predicts the contrasting results but for predictable reasons (a theoretical replication) (pp. 46-47).

According to Merriam (1998), there are two advantages of adopting a multiple- case study method. First, the more cases in the study and the greater variants across cases, the more compelling an interpretation is likely to be. Second, it can strengthen the precision, validation, and stability of the findings. In other words, multiple-case studies distinguish themselves from questioning many persons about something instead of one, or, increasing the number of subjects within an experiment. Instead the usage of multiple cases should be regarded as similar to the replication of an experiment or study.

In general, the function of the multiple- case study is to answer the following questions: How can one study multiple cases of the same phenomenon and come up with a viable conclusion? How can one integrate the multiple cases that do or do not have a common subject? How can a connection be drawn from those cases? Therefore, benefited by the functions of the multiple- case study, this study will attempt to reveal the factors of the MLCC by seeking an answer to the following questions: what are the factors that cause multiple campuses to make the same decision (MLCC)? What connection can be drawn from those campuses regarding the decision-making process?

The research questions of this study are concerned with the factors of the decision-making of merging libraries and computing centers in Taiwan. Simon's

(1976, 1997) bounded rationality decision-making approach and Rogers' (2003) innovation-decision process approach are applied as the theoretical framework. Due to the inquiry of what factors affect the decision-making process regarding the merger of libraries and computing centers (MLCC) on Taiwanese campuses, which relates to the "why" and "how" and the specific context of the research questions, this study will use the case study method.

In this multiple case study, participants were interviewed using the research questions as interview guides. The participants were allowed to speak in their own words to tell the story of the decision to merge the two university or college units. The researcher looked for themes that emerged in the stories provided by the participants. Participant check was used so that the researcher would ensure that she was not making any false assumption. It should be noted that the researcher was a member of an academic institution that allowed a merger to take place. This research, therefore, is also guided by the researcher's observation of the MLCC. Before, during, and after the interviews with her participants, the researcher also made observations of the different units. It should be stressed that to ensure objectivity, the researcher relied more on the interviews and the views of the participants. Furthermore, the researcher relied on the fact that the interviewees knew each other and would be sure not to fabricate their version of the MLCC. In a

multiple-case study, document analysis would be a beneficial component.

Unfortunately, the researcher was not able to obtain documents relating to decision-making in the MLCC. This was due to administrative policy and the culture of the Taiwanese administrative community. Minutes of meetings were almost non-existent and if there were any relevant document, the community was not conducive to sharing it. Besides, some of the interviewees are former top leaders who did not work in that campus any more, how could they offer the relative documents?

Strengths and Weakness

The primary weakness of the case study method for this study is time.

According to Stake's (1995) definition, the case study is an investigation of a bounded system or a case over time through an in-depth and detailed examination of multiple sources over information rich in context. The MLCC phenomenon has occurred for a period of time in Taiwan; therefore, even though there is little literature regarding this issue that has adopted the case study method, so models to follow are not numerous, the researcher has no difficulty to trace back the in-depth and detailed information regarding the MLCC decision. The other weakness is that, because of the administrative policy, routines, and culture, as pointed out above, none of the campuses can offer documents, such as minutes of meetings, pertaining to the MLCC. However, there are still other multiple ways to confirm the emerging findings.

Since the interviewees could not offer the relative documents, they referred the researcher to the school websites to gather formal and public information regarding the MLCC. The interviewee of Yuan Ze University even mailed his article to the researcher for describing the process and theoretical basis for the MLCC of Yuan Ze University. In this case, each institution's website was examined for history, the merging process, and missions. Following are the addresses (URL) of the web page of the four schools:

1. Fooyin University: <http://www.fy.edu.tw/english/history.asp>

http://140.127.86.100/library_v1/index-menu.htm

2. Yuan Ze University: http://www.yzu.edu.tw/eng_2003/

<http://www.yzu.edu.tw/intro.php>

3. National U. of Kaohsiung: <http://www.nuk.edu.tw/2005NUK/eng/aboutnuk01.htm>

<http://nft01.nuk.edu.tw/lib/home.htm>

4. National Kaohsiung First U. of Science and Technology:

<http://www.nkfust.edu.tw/english/1.html>

<http://www.lic.nkfust.edu.tw/lic-index.htm>

Those websites include English version and Chinese version and offered in this chapter. The researcher already translated the Chinese version and combined both

versions and information into the session with the heading of *Brief History of Selected Schools*.

According to Merriam (1988), “multiple perspectives can be used as another form of triangulation, which means it is important to get diverse voices to confirm the investigation”(p. 169). In this study, two of the interviewees mentioned about the “diverse voice”. One is the former library dean of Yuan Ze University who held a silent disagreement; the other is the librarians of National Kaohsiung First University of Science and Technology, whose voice were ignored totally. Although these voices were given indirectly, they are still “multiple perspectives” regarding the MLCC decision—a form of triangulation.

Additionally, Massey (1999) mentions the planned and unplanned triangulation. In this study some of the interviewees knew each other. Although the researcher did not mention their names to each other, some of them even told the researcher: “I think I know whom you interviewed and whom you are going to interview.” This kind of conversation happened several times, which implies that they know each other. From cross-verifying their conversations, the researcher had the opportunity to authenticate the truthfulness of their narrations. Since they knew each other, the researcher found that the conversations of the interviewees can offer another kind of triangulation, which is called “unplanned triangulation” by Deacon et al.

Although there is a lack of relative documents, the acquaintanceship of the participants, which is an unexpected strength, is used as the unplanned triangulation.

Denzin (1978) has also identified several types of triangulation; one of those types of triangulation is investigator triangulation. According to Key (1997), “Related to investigator triangulation is researcher-participant corroboration, which has also been referred to as cross-examination” (Triangulation session ¶ 1). This notion is similar to Merriam’s (1998) members check. Before, during, and after the interviews with the participants, participant check that is called as “research-participant corroboration” was used to ensure that the researcher was not making any false assumption. The participant check is a benefit component in this investigation as a type of triangulation. Therefore, there are still multiple ways to confirm the emerging findings.

Research Design

Selecting the Participants

Selected Schools. Based on the assumptions that different schools with different size and budget resources may have different factors affecting their MLCC decisions, and follow Yin’s (2003) suggestions of selecting multiple cases that each case either predicts a similar result (a literal replication), or predicts the contrasting result but for predictable reasons (a theoretical replication), there are four schools selected by

considering their budget resources and size which includes the area size of campuses and the numbers of students, staff, and faculty. In other words, the schools with same size/budget resources may have similar factors regarding their MLCC decisions; in the contrast, the schools with different factors toward the MLCC decisions may have different size/resources. Besides, since the year of 1997 was the first year of MLCC on Taiwanese campuses, the schools of Fooyin and Yuan Ze were selected; as the year 2000 was the beginning year of MLCC trend on Taiwanese campuses, the schools of National University of Kaohsiung and National Kaohsiung First University of Science and Technology (N. K. F. U.) were selected.

Of the four schools selected one is a public university, one is a public institution of science and technology, one is a private university, and one is a private institute of science and technology (see Table 5). In Taiwan, most of the budget (or other resource) of public schools comes from government; in contrast, the budget (or other resource) of private schools is earned by the schools themselves. The area size of campuses and the numbers of students, staff, and faculty of universities are bigger than the institutions of science and technology. In this area, the researcher is concerned with the following questions:

1. What are the factors for the schools with same size (all universities or all institution of science/ technology) for making the same MLCC?

2. What are the factors for the schools with same budget sources (all public or all private) for making the same MLCC?
3. What are the factors for the schools with different size (university vs. institution of science/ technology) for making the same MLCC?
4. What are the factors for the schools with different budget source (public vs. private) for making the same MLCC?
5. What are the factors for the schools with same size, but with different budget source (public university vs. private university; or public institution of science/ technology vs. private institution of science/ technology) for making the same MLCC?
6. What are the factors for the schools with different size, but with same budget sources (public university vs. public institution of science/ technology); or private university vs. institution of science/ technology) for making the same MLCC?

Table 5

Types of Selected Schools

<i>Budget/Size</i>	<i>University (U)</i>	<i>Institution of science and technology (I)</i>
<i>Public (B)</i>	BU	BI
<i>Private (V)</i>	VU	VI

Selected interviewees. The participants are the gatekeepers and the main decision-maker/group for each school. Because the researcher has been the library director of the institution of science/ technology for almost three years in Taiwan, there were several chances to meet other directors of libraries and computing centers within different conferences and meetings; some of them became friends, and some of those friends are the directors of the MLCC. Because of the friendship and the relationship of peers, they are the gatekeepers for contacting with the main decision-maker in the selected schools. With their help, it was easier to gain the trust of the main decision-maker, and to gain the confidentiality of their interactions with the researcher. Besides, all of the gatekeepers were involved in the decision-making process of their MLCC and are familiar with the decision-makers; thus they are useful and helpful informants. Therefore, they are interviewed as well in this study.

There are three schools located in southern Taiwan, and one school located in northern Taiwan. Since Taiwan is a small island with the area of 36,000 square-kilometers and all of the schools are restricted and supported by the Ministry

of Education, the researcher believes that the locations of participant schools is not a variable.

Brief History of Selected Schools

In order to give a background understanding for each MLCC, the researcher offers the brief history of each participant campus and a table comparing the participant schools (Table 6). The budget resource types, size, establishing year of MLCC, gatekeepers, and the decision-makers of each school are shown in this table. The history of each school partly comes from the participants' conversations and partly from the website and brochure of each school. The interviewees' last names are shown in the content, but no first names. Because in Taiwan people's last names are usually common, and people's first names are special. In other words, many Taiwanese persons have same last name, such as Chen, Liu, and Lee, but their first name are different, so that readers may not know the interviewees from their last names. The introduction for each school is important for understanding the higher educational environment and boundaries in Taiwan, and the development of each school. It is the researcher's hope that the introduction may help the readers to understand each school.

Table 6

A Comparison of Participating Campuses

Schools/Budget Sources	Fooyin U. (Institution of Sci. & Tech.)	Yuan Ze U.	N. U. K.	N. K. F. U. (Institution of Sci. & Tech.)
Public			*	*
Private	*	*		
Size (staff, faculty, students, area, budget...)	Smaller Institution of Sci. & Tech.	Bigger University	Bigger University	Smaller Institution of Sci. & Tech.
Establishing Year of Merging	Feb. 1997	Aug. 1997	Feb. 2000	Aug. 2001
Statuses of libraries and computing centers before Merging	Individual & cooperative under the Chair of Academic Affairs	Individual & cooperative with different directors	Not exist	Individual & independent with different directors

Schools/Budget Sources	Fooyin U. (Institution of Sci. & Tech.)	Yuan Ze U.	N. U. K.	N. K. F. U. (Institution of Sci. & Tech.)
Gatekeepers	Current Dean of library	Former Dean of Dept. of library & Inform.	First Dean of library after merging	First Dean of library after merging
Decision-makers	President	Director of Computing Center	President	President

1. Fooyin University

The school was established as a vocational high school of nursing and midwifery in Tungkang Town, Pingtung County in 1958. The school was then upgraded to be a five-year junior college of nursing and midwifery and moved to Taliao Hsiang, Kaohsiung County in 1970. The School was further upgraded to be Fooyin Institute of Technology with the Junior College Division in 1997 and officially approved of being upgraded into Fooyin University in August 2002.

Vocational High School period (1958–1968). In 1958, the founder, Dr. Chang, established the three-year “Fooyin Vocational High School of Nursing & Midwifery”

with his own investment and took the position as principal. At that time, it was the first private vocational high school in medicine-related fields and the predecessor of “Fooyin Institute of Technology”. Three years later, in 1962, the School was upgraded to a four-year senior vocational school of nursing and midwifery in response to the demand of professional instruction. During this time, the library had already been established.

Junior College period (1968~1997). A decade after the school was founded, in response to the development of the vocational education system and as a result of the well-recognized academic performance; Fooyin was upgraded by the Ministry Education in 1968 into a 5-year junior college of nursing and midwifery in 1968.

With the steady expansion, Fooying moved from Tungkuang Town, Pingtung County to the present site in Taliao Hsiang, Kaohsiung County in September 1970. The former campus was transformed into the affiliated hospital. The hospital not only offers practice and career opportunities for students and graduates, but also plays an important role to render medical care to local people.

Starting in 1988, the Department of Medical Technology was added and the Department of Nursing was gradually expanded. In the same year, the School was renamed “Fooying Junior College of Medicine & Nursing”. Soon after, with the drastic social changes and with the increasing demands on talents in environmental

protection, foreign languages, child care, rehabilitation, and health care management, Fooyin founded the Departments of Environmental Engineering and Sanitation, Foreign Languages, Child Care and Education, Rehabilitation, and Health Care Management to nurture professionals in the mentioned fields. In the year of 1988, the library was rebuilt. All of the collection, equipment, and staff were improved. At the beginning of 1997, the merger of library and computing centers was established, and moved to a new building that is still called “library”.

College period (1997~2002). In Academic Year 1998, Fooyin followed the second-phase medium- and long-term development planning and set up four-year programs for the Departments of Nursing and Environmental Engineering and Sanitation. In February 1997, Fooyin filed an application for upgrade and acquired the approval from the Ministry of Education to be upgraded into Fooyin Institute of Technology with the Junior College Division on July 1, 1997. Even after this upgrade, the title of the merger of library and computing centers still is called “library”.

University period (2002~). The School was officially sanctioned by the Ministry of Education to change the name into Fooyin University on August 1, 2002. At present, the University has established four colleges: College of Medicine and Health, College of Environment and Life, College of Management and Information, and College of Humanism and Sociology. There is also the Junior College Division

that includes the Departments of Nursing, Medical Technology, and Foreign Languages. Centering on the core concept of “human health”, the University is moving to a university of excellence at full throttle.

To sum up, Fooyin University was established as a vocational high school of nursing and midwifery in 1958, upgraded by the Ministry Education into a 5-year junior college of nursing and midwifery in 1968, and acquired the approval from the Ministry of Education to be upgraded into Fooyin Institute of Technology with the Junior College Division on July 1, 1997. Before upgrading into the institute of technology, the library and computing center were merged in February, 1997.

Although the School was officially sanctioned by the Ministry of Education to change the name into Fooyin University on August 1, 2002, because of the high contribution on nursing and midwifery fields, it is famous as university of technology by most people in Taiwan. People usually call this school “Fooyin University of Technology”.

2. Yuan Ze University

In order to sincerely and thoughtfully repay society by providing more educational opportunities, Mr. Y. Z. Hsu, the founder of Far Eastern Textile Group, sought out eminent domestic scholars willing to contribute their experience and wisdom to the establishment of Yuan-Ze Institute of Technology, which was to be based on the highest educational ideals. In 1986, numerous valuable proposals

concerning the planning and development of this institute and other related educational aspects were contributed by several prominent leaders in education, science, and technology, including Dr. Tsiang, Dr. Lee, and Dr. Mao. Following that, many enthusiastic scholars well dedicated to help the establishment of this institute, among them were Dr. Liu, Dr. Hu, Dr. Chow, Dr. Chang, and Dr. Wang, etc., all being learned and experienced in engineering education. The Yuan Ze Institution of Technology was formally established in 1989.

The library was founded in 1989; however, it was not called "Department of library and information" until August 1997. In that year, the Yuan Ze Institution of Technology was elevated into a university. Now it owns a collection exceeding 200,000 volumes, and has been actively undergoing a digitization process since it was relocated to the new building in 1997, where a host of electronic resources, ranging from the online database, electronic periodicals, and electronic books to online reference materials, has been rapidly accumulating over the years. Following the rapid development of the Internet, new items are constantly added to the electronic database, in addition to the subscription of more than 9,000 types of electronic periodicals, where the users can simply log on through the Internet to access a great variety of library resources, making the virtual library to be a great knowledge hub for teaching, research and community service as well.

To sum up, there was a four-year preparation to set up the Yuan Ze Institution of Technology, which lasted from 1985 to 1989. The library was established in 1989. After 8 years, the institution was elevated to a university in 1997, and the library and computing center were merged into the department of library and information in August 1997. Although this school used to be an institution, in contrast with the Fooyin University, people usually view it as “Yuan Ze University” in Taiwan.

3. National University of Kaohsiung

National University of Kaohsiung was founded in February 2000 under government auspices to achieve the balanced development of higher education between southern and northern Taiwan, and to help establish Taiwan as an Asia-Pacific Regional Operations Center. It is one of the leading academic institutions aiming for quality research and teaching in southern Taiwan. Currently the University has sixteen departments, namely Western Languages and Literature, Kinesiology, Health and Leisure Studies, Law, Government and Law, Economic and Financial Law, Applied Economics, Applied Mathematics, Applied Chemistry, Electrical Engineering, Civil and Environmental Engineering, Life Sciences, and Asia-pacific Industrial and Business Management, Traditional Arts, Finance, Information Management, and Applied Physics. There are also two institutes for postgraduate studies, including the Institute of Urban Development and Architecture as well as the Law Institute. In

August 2003, the Department of Chemical Engineering for undergraduate studies, the Institute of Statistics and the Institute of Biotechnology was formally set up.

To promote a balanced development of higher education between the north and south parts in Taiwan and to support government policy for developing Taiwan into an Asia-Pacific Regional Operations Center (including Tainan Science-based Industrial Park, Luchu Science-based Industrial Park, Manufacturing Center, Sea/Air Transportation Center, International Warehouse and Storage, and Kaohsiung Multi-functional Commerce and Trade Park), the University was established in February 2000. In addition, the University sets its objective to help declining traditional industries transform and upgrade, and to assist in the overseas development of these sectors' manpower.

The National University of Kaohsiung is the first national university to combine both library and computing services into an integrated library and information centre. The Library and Information Centre at the National University of Kaohsiung, located in the middle of the campus, is a building of 6 levels on the ground and 2 levels underground, providing a base area of 810,637 square meters and a total floor area of 32,534.14 square meters. In addition to traditional loan and reference services, the Library and Information Centre, incorporating library, computing and multimedia resources, will promote electronic, digital and online

services so as to provide comprehensive and consolidated information service to the staff and students of the University. The Library and Information Centre can accommodate 2000 reader seats and house 600000 books. It is also open to the community in the hope of establishing an educated society for lifelong learning.

To sum up, this school was brand new and established in February 2000. At the same time, the library and information center (called computing center in this study) were set up as one unit, which was called "Library and Information Center". In other words, the notions of library and information center may be different and separated, but the two units never worked separately.

4. National Kaohsiung First University of Science and Technology (N. K. F. U.)

Leading an elite team, in July 1993, Dr. K. started the preparatory work to establish a university in a vast area straddling the dividing line between Kaohsiung City and Kaohsiung County. In two short years, the National Institute of Technology at Kaohsiung was formally founded to meet the demand for talented managers and engineers for the nation's needs.

Guided by the school motto, "diligence, companionship, excellence, and innovation", the institute was publicly recognized for its achievements in education. In July 1998 the institute received the approval from the Ministry of Education to become National Kaohsiung First University of Science and Technology, the first

National University of Technology in the Kaohsiung area.

It is interesting to introduce the library and the computing center of this school, because they were set up in different times. The library was established in January 1995, and the computing center was established in August 1995, when the dean of library was also the director of computing center. The merger was not established until August 2001, and was called as “library and information center”.

To sum up, this school was prepared for two years, established as an institution in 1995, and was elevated into university in 1998. The MLCC was set up during the university period, which was 2001. Although this school used to be an institution for three years, from 1995 to 1998, after elevating into a university, the title of this school is still called “University of Science and Technology”.

After introducing the history of each of the participant schools, there is one explanation that should be added: the difference between the “university of science/technology” and the “university”. Usually, the school is viewed as a university of science/technology if it was elevated from an institution. Yuan Ze University is an exception. In Taiwan, the institution of science/technology and the university of science/technology are smaller than the university in campus area, staff, and faculty. It is hoped that the readers may get a clear understanding about the Taiwanese higher education system from this introduction.

Collecting and Analyzing Data

Generally (though there are exceptions), qualitative research studies rely on three basic data gathering techniques: participant observation, interview, and document or artifact analysis (Wolcott, 1995, 1999). Each of these techniques represents a continuum from less to more structured (Adler & Adler, 1987; DeWalt & DeWalt, 2002), various studies or particular techniques may rely more heavily on one data gathering technique or another.

Three methods of data collection are used, which are interviews, observation, and documents. The researcher interviewed the gatekeepers and decision makers, using techniques to invite the sharing of stories and critical incidents of the participants by asking some in-depth and open-ended questions in a semi-structured format. These interviews were conducted in Chinese, audio-taped, transcribed verbatim and then translated into English by the researcher. The method of observation involved observing and recording into field notes the interactions between the librarians, IT specialists, and other participants. The researcher intended to collect all of the related documents and information during the decision making process of the MLCC. However, because the school policies and administrative routines, the researcher failed to get the documents and minutes. According to what two of the decision-makers told the researcher, the administrative routine means that most of the

meetings of the MLCC decision-making are not formal and are guided by one person.

They admitted that not keeping the relative documents was negligent. However, they allowed and welcome the researcher to observe the working places of the two units.

There were three main steps for analyzing the data. First, the data of both in Chinese and English were entered into a word processing software program for organization and storage as they were accumulated. Second, the texts generated from this processing were qualitatively and iteratively analyzed by the researcher and machine analysis (N-Vivo software) to achieve the reduction of data that “sharpens, sorts, focuses, discards and organized data in such a way that ‘final’ conclusions can be drawn and verified” (Miles & Huberman, 1994, p. 11). Since there is no Chinese edition of the N-Vivo software, and the data analyzed were the English that was translated from the Chinese data. However, it did not seem suitable to use the machine analysis. According to the researcher’s understanding, the analysis is not the same meaning as the original meanings of the Chinese data. Third, the human analysis has been done by using Erickson’s (1986) three steps of data analysis, which are particular description, general description, and interpretive description. He said that these three components are units in the process of data analysis, and they also can become “basic elements of the written report of the study” (p. 149).

Particular description consists of quotes from people interviewed, quotes from

field notes, and narrative vignettes of every day life “in which the sights and sounds of what was being said and done are described in the natural sequence of their occurrence in real time” (Erickson, 1986, pp. 150-151). General description is needed to tell the reader whether the vignettes and quotes are typical of the data as a whole. Interpretive commentary provides a framework for understanding the particular and general descriptions. According to Erickson (1986):

Interpretive commentary thus points the reader to those details that are salient for the author, and to the meaning-interpretations of the author (p. 152).

Therefore, there are three kinds of findings analyzed in this study: the raw data are reported as particular description, patterns discovered in the data are reported as general description, and ever higher levels of abstraction become interpretive commentary.

Conducting Interviews

As Merriam (1998) says, “New researchers are often concerned about the order of questions in an interview” (p. 82). Before conducting the interview, the researcher had dilemmas between designing structured and unstructured questions. This situation just matched what Merriam (1998) mentioned, “An investigator new to collecting data through interviews will feel more confident with a structured interview format where most, if not all, questions are written out ahead of time in the interview

guide” (p. 82). However, the structured questions may restrict the answer and content regarding MLCC issue. Therefore, the semi-structured questions were conducted as a compromise.

It is not easy to meet the decision-makers or presidents on Taiwanese campuses due to the traditional administrative culture. Therefore, the gatekeeper of each school becomes very important. The most important preparation for conducting the interviews was searching for the gatekeepers. From e-mailing list of the researcher, based on my peer’s relation, two of the gatekeepers were found, and they were very happy to introduce the decision-makers of their schools (Fooyin U. and N. U. of Kaoshiung). Although one of the decision-makers is retired, because of the gatekeeper’s help, the researcher found and interviewed the decision-maker. One of the two gatekeepers introduced another gatekeeper who works in the N. K. F. U. and referred the researcher to the retired decision-maker of the N. K. F. U. The gatekeepers and decision-makers of the three schools were located and contacted by the researcher. The Yuan Ze University is the only one school where the gatekeeper was not found. The researcher used the e-mail address shown on the article that discussed the MLCC process of Yuan Ze University to contact the author who is one of the decision-making members of the MLCC of Yuan Ze University. Fortunately, the

author was happy to accept the interview. However, the main decision-maker was in the United States and nobody knows how to contact with him.

Ethical Concerns

As Stake (1994) observes, “Qualitative researchers are guests in the private spaces of the world. Their manners should be good and their code of ethics is strict” (p. 244), and the recommendation of Creswell (2003) is, “[r] Researchers need to respect research sites so that the sites are left undisturbed after a research study” (p. 65). The researcher respects the policies of the sites even though it created a dilemma and made it difficult to get the formal and relative documents from the schools. Most of the interviewees agreed to be interviewed and enjoyed sharing their stories and experiences with an honest and sincere attitude. The researcher respects and appreciates their sharing and cooperation.

The researcher does not think that translating the content of the data verbally from Chinese is dishonest. This question not only deals with the problem of languages, but also deals with the ways of thinking and writing. For instance, the first sentence is the most important sentence of each paragraph in English; in Chinese, the last sentence is the most important sentence of each paragraph. Before the last sentence, every sentence is the clue to help the readers to find out the result, which is the last sentence. The reason for not translating the content of the data verbatim from Chinese

is also in considering the contingency. The language contingent depends upon the social, cultural, and setting situations. If the researcher does not let the readers understand the whole setting and context first, it is useless even if the contents of the data are translated word for word (see Appendix G). Therefore, regarding the “ethics and honesty” issues, the findings of this study are still trustworthy.

Measure of Validity and Reliability

According to Merriam (1998), there is internal validity and external validity. Internal validity deals with the question of how research findings match reality. Reality, according to Lincoln and Guba (1985), is “a multiple set of mental constructions ...made by humans; their constructions are on their minds, and they are, in the main, accessible to the humans who make them” (p. 295). Since human beings are the primary instrument of data collection and analysis in qualitative research, the researchers are closer to reality than if a data collection instrument had been interjected between the researchers and the participants. Merriam mentioned that most people agree that when reality is viewed in this manner, internal validity is a definite strength of qualitative research. Therefore, the researcher adopts one of Merriam’s (1998) suggestions to enhance internal validity: member checks. Member checks are “taking data and tentative interpretations back to the people from whom they were derived and asking them if the results are plausible” (p. 204). The researcher recorded

and entered the interview results into a word processing software program for organization, and then sent them back to those participants. After getting their feedback, the researcher started the data analysis.

As to external validity, it is “concerned with the extent to which the findings of one study can be applied to other situations”(Merriam, 1998, p. 207). That is, how generalizable are the results of a research study. The question of generalizability has plagued the researcher quite a bit: how can a qualitative researcher think of generalizability in the same way as does a quantitative researcher using experimental or correlational designs? Overall, the issue of generalizability focuses on whether it is possible to generalize formal qualitative inquiry; therefore, the researcher follows Merriam’s (1998) suggestions to enhance the possibility of the generalizability of this study, which are (1) rich, thick description, and (2) multisite designs. Thus, the researcher provides the brief histories of the four schools and the overall raw data of the interview result so that the target readers may be able “to determine how closely their situations match the research situation, and hence, whether findings can be transferred” (p. 211). Besides, using more than one school may allow “the results to be applied by the readers to a greater range of other situations” (p. 212).

In statistics, reliability is the accuracy of the scores of a measure; in experimentation, reliability is the extent to which the measurements resulting from a

test reflect characteristics of the subject of measurement. An experiment is reliable if investigators are getting consistent results from the same measure. It is unreliable if repeat measurements of the same thing give different results. In qualitative research, reliability refers to the extent to which research findings can be replicated. In other words, reliability exists if the study is repeated and will yield the same result.

However, qualitative research is not conducted so that the human behavior can be isolated. In the social sciences, simply because a number of people have experienced the same phenomenon does not make the observations or investigations more reliable.

Since the term reliability seems a misfit when applied to qualitative research, Lincoln and Guba (1985) suggest thinking about the “dependability” or “consistency” of the results obtained from the data—“rather than demanding that outsiders get the same results, a researcher wishes outsiders to concur that, given the data collected, the results make sense”(p. 288). The question then is not if findings will be found again but if the results are consistent with the data collected. According to their notion, Merriam (1998) has three suggestions for the qualitative researchers to ensure the results are reliable or dependable, which are the investigator’s position, triangulation, and audit trail.

Therefore, the researcher explains clearly the theories behind this study, the basis for selecting the schools and participants, and the Taiwanese higher education

environment. As to the suggestion of triangulation, since the participants knew each other the researcher cross-verifies their conversations to authenticate the truthfulness of their narrations. As to the audit trail, the researcher does her best to describe in detail how data were collected and how categories of data were derived.

CHAPTER 5

FINDINGS

This chapter is constructed in three parts: (1) the relationship between the research question and the interviewing questions, (2) the narrations of each campus, and (3) the relationship between the interviewing data/findings and the theoretical framework. The theoretical framework of this study combines Rogers' (2003) explanation of the three stages of the innovation-decision process, which includes three considerations: prior conditions, characteristics of the decision-making units, and perceived characteristics of the innovation; and Simon's description of three limitations of decision-making, which include incompleteness of knowledge, difficulties of anticipation, and scope of behavior possibilities. This theoretical framework is illustrated on figure 2.

The narrations cover the research question and the interviewing questions and offer the context to understand the background of, reasons for, and the process of the MLCC decision of the four schools. The narrations are synthesized and analyzed by the researcher according to the theoretical framework which combines Simon's bounded rational decision-making and Rogers' innovation-decision process. The researcher found some of the findings not congruent with the theoretical framework which is discussed later.

The Questions of the Investigation and the Research

This study seeks to understand the decision-making process regarding the merger of the library and the computing center within a university or a college. The study has one primary research question and three sub-questions, as following:

RQ: What factors affect the decision-making process regarding the merger of two departments?

SQ1: Where does the idea for merging come from?

SQ2: Why is the decision necessary?

SQ3: How is the decision-making process conducted?

The researcher tried to collect all of the related documents and information during the decision making process of the MLCC. The researcher interviewed the decision makers, based on the research question, using techniques to invite the sharing of stories and critical incidents of the participants by asking some in-depth and open-ended questions in a semi-structured format as the following:

1. Please classify your institution and introduce yourself, e.g. academic background, prior experiences, your understanding and perception toward library and computing center, and how many years have you been here?

2. Where did the idea for merging come from? For example, related literature? Conference? Have you ever referred to or asked administrators about the MLCC from other merger institutions or peers?
3. Why was the decision necessary?
4. What was the primary reason for your institution to merge the library and computing center?
5. Was there a conflict voice that emerged during the decision-making procedure?
6. How was the decision-making process conducted?

Because of protecting their campuses and the habit of not keeping agendas and minutes during the decision-making process, none of the schools could offer the related documents, such as meeting agendas and minutes, evaluation reports, and surveys.

The answers, responses, and feedback from the participants were compared, synthesized, and analyzed into the five categories of the researcher's theoretical framework, which combines the cognitive and psychological elements of Simon's bounded rational decision-making and Rogers' innovation-decision process. The five categories of factors that act as helpful but not restricting guides are: 1. factors of

environment, 2. factors of decision-making units, 3. factors of decision-makers' personality, 4. factors of innovation, and 5. factors of time.

Raw Data: Brief Overview of the Four Cases

This section was written by using the interviewees as the first person to describe the reasons (why) and process (how) for the MLCC of four schools. It is both interesting and meaningful to read the stories by following their own tones. The narrations may be not logical, but they offer a contextual picture for understanding the MLCC decisions. The participants' narrations make the MLCC process look like films, not just photos; in other words, the narrations bring the MLCC process alive to illuminate the readers and listeners. The conversations of the interviews are in Chinese, and the researcher translated all of the conversations into English. To make it more meaningful, the researcher took much effort to translate the conversations into their meaning, rather than verbatim. This was not easy to do because the researcher was concerned that she would misinterpret the participants' words. For this reason, the translations may appear too colloquial. Nevertheless, the researcher believes that it is important to allow the participants to speak for themselves. For a sample transcription, refer to Appendix G.

There are many interviewees for each school, who include gatekeepers, decision-makers, and the member of decision-making units. Gatekeepers are the

persons who helped the investigator gain entry to the setting and secure permission to study the informants or situation (Marshall & Rossman, 1999).

Fooyin University

Participant:

There are several reasons for me to think about the merger of libraries and computing centers. Before explaining the reasons, I think that the library needs to be re-named in Taiwan. In Chinese, "library" means a building, not an organization for accessing information service and knowledge. Mostly, I believed that this innovation can prolong the life of the school. Because it can improve the information service, and the information service can fulfill the brains and minds of both faculty and students. The innovation of merging library and computing center can offer the information and knowledge to faculty faster than as usual, and the faculty would absorb the information and offer feedback to their researchers and students. After doing so, this school would last long.

Secondly, the function of library should be a knowledge management center, not only a building. Thirdly, the computing center is not only a center for maintaining computers. It should play as a connecting node for mobilizing information in the digital time period.

Fourth, the definition of information should be re-considered. The content of information includes real books, non-books, and electronic sources. Fifth, because the whole environment has been changed, the overlap area happened in libraries and computing centers, which were the soft ware and hard ware in libraries and computing centers, the missions, and the services.

Last, I would like to mention the government policy toward the management of universities and colleges in Taiwan. This policy admits the existence of libraries, but ignores the existence of computing centers. It limited the corporation of the two organizations, because it is not fair. It stipulates that a library is necessary on every campus; but a computing center is not necessary, it depends. It spoils and safeguards the librarians, but it belittles the IT specialists. How can they work together based on unfair rule? Fortunately, this policy is currently being fixed.

As to merger, I got inspirited from my peers. Firstly, I had been working together with Dr. C. in Yuan Ze University, when the library and computing center were almost not formal organizations before merging the two units. It looked like the merger occurred out of nothing. However, in this school, the two units were elevated and incorporated into a merger.

Secondly, the friendship and working experience in National Chiao Tung

University and National Taiwan University of Science and Technology. They used to discuss the conflict of information and human being, organizations, and society. They believed since the information is invisible, why do we need several million books in the library? The collection of the library could be invisible, accessed, and shared via information infrastructure, such as database and internet.

Thirdly, the peers' impact. I had worked with these peers, and was inspired by their ideas, and I saw them implement this idea on a real campus. I believed their experience would be my support to implement the merger.

Yuan Ze University

Participant:

The original notion of MLCC came from the business management field in the middle of 1990s, and did not come from the consideration of the relative advantages of MLCC. During that time, in Taiwan, the business firms and profit organizations applied the information technology to improve their management. Although the universities are non-profit organizations, the main decision-maker believed that the information technology was practicable to improve the organizational management on campus. This notion rises probably from his academic background of industrial management. And he

thought that the most suitable organizations on campus to experiment with were the library and computing center. Through the application of information technology management, the two organizations might achieve the information and integrate management on organization, administration, and service.

The team that implemented the MLCC was established in 1995. The convener's (Dr. C.) academic background is in industrial management and has been the Dean of Library for a couple of years. He already had the idea [of MLCC], and so as to persuade the faculty and staff to accept and execute it, we are told to searched the relative literature, theories, and examples then published an article to support this idea.

At the time of merging, Dr. C. H., a military officer with an information management background, was the director of the computing center. Another of the team members was the professor of the Chinese Department, Dr. L., and was the dean of library at that time. He voiced disagreement and held an obvious attitude of disagreement, although he followed the administrative order to merge the library and the computing center. I am another member in this team holding both a degree of LIS Master and a degree of educational technology doctorate. I have been the leader of the library for one year before merging, and also the leader of the merger after one year of the merging. The

positive cooperation of Dr. C., Dr. C. H., and I accomplished the implementation of MLCC. I believe that this kind of cooperation is very helpful to make a flawless process.

National University of Kaohsiung (N. U. K.)

Participant:

At that time, part of the reasons of merging was in response to the government policy of administrative reformation. I thought it was a good chance for the two organizations to learn from each other. This idea came purely from the notion of reducing personnel, not from the consideration of professional fields of library and computing. Of course, this notion was inspired by my prior experiences, peers and friends of various professions.

First, I considered about the libraries. The library has been transformed day by day, for instance, a paperless or wall-less library, and has impacted by the information and digitalization. It was the trend to cooperate with the computing center, not only for the paperless aspect, but also for the information. After their corporation, the end-users and readers would never walk away from their desks to get the information or the knowledge. Besides, libraries focused on “centralization”, which means there was no more “sub-library” on campus; therefore, the internet will be needed.

Second, I considered the sharing of information. The most important reason for the corporation was sources. The library always gets the most budget, and persons; whereas, the computing center often lacks budget and personnel. In Taiwan, the salary for IT specialists and expenses of computing equipment were more expensive than librarians' and library equipment. Therefore, the idea of merging the two organizations would be very helpful for sharing all of the related sources.

Third, I considered about the building. There is usually a building for the library and librarian; however, none for the computing center and IT specialists. If they work together, the building problem would be solved.

Fourth, I considered about saving personnel. Because this was a new school, all of the sources, including budget and persons, were very tight. Establishing a new school was a good chance for re-designing the organization, which means that we did not have to follow the other schools. This innovation of merging the library and the computing center was referred to Japan, The United States, and Europe.

Last reason is my prior experiences. I had the power to introduce the internet into Taiwanese campuses, and understood that the volume of books would not

impact the absorption of knowledge and information. Professors and students could learn new things from the internet as well from books.

National Kaohsiung First University of Science and Technology (N. K. F. U.)

Participant:

Honestly, the most and real reason to merge here was to build a new “library building” at that time, besides, we, the decision-making team, wanted to reduce the human personnel.

It was the most straitened circumstance of government budget. At that time, the most important thing for re-establishing the university (from a college to a university) was reducing personnel. The idea of merging the library and the computing center came from the consideration of reducing personnel.

Before determining the merger, we had considered the merging situations from foreign universities of other countries, especially from the United States. But not always considered and referred to the “famous and big” universities. We chose the schools which were similar to our new school.

Following the steps of the change of time, we found there was overlap in field of mission and profession between the two organizations, especially in the area of information services.

I had used my peer relationship to find the committee. You know, in the

southern part of Taiwan, there were few professional and talented people to be hired. This was a new university, and there were very few professors who are available to work here. It would be a tough time in the beginning years.

Therefore, most of the committeemen had the following personalities and characteristics: (1) with real and suitable experiences, (2) with visions and aspirations of establishing a new school, (3) with innovative thinking, and (4) with challenging disposition.

The above narrations were interviewed by and translated by the researcher.

The implication and explanation of the narrations will be detailed in the following section.

General Description of Data: Patterning Findings and Factors

Based on the theoretical framework, the data were analyzed and synthesized, and conclusions and findings were derived. The data were patterned with the categories of factors of the theoretical framework. Following is a detailed explanation of the content of the interviewing conversations and a mapping of the findings into the theoretical framework.

Factors of Environment

Regarding the category of factors of environment, the relationship between the content of the interviews and the factors can be seen in Table 7. The check (✓) marks

in Table 7 stand for the factors that have an impact on the school's MLCC decisions.

Table 7

Findings and the Factors of Environment

<i>Schools/Factors</i>	<i>Factors of Environment</i>		
	<i>Change of IT Application</i>	<i>Change of Missions</i>	<i>Limitation of Resources</i>
<i>Fooyin U.</i>	✓	✓	✓
<i>Yuan Ze U.</i>		✓	
<i>N. U. of Kaohsiung</i>		✓	✓
<i>N. K. F. U.</i>		✓	✓

The most common factors of environment derived from the interviewees' conversations are: (1) the change of application of information technology, (2) the change of duty and mission of both libraries and computing centers, and (3) the limitation of resources from the Ministry of Education in Taiwan.

The change of application of information technology. An example of this factor is that the IT specialists do not manage the super computers any more; the CD-ROM storage databases have been replaced by the on-line and internet databases in libraries. This notion is similar to the notion of the interviewee of Fooyin University who mentioned:

...Because the change of information-need and the behavior of information-use, and the change of the library duty. Because the change of the information environment,...

The change of duty and mission of both libraries and computing centers. The IT specialists and librarians are not only the guardians of information; instead of the old roles, they have become the accessing nodes of information. Interviewees of three schools mentioned this as one of the factors of environment which had an impact on their MLCC decision.

The interviewee of Yuan Ze University mentioned the change of duty and mission of both libraries and computing centers:

...Although the library must exist on campus according to *The Decree of Establishment and Management of University (DEMU)*, there is a trend for librarians to work with the IT specialists.

The interviewee of N. U. of Kaohsiung also discussed the overlap:

...Following the steps of the change of time, we found there is an overlapped field of mission and profession between the two organizations (library and computing center), especially in the area of information services. Besides, the progress of the information ability of librarians and the change of students and faculty toward the information demands.

The interviewee from N. K. F. U. detailed the job of computing centers:

...I believed that the main job of the IT specialists in computing centers has been changed. Around 1980s, the main job was taking care of the 'big and

huge computer'; after 1990s, the main jobs were maintaining and establishing administrative information system, the information internet, and being a consultant center of purchasing computing and digitalized equipment.

The interviewee of Fooyin University also discusses the overlap of mission and duty:

...Because the whole environment has been changed, the overlap area happened in libraries and computing centers, these were the soft ware and hard ware in libraries and computing centers, the missions, and the services.

Regarding this factor, the statement from the interviewee of N. U. of Kohsiung can be a proper explanation and a representation:

...The library has been transformed day by day, for instance, paperless or wall-less library, and impacted by the information and digitalization. It was the trend to work together with the computing center, not only for the paperless, but also for the information. After their corporation, the end-users and readers would never walk away from their desks to get the information or knowledge. Besides, libraries focused on "centralization", which means there was no more "sub-library" on campus; therefore, the internet will be needed.

The limitation of resources from the Ministry of Education in Taiwan. The Taiwan government now intends to encourage the universities and colleges to find resources (including making money) by themselves through the policy of reducing the

budget support, even the public universities and colleges. Two of the interviewees

(Fooyin U. and N. K. F. U.) mentioned the government policy issue:

...This policy admits the existence of libraries, but ignores the existence of computing centers. It limited the corporation of the two organizations, because it is not fair. It stipulates that library is necessary on every campus; but computing center is not necessary, it depends. It spoils and safeguards the librarians, but it belittles the IT specialists.

Regarding this factor, the statement from the interviewee of N. U. of Kohsiung can be a proper explanation and a representation:

...Second, from the sharing of information. Most reason for the corporation was sources. The library always gets the most budget, and persons; however, the computing center often lack of budget and persons. In Taiwan, the salary for IT specialists and expense of computing equipment were more expensive than librarians' and library equipment. Therefore, the idea of merging the two organizations would be very helpful for sharing all of the related sources.

Third, from the consideration of building and saving personnel. There is usually a building for library and librarian; however, none for computing center and IT specialists. If they work together, the building problem would be solved. Because this was a new school, all of the sources, including budget

and persons, were very tight. Establishing a new school was a good chance for re-designing the organization, which means that we did not have to follow the other schools, we do not have to build a “library use-only” building. The librarians and IT specialists can work in a same building, which means we can low down the expense for personnel and building.

In sum, from the findings, the notion or concept of MLCC came from the awareness of and observation towards the change of application of information technology, and the change of duty and mission of both libraries and computing centers. Furthermore, the occurrence of MLCC was forced indirectly by the limitation of resources from the Ministry of Education in Taiwan. From the Table 7, the MLCC decisions of the four schools were all affected by the change of duty and mission of both libraries and computing centers, three of them were affected by the limited resources, and one of them was affected by the change of application of information technology.

Factors of Decision-making Units

The relationship between the interview results and the factors of the decision-making units is shown in Table 8. There are three sub-categories under the category of decision-making units, which are decision-making types, organizational context, and expectation. Not all of the factors were found in the investigation and are explained later.

Table 8

Findings and the Factors of Decision-making Units

<i>Schools/Factors</i>	<i>Factors of Decision-making Units</i>				
	<i>Decision-making Types</i>	<i>Organizational Context</i>	<i>Expectation</i>		
			<i>Resource allocation</i>	<i>Search activity</i>	<i>Computations</i>
<i>Fooyin U.</i>	<i>Authority</i>	<i>Obedient</i>			
<i>Yuan Ze U.</i>	<i>Authority</i>	<i>Conflict from faculty</i>			
<i>N. U. of Kaohsiung</i>	<i>Authority</i>				
<i>N. K. F. U.</i>	<i>Authority</i>	<i>Conflict from librarians</i>			

Decision-making Types of Innovation. According to the investigation and interviews, the MLCC decisions of four schools were made by very few individuals, usually only by the presidents and his/her one or two peers. Therefore, the decision-making type of MLCC in Taiwan can be defined as an authority innovation-decision, where the numbers of persons who are involved in the decision-making process are usually one or two. For instance, the interviewee of Fooyin U. said:

...It was my personal decision. But I invited Lin to help me to execute it, she is now the Dean of Research and Development in Shu Te University. She was introduced by my peers.

However, the interviewee of N. U. of Kaohsiung said:

...Most committeemen came from my peer relation, and from government

agency, for instance, BAS (Department of Budget, Accounting and Statistics), RDE (Department of Research, Development and Education), and from other profit related business, even from financial fields. There were many kinds of professions in the committee, the main purpose was to canvass various opinions and benefit from them.

It seems as if the MLCC decision on N. U. of Kaohsiung is a collective decision; however, he said continuously:

Sometimes the committeemen would have different opinions for purchasing a particular system and equipment; however, based on my opinion, the notion to merge library and computing center was the same and kept going.

Therefore, it might be concluded that the decision was authoritative and based on one or two persons, although the decision-making process was collaborative and comprehensive.

Organizational context. The social decision scheme theorist Davis (1973) mentions there are three variables of organizational context which affect decision-making, (1) the numbers of persons who are involved in the decision-making process, (2) the organizational politics under which the problem is emerged and solved, and (3) the organizational culture (pp. 105-107).

Regarding the first variable, the numbers of decision-makers, based on the above explanation of the decision-making type of MLCC, the MLCC decisions of the four schools were made by very few individuals; therefore, the number of persons in the decision-making process is an obvious variable. However, in this investigation, the researcher did not try to measure how important this variable is.

Regarding the second variable which is the organizational politics under which the problem is emerged and solved. The researcher found that none of interviewees either mentioned the MLCC as a solution to solve the information service on campus, or viewed MLCC is a problem between the librarians or the IT specialists or on campus. The MLCC may be created by offering better services but not due to the problem existing in libraries or computing centers.

Regarding the third variable, organizational culture, it is interesting to find huge differences between Fooyin University and the N. K. F. U.. In Fooyin University, the interviewee said:

...Both units had no serious reaction. Besides, the director of the old library is not professional, which means he has no LIS or information science background. I guess it is part of the reason why he did not react toward this decision. Another part of the reason for no serious reaction is the atmosphere of this school. Usually the faculty and staff are quiet in this school.

Therefore, according to his explanation, the most possible reason for no serious struggle or un-cooperative attitude from library and computing centers was due to the nature of the organizational culture on that campus.

There was a disagreement from the library side of the N. K F. U. during the merging; however, the interviewee of N. K. F.U. said:

In the atmosphere of administrative culture in Taiwan, I really believe if a leader wants to do something, he must be tough, risky, responsible, persistent, and anti-pressure. I was confident that I found the best team to follow my willingness.

The MLCC is the goal that had to be achieved, according to the interviewee, even though there was disagreement from within the library. Both MLCC decisions are authoritative; however, based on the different organizational culture, there were unique reactions on the different campuses.

One of the interviewees of Yuan Ze University thought that usually the faculty with the background of engineering and industrial fields may accept the MLCC more easily than the social scholars; however, inside the campus of Yuan Ze University, there was an interesting phenomenon occurring at that time of merging:

...Most of the faculty is industrial and mechanical fields in our school. Not having at least the passive support from the senior faculty and administrators. I

guess that resulted from the fear of sharing power and resource. Because after merging, the new organization, which will be one of the biggest units on campus, certainly holds a lot of the budget and resources, and has the right to handle all of the IT events of the campus.

In focusing organizational culture, two kinds of conflict regarding the MLCC were noted, one from faculty on the campus of the Yuan Ze University, the other from librarians on the campus of the N. K. F. U.. On the campus of the Fooyin University the organizational culture intends to be obedient.

Expectation. This concept implies that decision-making units hold a belief about the outcome prior to goal setting. According to Cyert et al. (1958), there are three aspects in the attitudes of decision-making units in regard to the expectation: (1) resource allocation, (2) search activity, and (3) computations.

The first aspect is the resource allocation which is mentioned by the National University of Kaohsiung and the N. K. F. U.. The MLCC decision was made by considering the re-allocation of information, building, and personnel. The interviewee of N. U. of Kaohsiung said:

I considered the sharing of information. The most important reason for the corporation was sources.... the idea of merging the two organizations would

be very helpful for sharing all of the related sources....If they work together, the building problem would be solved.

The interviewee of N. K. F. U. said:

...The idea of merging the library and the computing center came from the consideration of reducing personnel.

The consideration for saving of personnel as an important reason for merging libraries and computing center matches the notion of Cyert et al. (1958) that decisions were made within budgetary constraints and to that extent reflected any marginal calculations that entered into the formation of a general budget.

The second aspect is the search activity. Usually if a problem is recognized there is ordinarily a search for possible alternatives. From the interviews, none of the interviewees think the MLCC is a "problem". They tend to believe it is a necessary road and must be done. The interviewee of the N. K. F. U. mentioned:

...Before determining the merger, we had considered the merging situations from foreign universities of other countries, especially from the United States.

The interviewee of the Yuan Ze University mentioned:

...We tried to find the relative literatures and theories to support our idea of merging the library and computing center, and to persuade the faculty and staff to accept it.

No matter how hard the search activity of the decision-making units, it is reasonable that the process of search activity of the four schools is limited by the notion of the insufficiency of the capacity of the decision-making unit. It can be viewed matching Simon's (1997) bounded rational decision-making that "Human being never has more than a fragmentary knowledge of the conditions surrounding his action, nor more than a slight insight into the regularities and laws that would permit him to induce future consequences from a knowledge of present circumstances" (p. 94).

The third aspect is the computations, which can be explained as finding a solution towards a problem from given inputs by means of an algorithm; therefore, the computational data is quantitative. Since the MLCC decision on Taiwanese campuses is quite new, there are few statistics to support the decision-making units; therefore, the interviewees said that they did not use any data to support this decision or show the librarians and IT specialists.

From the three aspects of resource allocation, search activity, and computations, it is not clear to find the expectation of the decision-making units regarding the MLCC. According to the researcher's observation none of the interviewees mentioned the expectation of the MLCC outwardly. Therefore, the use of search activity and resource allocation, instead of satisfying the expectation, are for achieving and supporting the MLCC decision. In other words, the decision-makers

already assumed that the MLCC was a certain thing that should be done. Besides, there is no finding to display the organizational culture from the interview of N. U. of Kaohsiung, because it was a brand new school.

Factors of Decision-makers' Personality

The relationship between the interviewing results and the factors of personality is shown in Table 9. Not all of the factors are found from the investigation, therefore some of them are blank, and are explained later.

Table 9

Findings and the Factors of Decision-makers' Personality

<i>Schools: Factors</i>	<i>Factors of Decision-makers' Personality</i>								
	<i>Cognitive Style</i>		<i>Knowledge/Attitudes</i>		<i>Judgment</i>		<i>Tolerance of Ambiguity</i>		<i>Proposition</i>
	<i>Complex</i>	<i>Simple</i>	<i>Knowledge</i>	<i>Attitudes</i>	<i>Factual</i>	<i>Value</i>	<i>High</i>	<i>Low</i>	
<i>Fooyin U.</i>		✓	Physics	MLCC is an overlap		✓	✓		
<i>Yuan Ze U.</i>	✓		Industry	IT application		✓		✓	
<i>N. U. of Kaohsiung</i>	✓		Law	Inspiration from Internet	✓				
<i>N. K. F. U.</i>		✓	Mechanics	Reducing staff	✓				✓

There are three decision-makers and five gatekeepers interviewed in this study, and the gatekeeper and the decision-maker are very familiar with each other in each school. For instance, in Fooyin University, the gatekeeper and the decision-maker are friends. The researcher did the best to determine the personalities of decision-makers by objectively analyzing conversations with three decision-makers and five

gatekeepers. Some of the decision-makers did not hesitate to describe their personalities.

Cognitive style. The concept of cognitive complexity measures the structure of cognition and includes two primary components: differentiation and integration. According to Simon (1997), cognitive style influences the decision-making process when an individual or an organization is presented with a new idea (e. g. reorganization). Cognitively simple decision-makers tend to perceive stimuli in simple and minimally differentiated dimensions (Schroder, 1971). On the contrary, cognitively complex decision-makers tend to perceive several dimensions of stimuli and apply more complex rules to interpret phenomena (Bartuned & Loius, 1988).

According to the conversation when interviewing, the decision-makers of the Yuan Ze University and the N. U. of Kaohsiung seem to fit in the cognitively complex type. They considered a variety of information from the financial, industrial, and business fields to produce the decision of MLCC. The interviewee of the Yuan Ze University said:

...During that time, in Taiwan, the business firms and profit organizations applied the information technology to improve their management. Although the universities are non-profit organizations, the main decision-maker believed

that the information technology was practicable to improve the organizational management on campus.

The interviewee of the N. U. of Kaohsiung considered five aspects to make the MLCC decision, including the mission of libraries, sharing of information, sharing building, saving personnel, and inspiration by peers and prior experiences.

The decision-makers of Fooyin University and N. K. F. U. appear to be cognitively simple. They made the MLCC decision solely based on the belief that the MLCC is practical and economical. The interviewee of the Fooyin U. mostly believes that “the MLCC can improve the information service, and the information service can fulfill the brains and minds of both faculty and students”, and the MLCC on the campus of N. K. F. U. happened, solely because of the creation of a new building.

Attitudes and knowledge. According to Rogers (2003), “attitude is a relatively enduring organization of an individual’s beliefs about an object that predisposes his or her actions” (pp. 174-175), and also decision-makers’ knowledge influences their ability to recognize the relevance and importance of the stimuli and their problem-solving abilities. From the investigation, the researcher found that all of the four decision-makers made the MLCC decision without viewing it as a direct problem that needed to be solved. They made the MLCC decision mostly based on their awareness and observations of the development of the applied technology and

information-use environment, and with the expectation of reducing personnel and saving budget. Therefore, the discussion of the problem-solving ability is not relevant to the MLCC directly.

According to the decision-maker of Fooyin University, he made the MLCC based on his academic knowledge (physics) and the understanding of the overlap in libraries and computing centers. He even made a new definition for the library mentioned in prior chapter. The decision-maker of Yuan Ze University also made the MLCC based on his academic knowledge (industrial management) and from the idea of introducing the notion of applying information technology to manage the organizations. The decision-maker of N. U. of Kaohsiung made the MLCC decision based on the inspiration of new technology (the internet) because he felt that there is no way to escape the trend of using the internet in the future. The attitude of the decision-maker of N. K. F. U. was only based on the consideration of reducing the numbers of staff.

Judgment. According to Simon (1997), considerations are value judgments and factual judgments, which lead toward the selection of final goals (value judgments) and the implementation of such goals (factual judgments). Those judgments depend on individuals' values.

The decision-maker of Fooyin University viewed the final goal of MLCC with the value of producing knowledge for faculty and students. The decision-maker of Yuan Ze University viewed the final goal of MLCC with the value of using information technology to manage organizations efficiently. Both the decision-makers of the N. U. of Kaohsiung and the N. K. F. U. viewed the MLCC as a design with the implementation (factual judgment) of saving personnel and sharing a building.

Tolerance of ambiguity. This refers to the degree to which people can hold back their need for an action, in other words, tolerance for ambiguity is concerned with the behavior-initiating mechanism. Individuals with low tolerance for ambiguity prefer definiteness and regularity; in contrast, individuals with high tolerance for ambiguity feel more comfortable with handling soft (qualitative) and vague data.

The decision-makers of Yuan Ze University applied the concepts of business and industrial management into the campuses to make the MLCC decision. The decision-makers of N. K. F. U. considered the real examples of the European and American universities to make the MLCC decision. Both of them emphasized the definite experiences of other organizations to support their decisions. It is not difficult to understand that the decision-makers of those two campuses might have a low tolerance for ambiguity and prefer definiteness and regularity. In contrast, the decision-maker of Fooyin University told the researcher that he might separate the

library and computing center if the performance of the new organization is not efficient. In other words, he is flexible to the MLCC decision. Therefore, he might have a high tolerance for ambiguity and feel more comfortable with handling soft (qualitative) and vague data. The tolerance for ambiguity of the decision-maker of N. U. of Kaohsiung can not be determined as both of the gatekeeper and the decision-maker did not describe it.

Decision-maker's proposition to the problem. The concept of decision-maker's proposition has been mentioned as a factor to consider in the decision processes. Yang (2003) summarizes four effective elements of decision-making as (1) decision-maker's knowledge and understanding of the nature of the problem, (2) decision-maker's problem-solving ability, (3) decision-maker's expectation, and (4) decision-maker's personality.

Because the MLCC decisions are not viewed as a problem or solution on all of the four campuses, the first three elements are difficult to discuss in this study. The fourth element has been discussed in the above paragraphs. To add to that discussion, there are many adjectives to describe the personalities of the decision-makers of the four schools that came from them and from the gatekeepers. These adjectives include: farseeing, brave, wise, innovative, intelligent, high risk-taking, eager in learning new knowledge, and high artifice of public relationship. The common adjectives for their

personalities are persistent with high capacity for implementation. In other words, as long as they determine to do something, they never give up and insist on finishing it.

Summarily, the findings in regard to the factors of the decision-makers' personalities are difficult to find. The researcher abstracted the findings mostly from the conversations when interviewing the gatekeepers. The researcher encouraged all of the participants to describe the personalities of the decision-makers as honestly as possible. The researcher found that the gatekeepers who were very close friends of those decision-makers tried quite hard. In addition, the researcher objectively ascertained the authentication of the description by observing the facial expressions as the decision-makers were talking.

Factors of Innovation

The relationship between the interviewing results and the factors of innovation are shown in Table 10. Not all of the factors were found in the investigation and are explained later.

Table 10

Findings and the Factors of Innovation

<i>Schools/Factors</i>	<i>Factors of Innovation</i>								
	<i>S Attributes</i>					<i>Perception</i>	<i>Types</i>		
	<i>Relative advantage</i>	<i>Compatibility</i>	<i>Complexity</i>	<i>Triability</i>	<i>Observability</i>		<i>Administrative/technical</i>	<i>Product/process</i>	<i>Radical/Incremental</i>
<i>Fooyin U.</i>						Reasonable consequence	Administrative		Incremental
<i>Yuan Ze U.</i>						Management strategy		Process	Incremental
<i>N. U. of Kaohsiung</i>						Reasonable consequence		Product	Radical
<i>N. K. F. U.</i>						Reasonable consequence	Administrative	Process	Incremental

Five attributes. Rogers (2003) describes five attributes to indicate the adoption rate of an innovation. However, the five attributes may also be considered in connection with the other factors that impact the innovation-decision process. The five attributes are: (1) relative advantage, (2) compatibility, (3) complexity, (4) trialability, and (5) observability. The interviewee of the Fooyin University considered the relative advantage of MLCC on their campus when he said:

...The innovation of merging the library and the computing center can offer the information and knowledge to faculty faster than as usual, and the faculty would absorb the information and feedback to their researches and students.

After doing so, this school would last long.

The interviewee of N. U. of Kaohsiung considered the relative advantage of MLCC as saving personnel:

...This idea came purely from the notion of reducing personnel, not from the consideration of professional fields of library and computing.

The interviewee of Yuan Ze University considered the trialability of MLCC on their campus as he described the advocator's idea:

...He mainly is impacted by the management trend of business at that time.

During that time, most firms are applying and adopting the information technology to manage their organizations. Although those firms are profit organizations, and universities are non-profit organizations; he believed that universities may try to adopt to improve the management. ... The main purpose is to achieve total-informational management on organization, administration, and service.

In sum, three of the decision-makers used an attribute of innovation to determine their MLCC decision.

Perceptions. The perceptions of an innovation by members of an organization's decision-makers/unit also affect their evaluation of and propensity to adopt the innovation (Ostlund, 1974; Tornatzky & Klein, 1982.; Holak et al., 1987). However, from the investigation of the four schools, the researcher found that they did not have any distinguishing perception about the MLCC. At most, they believe that the MLCC is another management strategy toward the informational organizations

(libraries and computing centers), just like the interviewee of Yuan Ze University mentioned:

...To achieve total-informational management on organization, administration, and service, that means using the IT to manage the organizations, most especially the informational organizations.

The interviewee of N. K. F. U. said:

...It doesn't matter what merits and defect the innovation has, and it doesn't matter how bad or good schools became after adopting this innovation.

Summarily, there is no positive or negative perception regarding the MLCC. Most of the decision-makers believed that the MLCC was a reasonable consequence after the change of mission of the libraries and the computing centers.

Types of innovation. From the aspect of viewing the MLCC as an innovation, it is difficult to distinguish the type of MLCC. However, the researcher tried to use Damanpour's (1991) three pairs of innovation types to gain more understanding about the MLCC in Taiwan. The three pairs of innovation types are administrative and technical, product and process, and radical and incremental. According to the development and decision-making process of MLCC of individual campuses, the research has the following findings.

1. The MLCC of Fooyin University

This decision can be compared to administrative and incremental innovation.

The reason for Fooyin University to merge the library and the computing center is for elevating into an institute of science and technology. After elevating, the organizational status has been changed and must follow different rules. For instance, the library and computing center did not belong to the Dept. of Academic Affairs any more, nor work together under the Dean of Academic Affairs. The administrative rules have been changed. However, the change did not happen suddenly. The MLCC of Fooyin University took about 10 years. Therefore, according to the explanation in prior chapters, the MLCC on this campus matched the notion of administrative innovation that involves organizational structure and ministration processes.

2. The MLCC of Yuan Ze Univeristy

This decision is similar to process and incremental innovation. In order to meet the trend of applying technology to manage the non-profit organizations, the MLCC of Yuan Ze University was introduced and practiced on this campus. According to the explanation in prior chapters, this matched the notion of process innovations which are new elements that are introduced into an organization's production or service operations. It is also an incremental innovation because the MLCC of Yuan Ze University took about nine years to be fulfilled.

3. The MLCC of N. U. of Kaohsiung

This decision can be compared with product and radical innovation. This school was completely new, and so was its MLCC. Additionally, the notion of MLCC was also very new during that time. Therefore, according to the explanation in prior chapters, the MLCC of this campus matches the notion that production innovations are new products or services that are introduced to meet an external user or market need and matches the notion that the radical innovations are re-orientation and non-routine and ultimate. In other words, the MLCC on this new campus can be viewed as a non-routine and new service. As there is no separated library and computing center only "Library and Information Center".

4. The MLCC of N. K. F. U.

This decision is similar to administrative, process, and incremental innovation. Before merging the two organizations were under one leader. According to one of the interviewees of N. K. F. U. university, "before merging, there is usually only one leader who is in charge of the both units in order to observe the differences and similarities of the two units. It looks like a beforehand plan". It matches the notion of incremental innovation: it took time to make the change happen. The MLCC was quite new during that time, as noted by one of the interviewees, "I have no idea about the MLCC, or understand its merits and defect, but I know it is new". His viewpoint

matched the notion that process innovations are new elements introduced into an organization's production or service operations. Also, the MLCC decision was made mostly by considering the sharing of a new building and reducing staff making it an administrative innovation.

In this section, Damanpour's (1991) three pairs of innovation types act as a guide to understand the notions of MLCC on different campuses. In this study, the MLCC is an overlap of innovation types, because it was determined by the multiple considerations of the four schools.

Factors of Time

The relationship between the interviewing results and the factors of time is shown in Table 11. Not all of the factors were found in the investigation and are explained later.

Table 11

Findings and the Factors of Time

<i>Schools/Factors</i>	<i>Factors of Time</i>		
	<i>Timing</i>	<i>Time Constraint</i>	<i>Time Pressure</i>
<i>Fooyin U.</i>	✓	✓	
<i>Yuan Ze U.</i>	✓	✓	
<i>N. U. of Kaohsiung</i>	✓	✓	
<i>N. K. F. U.</i>	✓	✓	✓

The timing was very important for the MLCC decision on those campuses interviewed. According to the conversations from the interviewees, the researcher found that timing is a chance and a positive stimuli to make the merger. In other words, the timing creates the chance for the MLCC decision.

Timing. The MLCC of Fooyin University was established during the time of elevating from a junior (two-year) college to a four-year college in February 1997. It was also the time for separating from the Academic Affairs Dept. As well, the MLCC of Yuan Ze University was also during the time of elevating from an institute of technology to university in August 1997. The N. U. of Kaohsiung was established as a totally new university in February 2000, which was also a good time for setting up a completely new organization of MLCC. The N. K. F. U. is the only university where the MLCC was not established while elevation was occurring.

The time during elevation is an opportune time for merging. According to the *Decree of Establishment and Management of University (DEMU)*, in order to elevate and become a college, the junior college needs to achieve the requirement of being a college. The requirement is to contain a collection of over 150,000 books and over 5,000 square-meters of space. So the campus must rebuild the library to achieve the requirement of the space in order to elevate. Also, in order to achieve the required number of professional staff, it was more advantageous for the campus to combine the

librarians and IT specialists. In Taiwan, both librarians and IT specialists will be viewed as “professional”, if they work in the same unit. That is why the timing creates the chance of the MLCC decision. For instance, a Fooyin University interviewee stated that:

...The time of merging library and computing center in this school was the time for elevating college to university. The two units of library and computing center belong to the academic affair department, and both under the chair of academic affairs. After elevating, both of them still belong to one leader, the dean of the merger.

Therefore, following the required number of professional staff, it is better for the campus to combine the librarians and IT specialists.

Time constraint. In order to elevate and become a university, the schools must obey several regulations and match the concepts and demands in regard to the information-use of the *Decree of Establishment and Management of University (DEMU)*. Therefore, it is the time to re-construct the organizations of the campus.

Most of the interviewees did not view the above situation as pressure; on the contrary, the interviewees believed it was a time constraint for establishing the new relationship of the libraries and the computing centers. In other words, they thought the establishing time was a constraint but not disadvantageous.

Additionally, according to the interviewee of N. U. of Kaohsiung:

...it was the perfect timing of the initiation of Internet to combine the two organizations.

Time pressure. Three of the schools had no time pressure, except the N. K. F. U.. The explanation from the interviewee was: "Honestly, the most and real reason was to build a new library building at that time", which means the MLCC had to be done at the same time as the completion of the new library building.

Summarily, according to the different situations of individual campuses, the decision process of MLCC is different. People outside of the campuses might see their decision of MLCC according to the date of formal announcement; however, this decision really took longer time than what people think. The decision in Fooyin University took about ten years, from 1988 to 1997; Yuan Ze University took about nine years, from 1989 to 1997; and the N. K. F. U. took about six years, from 1995 to 2001. The researcher was unable to use Rogers' decision-innovation process to compare the decision-making process of the four schools, as the stages of adopting MLCC on every campus are not clear. The interviewees had difficulty demarcating the time periods from the knowledge stage, the persuasion stage, the decision stage, the implementation stage, and the confirmation stage.

CHAPTER 6

CONCLUSIONS

Conclusions and Further Studies

There are two main conclusions for this study which are based on the findings.

In this study, there are three kinds of analysis: (1) the raw data are reported as particular description, which is the brief overview of the four cases; (2) patterns discovered in the data are reported as general description, which are the patterning of findings and factors, and (3) the higher levels of abstraction, which is the interpretive commentary and shown as the two conclusions. The two conclusions were analyzed according to Erickson's (1986) interpretive commentary, which "points the reader to those details that are salient for the author and to the leaning-interpretations of the author" (p. 152). Therefore, the conclusions are the highlights of this study and can draw forth further studies.

Conclusion 1: Factors vs. Budget Resources and Size

Based on the original assumption that the budget resources and size of selected schools may have an impact on the MLCC decisions, the findings have been synthesized and shown as Table 12 and Table13.

Table 12

A Comparison of Factors Considering School Size

Size of Schools	Large Size		Small Size	
	Public School	Private School	Public School	Private School
Budget Resource of Schools				
Factors of Environment	<i>Change of missions</i>		<i>Change of missions / Limitation of resources</i>	
Factors of Decision-making Unit	<i>Authority</i>		<i>Authority</i>	
Factors of Decision-makers' Personality	Complex cognitive style		Simple cognitive style	
Factors of Innovation			Administrative / Incremental	
Factors of Time	<i>Timing / Time constraint</i>		<i>Timing / Time constraint</i>	

Note. The italics represent the same factors.

The Yuan Ze University is a large private school, and the National University of Kaohsiung is a large public school. Both of them have the same factors from the five categories of factors shown in Table 12. The National Kaohsiung First U. of Science and Technology is a small public school, and the Fooyin University is a small private school. Both of them have the same factors from the five categories of factors shown in Table 12. The italics on the Table 12 are the common factors for all of the four schools in regard to size.

Table 13

A Comparison of Factors Considering Budget Resources

Budget Resource of Schools	Public Schools		Private Schools	
	Large Size	Small Size	Large Size	Small Size
Factors of Environment	<i>Change of missions/</i> Limitation of resources		<i>Change of missions</i>	
Factors of Decision-making Unit	<i>Authority/</i> Resource allocation		<i>Authority</i>	
Factors of Decision-makers' Personality	Factual judgement		Value judgement	
Factors of Innovation			Incremental	
Factors of Time	<i>Timing/ Time constraint</i>		<i>Timing/ Time constraint</i>	

Note. The italics represent the same factors.

The National University of Kaohsiung is a large public school, and National Kaohsiung First U. of Science and Technology is a small public school. Both of them have the same factors from the five categories of factors shown in Table 13. The Yuan Ze University is a large private school, and the Fooyin University is a small private school. Both of them have the same factors from the five categories of factors shown in Table 13. The italics on the Table 13 are the common factors for all of the four schools in regard to budget resources.

The first part of the conclusion from the synthesized findings is that regardless of budget resources or school size, the MLCC decisions of schools are impacted by the factors of environment, decision-making unit, and time, shown as italics in the tables. The common factors are the change of missions of libraries and computing centers, the authoritative decision type, timing and time constraint. More specifically, the MLCC is an authoritative decision, which considers the change of missions of

libraries and computing centers. Also, all of the MLCC was made based on the time of elevating or establishing, and the timing was viewed as a time constraint.

All of the public and small schools emphasize the limitation of resources which is one of the factors of environment. According to the researcher's thought this is because the budget resources of public schools come from and are limited by the government and the budget resources of small size schools depend on the number of yearly students.

Factors of innovation were not found to be significant in this study. The MLCC innovations of private and small schools are of the incremental type. This is not a significant finding based on the budget resources and school size.

The second part of the conclusion is that the decision-makers' personality is a key factor which may change according to the school size and budget resources. As to the size of school, the decision-maker in a large school has a complex cognitive style, and the decision-maker in a small school has a simple cognitive style. As to the budget resources, the decision-makers in public schools tend to make the MLCC decision by using their factual judgment, and the decision-makers in private schools tend to make the MLCC decision by using their value judgment.

Cognitively simple decision-makers, who are the decision-makers of Fooyin University and N. K. F. U., tend to perceive stimuli in simple and minimally

differentiated dimensions. They made the MLCC decision based solely on the belief that the MLCC is practical and economical (e. g. reducing staff). The researcher thinks that the smaller school size limits them to consider fewer options, because there are fewer faculties, students, and staff involved on campus and who are affected by their decisions. Also, the finding that small schools emphasize the limitation of resources may be one of the reasons. The small schools want to reduce the staff as they are limited by the budget and other resources, which is a practicable and economical notion.

On the contrary, cognitively complex decision-makers, who are the decision-makers of Yuan Ze University and the National University of Kaohsiung, tend to perceive several dimensions of stimuli and apply more complex rules to interpret phenomena. These schools considered the variety of information from financial, industrial, and business fields to make the MLCC decisions. The researcher thinks that the larger school size leads them to consider more, because there is more faculty, students, and staff involved on campus that are affected by their decisions.

Further studies could explore several questions that arise from the first part of this conclusion. The researcher wonders if the factors of environment, decision-making units, and time are the same factors for all schools that adopted the MLCC. If it is true, considering the three categories of factors, are libraries and

computing centers the only two units that should or could be merged? Is there any other more suitable or proper units on campus that should or could be merged? Finally, could the three categories of factors be generalized for all of the schools that adopted the MLCC on Taiwanese campuses? These questions may direct further studies. These kinds of further studies may solve the conflicts between libraries, computing centers, and faculty, and make an efficient merger. These kinds of further studies may offer suggestions to the schools that are considering making MLCC.

From the second part of this conclusion, the researcher wonders what the result would be if the budget resource and size of schools are viewed as the two independent variables, which can be directly manipulated by the experimenter to determine its influences, and the decision-makers' personality is viewed as the dependent variable that is "a response caused by the manipulation of the independent variables" (Smith, 2003, 3rd. pp. 8-9). This question may be answered by further quantitative or qualitative studies. The researcher wonders if the decision-makers with the same budgetary resources will make the same decision; and if the decision-makers of the schools of the same size will make the same decision. That is to say, if the MLCC decision is relative to the budget resources or school size individually more than relative the personality of the decision-makers.

Conclusion 2: MLCC is an Authoritative Decision

The result shows that the MLCC on Taiwanese campuses is an authoritative and necessitated decision. In other words, the innovation of MLCC was viewed as a certain trend and then accepted. From the findings, the MLCC is an innovation, which is new to Taiwanese campuses, but it was not accepted by the individual decision-makers due to its innovative attributes. In contrast, MLCC was accepted depending on the decision-makers' personalities and the factors of environment and time.

From the investigation, the researcher found all of the four MLCC decisions were made by one person. Although these sole decision-makers asked for the opinions of their peers', relative persons, and reviewed the relative literature, they never consulted or asked for the inclinations and feelings of the librarians and the IT specialist in regard to the merger. One of the gatekeepers told the researcher that the MLCC was made by the decision-maker's will, "as long as he said so, we must do so". From these findings, these MLCC fit into the authority type of decision-making. However, the researcher does not want to make a statement that all of the decision-makers are authoritative. As a Taiwanese, the researcher was expected by the interviewees to understand that this type of decision-making results from the administrative culture of Taiwan; therefore, these interviewees did not emphasize this

issue. That is to say, they seem to view this type of decision-making as normal, reasonable, and acceptable, and the researcher should understand it as well. Therefore, from this investigation, the researcher feels that further study may focus on discussing the relationship between decision-making and administrative culture in Taiwan universities.

Although the Taiwanese MLCC notion matches the theoretical definitions of innovation, the researcher found that most of the interviewees adopted the MLCC to achieve practical goals of saving budget, reducing the numbers of librarians and IT specialists (the personnel issue), and achieving the requirement of “*The Decree of Establishment and Management of the University (DEMU)*” to elevate into a higher level. In other words, the decision-makers would accept any idea that could achieve those goals. Thus, the MLCC was accepted and adopted by the Taiwanese campuses not because it was an innovation. It was a coincidence that the MLCC was new to Taiwanese campuses as an innovation and also a way to satisfy their needs. In other words, the libraries and the computing centers need not necessarily be merged if there are other organizations that can work together to satisfy these practical goals.

The second conclusion implies that Rogers’ (2003) five stages of innovation decision process have no significance on Taiwanese campus regarding the MLCC decision. According to the findings, the stages of Taiwanese MLCC decision look

more like: (1) decision, (2) knowledge, (3) persuasion, (4) implementation, and (5) confirmation; the fourth and fifth stages are not discussed in this study regarding the research question. From the interview conversations, most of the decision-makers were already determined to adopt the MLCC without struggling according to their perceptibility and peers' communication. They then told or ordered the appropriate people to implement it. Just like one of the interviewees of Yuan Ze University told the researcher: "the decision-maker already had the idea [of MLCC], and so as to persuade the faculty and staff to accept and execute it, we are told to search the relative literature, theories, and examples then publish an article to support this idea...". This article was used to explain that the MLCC was not a groundless decision and was very famous during those years.

O'Neil (2000) criticized Rogers' (2003, 5th ed.) five stages and questioned "are there adoption stages?", and he wondered if any stages exist while people adopt an innovation, and used the following headings in his article to explain it: "(1) cause we said so, (2) sometimes all, but frequently not these stages, (3) sometimes these sources, it just depends, and (4) too much time to measure so it must be true" (§5). His article holds the same attitude as the interview conversations, in which the interviewees said that they had difficulty in clarifying the boundaries of the stages of adoption.

The second conclusion echoes the three limitations of Simon's bounded rationality decision-making process, which states that people have incompleteness of knowledge, difficulties of anticipation, and limited possibilities of behavior to achieve a decision. Since this MLCC in Taiwan is an authoritative decision which was made by only one person; and this person usually used the peer communication channel to form his/her perception and to get the information for making the decision, certainly, the information is incomplete and behaviors are limited. This characteristic of communication for Taiwanese campus decision-makers does not only echo Simon's notion of information limitation, but also matches Rogers' notion of homophily communication. According to Rogers (2003, 5th ed.), "[h]omophily is the degree to which a pair of individuals who communicate as similar. Such similarity may be in certain attributes, such as beliefs, education, socioeconomic status, and the like" (p. 305). Most of the MLCC decision-makers are the top leaders or managers on Taiwanese campuses who live and work in a high-context administrative culture explained suitably by Hall. Therefore, it is reasonable to understand that the decision-makers of MLCC on Taiwanese campuses may consider following other peers and maintain a distance from the related employees, because it is not proper to show their inner feelings in public occasions. In other words, the Taiwanese decision-makers tend to keep a close relationship and communicate solely with their

peers (such as the presidents of other campuses). This relationship can be viewed as a homophily communication. Rogers (2003) mentioned that homophily communication is a barrier to diffuse an innovation. This is not the issue being discussed in this study, but it may be a direction for further study. For instance, when people are restricted (either culturally or personally) by limited information to make a decision, according to Langevoort (2003), there are several possible cognitive biases that may happen: (1) cognitive conservatism, which means a person is too persistent in one belief to change behavior; (2) representativeness effect, which means a person over-reacts to a particular news or innovation; and (3) overconfidence, which means a person is over-confident with his/her available information and ignores others. The three biases should be considered as factors in examining the adoption of MLCC in Taiwanese campuses.

Significance of this Study

Significance 1: The Value of the Theoretical Framework

From the second conclusion, the finding shows that MLCC in Taiwan is an authoritative decision. Thus the significance of the theoretical framework emerges. There are some findings that do not map to the theoretical framework and some categories of factors in the theoretical framework that cannot be found from this investigation. For instance, the researcher found that most of the interviewees do not

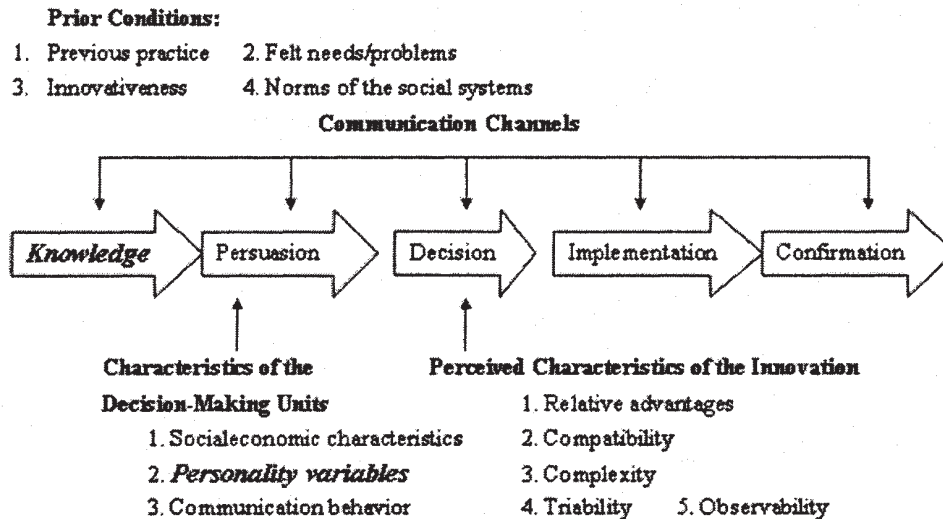
view the MLCC as a solution for a particular problem on campus. Consequently, they do not have the time pressure and motivation to apply their problem-solving skills. Therefore, the factor of the problem-solving skill, and the factor of time pressure can not be found in the investigation. The researcher also found that most of the interviewees view the MLCC as an innovation just because it is new but not considering its attributes. Therefore, the factors of perception towards and the attributions of an innovation cannot be found. Finally, the researcher found that all of the four MLCC decisions were made by one person, an authoritative decision, which means the factors of decision-makers' personality is very important.

The analysis of the second conclusion implies that Rogers' (2003) five stages of innovation decision process is not proper to explain Taiwanese MLCC and echoes three limitations of Simon's (1976, 1997) bounded rationality decision-making process. The overlap issues that emerge from Rogers' and Simon's theories are knowledge and personal characteristics. Refer to the italics in the following figure (Figure 6). It is obvious that this framework contains the factors as reasonably and comprehensively as possible, and shows the researcher's effort to reveal the factors that have an impact on the Taiwanese MLCC. Along with the three common categories of factors discussed earlier (environment, decision-making type, time), this framework offers a chance for relative people (decision-makers, administrators in

higher education system, librarians, and IT specialists) to think about the decision of MLCC and decision-making attitudes and methods. Many questions arise. What if the decision made by one person is not suitable to the particular campus? What will happen if the leader (decision-maker) is not of intellectual (kind of limited knowledge) and powerful (kind of personality variables)? This framework shows a clear relation between the decision-making, personal knowledge, and personality. It offers an opportunity for people to rethink the concept of Taiwanese campus management.

Overlap Issues from the two Conclusions

Rogers' Innovation Decision Process



Simon's Bounded Rationality Decision-making

3 Limitations:

1. *Incompleteness of knowledge*
2. Difficulties of anticipation
3. Scope of behavior possibilities

4 Articulations:

Positive stimuli → *Individual characteristics* → Behavior-initiating &
 Behavior-persistence → Integrative procedure

Figure 6. Cited from Rogers (2003, 5th ed.) and reorganized by the researcher.

Significance 2: Contribution toward LIS

The following are the major factors to make MLCC take place on Taiwanese campuses. First is the change of the missions of libraries and computing centers, which belongs to the factors of environment. Because of the digitalization, the Internet, and the application of information technology, the whole environment has been changed. The overlap area took place in libraries and computing centers in both

the missions and the services. Therefore, it is obvious to find the mission and profession between the two organizations changed.

The second factor is the will of the decision-makers of individual schools, as all of the MLCC are authoritative decisions. The MLCC decision was made by one person, or it might be said made by the top peers of higher education campuses in Taiwan. Through their homophily communication, the MLCC took place in Taiwan.

Third, is the timing for elevating into universities or institutions of science/technology. The MLCC is a product which took place in order to achieve the requirement *The Decree of Establishment and Management of University (DEMU)*. Based on the three factors, the research hope the following suggestions emerged from this study will benefit LIS.

Build the legitimacy. If the top campus administrators, decision-makers, librarians, and IT specialists understand that the three factors are the main basis to make the MLCC a new organization they have the responsibility to build the legitimacy for this new organization.

Legitimacy is both explicit and tacit, and something can be called "legitimate" if one approves of it. The concept of legitimacy is similar to organizational culture. According to See and Clemen (2005), "for some organizations and the populations to which they belong, the perception of legitimacy in the institutional environment is

required in order to ensure external investors, consumer loyalty, or regulatory compliance” (p. 12). In this study, the researcher mentions the legitimacy by focusing on the management issue. After merging the two units with two different organizational cultures, it is important to build a new legitimacy for adding accountability and consistency in this new organization. It is the hope that based on the new legitimacy, the performance of MLCC will be efficient.

Contribution to IFLA. “The International Federation of Library Associations and Institutions (IFLA) is a worldwide organization created to provide librarians around the world with a forum for exchanging ideas, and promoting international cooperation, research and development in all fields of library activity” (Retrieve from <http://www.ifla.org/III/intro00.htm>). Since *the International Federation of Library Associations and Institutions (IFLA)* is the leading international body representing the interests of library and information services and their users. It is the global voice of the library and information profession. Its aims are to: “(1) promote high standards of provision and delivery of library and information services, (2) encourage widespread understanding of the value of good library & information services, and (3) represent the interests of our members throughout the world” (Retrieve from <http://www.ifla.org/III/intro00.htm>). Therefore, this study may be contributed to IFLA to think culturally about the Taiwanese decision-making type, and offer IFLA to use

different aspects for working with the libraries of Taiwan. If IFLA works with Taiwanese library associations by holding this understanding, it is also helpful for Taiwanese librarians to join the activities of IFLA, such as a range of professional meetings, seminars and workshops hold around the world.

Curriculum design of LIS. From the three factors, the researcher found that the LIS curriculum may involve the fields of management and law. The decision-makers have biases of homophily communication, According to Rogers (2003, 5th ed.), homophily communication “is the degree to which pairs of individuals who communicate are similar. Such similarity may be in certain attributes, such as belief, education, socioeconomic status, and the like” (p. 305); and the librarians lack the skill of heterophily communication. Heterophily is the opposite of homophily, and is “the degree to which pairs of individuals who interact are different in certain attributes” (p. 306). The LIS curriculum should educate future librarians with the abilities of leadership and heterophily communication so that they can work with IT specialists and top leaders. In Taiwan, the librarians are always an underprivileged and silent group. After merging, none of the new leaders of MLCC is a librarian, except at Yuan Ze University. The first leader of the merger was Dr. Lian with a LIS background; however, after one year, the leader has been changed to a professor with a computing background. This is not only a management issue, but also a skill for

expressing librarians' voices. This skill is helpful to build librarians' professional imagination, push librarians to improve their professional knowledge and skills, and strive for their status on this new organization.

Furthermore, the LIS curriculum should pay attention to the law. *The Decree of Establishment and Management of University (DEMU)* has a very serious impact on the decisions of individual schools, not only on MLCC decision. Did the scholars of Taiwanese LIS ever think about its impact toward the design of LIS curriculum? The impact of *The Decree of Establishment and Management of University (DEMU)* may be viewed as an environmental factor for improving the course design of LIS. Usually on Taiwanese campuses, the *DEMU* protects the librarians' status and rights; however, it is satiric that the librarians have never thought that the *DEMU* was also the force to make them work with the IT specialists of computing centers. After merging, this law can not even ensure that they can keep the leadership status of information service on campuses. The directors of libraries always lose their jobs after merging. Studying law can not only protect the librarians' rights, but also protect the readers' rights in avoiding the use of illegal copyrights. There will be two advantages of this design.

From the investigation of this study, the researcher hopes to make a contribution towards the LIS curriculum which is very important for the future

development of libraries. Summarily, the curriculum should be designed to exhibit the new librarians' imagination of willingness and ability to learn more in the digital environment to ensure librarians will remain a professional forever.

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Appendix A: Informed Consent of Conversation Collection

My name is Chiou-shu J. Hwang. I am a doctoral student at Emporia State

University's School of Library and Information Management.

This study is going to understand what factors are considered by decision makers regarding the merger of libraries and computing centers (MLCC), and will focus on: why the administrators decided to merge the library and computing center, and how the decision-making process of MLCC was conducted. It is conducted by a multiple-case study method.

I appreciate your willingness to participate in this study and support my dissertation. Before I start the collection of our conversation, I would like to reassure you that you have several very definite rights. These include the following: your participation in this study is entirely voluntary; you are free to refuse any conversation at any time. The conversation notes/records will be kept strictly confidential in my personal audio-tapes and files and any information from it will be available only for research purposes within the context of the study. Under no circumstances will the document identifying characteristics be included in this study; any related document will be permanently erased after the implementation of the dissertation.

Please sign this form to show that you have read and understood its contents.

_____ (signed)

_____ (printed)

_____ (dated)

If you have any further questions, please contact me at chwang@emporia.edu, or

the chair of the dissertation committee, Dr. Cecilia Salvatore, at

csalvato@emporia.edu.

Appendix B: Informed Consent of Related Document Collection

My name is Chiou-shu J. Hwang. I am a doctoral student at Emporia State University's School of Library and Information Management.

This study is going to understand what factors are considered by decision makers regarding the merger of libraries and computing centers (MLCC), and will focus on: why the administrators decided to merge the library and computing center, and how the decision-making process of MLCC was conducted. It is conducted by a multiple-case study method.

I appreciate your willingness to participate in this study and support my dissertation. Before I start the collection of related document, I would like to reassure you that you have several very definite rights. These include the following: your participation in this study is entirely voluntary; you are free to refuse to offer any document at any time. The document will be kept strictly confidential and any information from it will be available only for research purposes within the context of the study. Under no circumstances will the document identifying characteristics be included in this study; any related document will be permanently erased after the implementation of the dissertation. Please sign this form to show that you have read and understood its contents.

_____ (signed)

_____ (printed)

_____ (dated)

If you have any further questions, please contact me at chwang@emporia.edu, or

the chair of the dissertation committee, Dr. Cecilia Salvatore, at

ssalvatoc@emporia.edu.

Appendix C: Informed Consent of Interview/Observation

My name is Chiou-shu J. Hwang . I am a doctoral student at Emporia State University's School of Library and Information Management.

This study is going to understand what factors are considered by decision makers regarding the merger of libraries and computing centers (MLCC), and will focus on: why the administrators decided to merge the library and computing center, and how the decision-making process of MLCC was conducted. It is conducted by a multiple-case study method.

I appreciate your willingness to participate in this study and support my dissertation. Before I start the interview, I would like to reassure you that you have several very definite rights. These include the following: your participation in this interview is entirely voluntary; you are free to refuse to answer any question at any time; you are free to withdraw from the interview at any time.

This interview will be kept strictly confidential and any information from it will be available only for research purposes within the context of the study. Under no circumstances will your name or personal identifying characteristics be included in this study; --Any tape recording/notes/photographing of the

interview/observation will be permanently erased after the implementation of the dissertation.

Please sign this form to show that you have read and understood its contents.

_____ (signed)

_____ (printed)

_____ (dated)

If you have any further questions, please contact me at chwang@emporia.edu or the chair of the dissertation committee, Dr. Cecilia Salvatore, at csalvatoc@emporia.edu.

Appendix D: Interview Questions

Project:

Merging Libraries and Computing Centers in Taiwan: Factors Affecting

Decision-making

Date: _____

Place: _____

Interviewee: _____

Position of interviewee: _____

Brief description of the project:

This study seeks the factors considered by decision makers regarding the merger of libraries and computing centers (MLCC), and focuses on: why the administrators decided to merge the library and computing center, and how the decision-making process was conducted. It is conducted by a multiple-case study method.

Questions:

1. Please classify your institution and introduce yourself, e.g. academic background, prior experiences, your understanding and perception toward library and computing center, and how many years have you been here?

2. Where did the idea for merging come from? E.g. related literature?
Conference? Have you ever referred or asked administrators about MLCC
from other merger institutions or peers?
3. Why was the decision necessary?
4. What was the primary reason for your institution to merge library and
computing center?
5. Was there difference voice emerged during the decision-making procedure?
6. How was the decision-making process conducted?

Thank you for participating in this interview. Your response is assured in confidentiality. If you have any questions, please contact me at chwang@emporia.edu, or the chair of the dissertation committee, Dr. Cecilia Salvatore, at csalvatoc@emporia.edu.

Appendix E: APPLICATION FOR APPROVAL TO USE HUMAN SUBJECTS

For R&G Use Only	Date approved _____
File No. ____ Full Review _____ Expedited Review ____ Exempted Review ____	

This application should be submitted, along with the Informed Consent Document and supplemental material, to the Institutional Review Board for Treatment of Human Subjects, Research and Grants Center, Plumb Hall 313F, Campus Box 4003.

1. Name of Principal Investigator(s) (Individual(s) administering the procedures): Chiou-shu J. Hwang
2. Departmental Affiliation: School of Library and Information Management
3. Person to whom notification should be sent:
 Address: 229 W. 13th Ave. Apt. #3, Emporia, KS 66801
 Telephone: 620-3419982
4. Title of Project: Merging Libraries and Computing Centers in Taiwan: Factors Affecting Decision-making
5. Funding Agency (if applicable): _____

6. This is a dissertation X thesis _____ class project _____
other _____

7. Project Purpose(s):

For revealing the factors of why the administrators decided to merge the library and computing center and how the decision-making process of the merger of computing centers (MLCC) was conducted, this study is going to be conducted by a multiple-case study method to interview the decision-makers on four campuses in Taiwan.

8. Describe the proposed subjects: (age, sex, race, or other special characteristics, such as students in a specific class, etc.)

The participants will be the main decision-makers for the merger, who are the persons with the highest position and most responsibility for the universities and colleges in Taiwan. They may be the president, the vice-president of academic affairs, the vice-president of administrative affairs, and sometimes the academic deans. It depends on individual colleges and universities.

9. Describe how the subjects are to be selected:

There will be four schools selected by considering their budget sources and size which includes the size of campuses and the numbers of students, staff, and

faculty. The types of the four schools are one public university, one public college, one private university, and one private college. The participants will be the main decision-maker/group for each school.

10. Describe the proposed procedures in the project. Any proposed experimental activities that are included in evaluation, research, development, demonstration, instruction, study, treatments, debriefing, questionnaires, and similar projects must be described here. **Copies of questionnaires, survey instruments, or tests should be attached.** (Use additional page if necessary.)

Please see the Appendix F: Research Design

11. Will questionnaires, tests, or related research instruments not explained in question #10 be used? _____ Yes _____ **X** No (If yes, attach a copy to this application.)

12. Will electrical or mechanical devices be applied to the subjects?
_____ Yes _____ **X** No (If yes, attach a detailed description of the device(s) used and precautions and safeguards that will be taken.)

13. Do the benefits of the research outweigh the risks to human subjects?
_____ **X** Yes _____ No (If no, this information should be outlined here.)

No risk at all

14. Are there any possible emergencies which might arise in utilization of human subjects in this project? _____ Yes X No (*If yes, details of these emergencies should be provided here.*)

15. What provisions will you take for keeping research data private? (*Be specific.*)

The data that include interview audio-recording, notes, photographs, and related documents, will be kept strictly confidential and any information from it will be available only for research purposes within the context of the study. Under no circumstances will the schools' title and the participants' name or personal identifying characteristics be included in this report. Any tape recording/notes/photographing/documents of the interview/observation will be permanently erased after the implement of the dissertation. Before the implementation of the study, these data will be kept strictly confidential in the researcher's personal computer, audio-tapes, album, and file-cases.

16. Attach a copy of the informed consent document, as it will be used for your subjects.

Please see the attached appendix A, B, and C.

STATEMENT OF AGREEMENT: I have acquainted myself with the Federal Regulations and University policy regarding the use of human subjects in research and related activities and will conduct this project in accordance with those requirements. Any changes in procedures will be cleared through the Institutional Review Board for Treatment of Human Subjects.

Signature of Principal Investigator

Date

Faculty advisor/instructor on project (if applicable)

Date

Appendix F: Research Design

Research Sites & Participants

There will be four schools selected by considering their budget sources and size which includes the area size of campuses and the numbers of students, staff, and faculty. The researcher assumes that the budget sources and size either predict a similar result, or they are the predictable reasons for a contrasting result.

The types of the four schools are one public university, one public college, one private university, and one private college. The participants will be the main decision-maker/group of each school.

Methods of Data collection

Three methods of data collection will be used: interviews, observation, and documents. The researcher will interview the decision makers, using techniques to invite the sharing of stories and critical incidents of the participants by asking some in-depth and open-ended questions in a semi-structured format. These interviews will be conducted in Chinese, audio-taped, transcribed verbatim and then translated by the author into English. The method of observation involves observing and recording into field notes the interactions between the librarians, IT specialists, and others participating. The researcher will also collect all of the

related documents and information during the decision making process of the MLCC. These documents may be meeting agendas and minutes, evaluation reports, surveys, and e-mail communication between the participants of an institution, and will be translated into English by the author as well.

Procedures of Data Analysis

There are three main steps for analyzing the data. First, the data will be entered into a word processing software program for organization and storage as they are accumulated. Second, the texts generated from this processing will be qualitatively and iteratively analyzed by human and machine analysis. Third, the human analysis will be done by the researcher using the constant comparative method. Besides the human analysis, machine analysis using the N-Vivo software will be utilized as a check for accuracy of the human analysis and vice versa (Gibbs, 2002).

Appendix G: Example of Verbatim et Literatim

1. The conversation in Chinese was translated verbally into English.

Chinese--是為了精簡人力.

English--is for briefly reducing human power

Chinese--因為是一個新學校的籌備,人力及財力都很緊迫,

English--Because is a new school's preparation, human power and financial
power are all very tight,

Chinese--恰好當時有這個機會,可以在組織設計上運用這個創見.

English--coincidence at that time have this opportunity, can in organizational
design upon use this innovation.

Chinese--當時,也參考過日本及美國,及歐洲的例子

English--At that time, also referred to Japanese and American, and European
examples

2. The conversation in Chinese was translated into English according to its meaning.

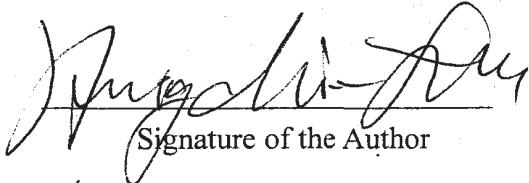
Chinese--

是為了精簡人力。因為是一個新學校的籌備,人力及財力都很緊迫,恰好當時有這個機會,可以在組織設計上運用這個創見。當時,也參考過日本及美國,及歐洲的例子。

English--

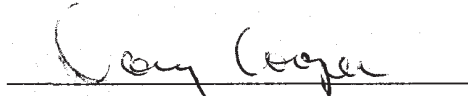
I considered about saving personnel. Because this was a new school, all of the sources, including budget and persons, were very tight. Establishing a new school was a good chance for re-designing the organization, which means that we did not have to follow the other schools. This innovation of merging the library and the computing center was referred to Japan, The United States, and Europe.

I, Chiou-shu J. Hwang, hereby submit this dissertation to Emporia State University as partial fulfillment of the requirements for a doctoral degree. I agree that the Library of the University may make it available for use in accordance with its regulations governing materials of this type. I further agree that quoting, photocopying, or other reproduction of this document is allowed for private study, scholarship (including teaching) and research purposes of a nonprofit nature. No copying which involves potential financial gain will be allowed without written permission of the author.


Signature of the Author

May 9th, 2006
Date

Merging Libraries and Computing Centers in Taiwan:
Factors Affecting Decision-making


Graduate Office Staff Member

5-12-06
Date Received