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**A Comparative Study of Organisational Structure  
Changes in Higher Education Institutions  
Libraries between UK and Taiwan**

***Shiow-Man Liao***

**Department of Information Science  
City University**

**Submitted in partial fulfillment of the requirements  
for the degree of Doctor of Philosophy  
(Information Science)**

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## **IMAGING SERVICES NORTH**

Boston Spa, Wetherby  
West Yorkshire, LS23 7BQ  
[www.bl.uk](http://www.bl.uk)

**Author email address redacted at the University's request.**

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# **A Comparative Study of Organisational Structure Changes in Higher Education Institutions Libraries between UK and Taiwan**

**By  
Shiow-Man Liao**

## **Abstract**

Over the past two decades (1980s and 1990s), changes in environmental factors demanded that higher education institutions should be managed more efficiently. It is necessary for library administrators to evaluate their organisational structures in order to meet their customers' rising expectation and parent institutions' vision, mission, and strategy for future development. The purpose of this study was to examine the extent of library reorganisation within the UK and Taiwan universities, and the principal differences and similarities on organisational structure changes between 1985 and 2001. This study was a population study. This study was composed of two surveys (the initial survey and the follow-up survey) in the two countries. Quantitative data was gathered through a questionnaire.

The researcher investigated general aspects of library reorganisation, then focused specific on eight research problems and conducted comparison between the UK and Taiwan. Thirteen hypotheses centered on the issues concerning organisational structure changes were tested. Of the thirteen hypotheses, some were supported by the study and others were not. Comparisons were made among organisational charts during this 15-year period.

The main findings are: (1) The extent of library reorganisation for the two countries was high over the 15-year period (1985-2001). However, there had been an overall decline during the follow-up survey period. If the non-respondents represented a biased set (they all had not conducted organisational structure change), then the extent of change in the two countries was actually not so high. The plans of organisational change will continue with 30% respondents from UK and 24% from Taiwan in the follow-up survey were considering the possibility. (2) There was no significant relationship between the extent of the library reorganisation and the selected background of libraries studied. (3) Of the environmental factors responsible for organisational structure changes, Service reasons and management reasons played the top two major roles. Economic and technological influences on organisational change declined over the survey time. 'Changes in higher Education', 'the development of digitized collection/digital library', 'change in human expectations', and 'changes in scholarly publishing/communication' became the important

reasons for changes in the follow-up survey period. (4) Most of the libraries conducted internally reorganisation rather than externally. The top two methods adopted in internal reorganisation were: 'creating new functions/departments/units', and 'combination of functions'. Convergence activities were only reported by several responding libraries, the results showed that the extent of convergence activities seemed increased with time. The major reasons for the convergence were: shared vision; to pursue a more effective administration; to cooperate in supporting teaching, research, and learning; overlapping missions and strategies; exchanges of specialization between organisations; more economic administration; to cooperate in development of digital resources and digital collection; sharing of staff, facilities, and equipment. (5) After reorganisation, most university libraries in the UK adopted hierarchical structure and based on a combined functional/subject-based pattern. Team-based structure was the second favorite. Almost all respondents' libraries in Taiwan preferred a hierarchical structure and based on a functional pattern, however, 'teamwork' concept was adopted by some libraries. (6) The new organisations mostly emphasized user services, integration of the management of varied resources in libraries, and technological support. (7) The management levels of libraries in the UK tended to be flatter after reorganisation. However, most of the libraries in Taiwan retained the same management level after reorganisation. (8) The title of library managers within UK universities became more versatile after reorganisation. However, most of the library managers in Taiwan retained the same title even after reorganisation. (9) The considered important challenges of organisational change were: 'the parent institutional climate'; 'managerial support within and outside the library'; 'the climate of the libraries'; 'the staff strengths and weaknesses'; 'staff attitudes towards change'; 'the attitude of library directors'. (10) The results of library reorganisation have been mostly positive, and have provided lessons in organisational change from which other libraries may benefit.

# Chapter 1 Introduction

## 1.1 General Background

The importance of academic libraries has long been recognised. As stated in the Follett Report (HEFCE 1993), 'Libraries play, and will continue to play, a central part in meeting the information needs of students, teachers, and researchers in higher education: it is impossible to imagine any university or college functioning effectively without a good library service'. Byrne (2004) also stated that 'university libraries are becoming ever more integral to learning and research within higher education. They play an essential role in the refocusing of universities towards flexible, open and career long learning'. Brophy (2000) indicated that academic library is the 'heart of the university'. Teaching, research, and public service are the main missions and functions of universities and colleges (MOE 2001). Therefore, it is essential for university libraries to understand higher education's direction in order to support the policies and practices of parent institutions, and adopt organisational models that are compatible with the operation of their parent institution (Hu 1998). 'Since academic libraries are parts of larger organisations (universities), and serve those communities, they are affected by their parent institutions' administration and faculty. It cannot invent all its own procedures to suit itself but has to operate within the policies and procedures of its parent institution. It is vital that the vision, values, mission, plan, and strategy are tied closely to those of the parent university'. (Brophy 2000)

In the late 1980s and early 1990s, changes (such as economic pressures, technological development, social demand, political ideology, etc.) demanded that academic institutions should be managed more efficiently in two aspects—"financial constraint" and "competition for resources". Under this circumstance, universities' management structures were more devolved, with fewer units (by merging departments), and committees but with the addition of corporate management teams to take the key decisions and improve the effectiveness in teaching and learning. (Sanyal 1995)

Byrne (2004) indicated several internal influences and external influences face university libraries. Internal influences includes pedagogical development, providing tailored services in situ, guiding infrastructure development, implementation of increasingly integrated information resource access systems, and adoption of knowledge management. The external influences include globalisation, multilingual and multicultural challenges, media developments and eWorld opportunities. Huntingford (1998) pointed out underlying causes of rapid shifts in the structure, function and culture of HE organisations: the expansion of an increasingly heterogeneous student population demanding an ever-greater level of IT provision; financial stringency; increased

accountability; developments in information, educational and networking technologies. Field (1998) also mentioned that 'higher education in the UK has experienced a far-reaching change, challenge, opportunity and instability, with the promise of yet more to come, as the years 1993-98. The Follett, Dearing and other governmental and sectoral reports have clearly set out the financial and structural pressures facing higher education in the UK, identified the need for organisational, cultural and pedagogic change in the sector in the light of emerging technological and market opportunities, and identified the ways in which library and information services should underpin that change'. Pressures from internal and external environments demand library administrators from higher education institutions (HEIs) to evaluate their organisational structures in order to become more efficient and more responsive to changing environments. In the UK, a major report on academic libraries—the Follett Report (HEFCE 1993), was produced by the Higher Education Funding Council for England indicating the findings of a committee chaired by Sir Brian Follett. It suggested that substantial funding should be made available for a range of projects to investigate electronic library issues and to develop some of the content, resources and management structures needed for digital libraries (Deegan 1998). Since then universities were encouraged to reconsider their libraries' present and future role. Libraries have the opportunity and resource to define a future combining traditional skills with the understanding of the nature of electronic resources. (Law 1998)

Over the past two decades, the 1980s and 1990s, the discussion of changes of organisational structure of university libraries mainly focused on the impacts of library automation on the integration of traditional bifurcated 'technical services' and 'public services'. The integration of technical services and public services functions is just one method of reorganisation. The method is adopted when the libraries follow true to function, utilizing acquisitions, circulation, reference, and integration (cataloging, classification, and processing) departments in their organisational structure (Hoadly and Corbin 1990). Bryant (1987) suggested that if the funding and staff size of a library grows, library organisational structure will become more complex, ultimately de-emphasizing the basic functions of the library'. In this case, Fisher (2001) identified that most libraries use a combination of three or four of methods at the same time.

Besides the internal reorganisation of libraries involving only changes in functions or departments, external reorganisation, such as convergence of libraries with other information resource services or teaching and learning support services, is currently underway in many universities. As university libraries have become more dependent on the use of computers for the delivery of their services, the lines blur between the activities and services of libraries, computer centres, and telecommunications department, their relationships have become much closer. Many



institutions are working to build organisational models that acknowledge the new roles and partnerships that have developed (Probst 1996). In the UK, many British higher and further education institutions have converged the library and computer services. (Brophy 2000)

Field (2001) noted that since the mid-1980s the principal global driver has been an increasing convergence of the technologies for producing, storing, retrieving, processing and transmitting text, data, image and voice, and the associated increasing dependence of libraries upon electronic information and network infrastructure. Under these circumstances, it makes more sense for an institution's different service providers to share the investment and management of the technical infrastructure and the information. Therefore, 'the advancement of information technology, especially the acceleration of computer networking had dramatic influences on the institutional arrangements in higher education. Academic libraries have been gradually restructuring themselves to be more aligned with patterns of computer networking on campus, in consortia, and across the scholarly communication system at large. Networked resources require restructured, boundary-spanning library services throughout the academic institution. Some believe that the increasingly developed networked information resources have changed the role of the academic librarian to support effectively the networked learner. (Schwartz 1997)

Collier (1994) pointed out the role of information management within the university is acquiring a much higher attention and it is one reason why the merger of libraries with other academic services took place in British universities. He noted that the major aims of the convergence can be discussed from the management-orientated aspect and user-orientated aspect. The user-orientated aspect means the student and academic are 'electronic scholars', in which they are information navigators to enrich their teaching and learning experience. The management-orientated arguments can be categorised as:

- Technocratic imperative—relevant technical and management skills must be harnessed together;
- Executive thrust—strategic and economic implications of various services are so great that clear and simple lines of authority must be established;
- Information management—the university needs to have a professional approach to managing its information;
- Resource management—merged various services to prevent competition of resource.

Schwartz (1997) indicated that implementing organisational change often proves difficult and costly if it is ill-planned. Corral (2000) also pointed out the importance of 'change management'. The process of planning and implementing change deserves special attention. She said that it is easy to underestimate the time and effort required to manage change effectively.

Biosse (1996) also noted that the change of organisational structures is particularly difficult in university libraries because traditional libraries are more bureaucratic, they tend to resist change, are inflexible, can not respond rapidly to new technologies, are more internally focused than externally focused, and do not value the individual. Early reports by Busch (1985) and by de Klerk and Euster (1989) also found little change to organisational structures even with the increased use of technology throughout the library. Schwartz (1997) indicated that organisational change means giving up comfortable ways of doing things, and establishing ways of relating to colleagues, customers and the parent institution. Therefore, Corral (2000) suggested that it is essential to have a strategic approach to human resource development in change management. Education, training and development of staff and communication are the most critical aspect of the change process. Some information service managers (or their bosses) sometimes bring in consultants for advice or assistance with major organisational change.

'The formal structure adopted can significantly affect an organisation's business and financial performance because of its impact on efficiency and effectiveness, in particular on the quality of decision-making, ability to respond to changing circumstances, and the morale and motivation of individuals. Organisational structure determines allocation of responsibilities, assignment of tasks, communication of information, coordination of operations and the grouping of individuals in units, sections. Structures must be designed to suit an organisation's situation. It requires consideration of the external environment as well as internal issues'. (Corral 2000)

In responding to the changing forces that face higher education libraries, what will the university libraries look like? What routes have they taken or are they going to take? Garrod (1997) believed that a hierarchical organisation is no longer viable in a world of constant change. New matrix structures are slowly being introduced, with staff working in teams, and taking on several roles concurrently. The organisational structure of university libraries is determined by the use of technologies, the desired customer service model, library purposes and goals. There could be no single structure appropriate for all libraries. The Follett Report also indicated the same point because the great differences (different backgrounds and distinctive aims of each institution) between libraries in HEIs make it impossible to suggest one single management or resource allocation model which can be held up as a blue-print. Therefore, 'each institution should carefully review its own arrangements' (Joint Funding Councils 1993). Joe, Bessant, and Pavitt (1997) noted that the future development of university libraries will be influenced by many factors, such as, the structure of the organisation; the roles played by key individuals; the training and development of staff; the way in which people are involved in innovation; and how the organisation learn and share knowledge (Branin 1996).

## 1.2 Statement of the Problem

To address the library reorganisation issues, the meaning of 'organisation structure' and 'reorganisation' in this study needs to be properly defined.

Senior (1997) indicated that basic elements of an organisational structure included: the allocation of responsibilities, the grouping of functions, co-ordination and control of these.

As to the definition of 'reorganisation', a broader meaning was adopted in this study. For example, 'reorganisation' and 'restructuring' are treated as similar terms in this study. In a book of Schwartz (1997), he defined 'Restructuring' as 'the development of boundary-spanning library services—allied with computing center services—to deliver networked information resources campuswide for the broader purpose of supporting new research and curricular programs'. In this research, the meaning of 'reorganisation' was broadened; it implied libraries restructure from the relatively bounded areas of library units, work flow processes, personnel, and budgets to campuswide and geographically dispersed fields of opportunity afforded by networked information resources and service. The approaches involved internal reorganisation (eg. blurring of public and technical services) and external reorganisation (convergence of library and computing service).

Many published papers during the past two decades (1980-2000) suggested that libraries should redesign or reinvent organisational structures in order to respond to the stresses of a rapidly changing external and internal environment. Most of them relied on interviews or mail surveys of a few library directors, case studies of a small group of similar libraries, or descriptions of the change process undertaken in a single *library*, few provided any empirical evidence to support the efficacy of new organisational forms. A literature search of *Library Literature* database and *Library and Information Science Abstracts* (LISA) database did not find any current figures for the extent of library organisational structure changes in both the UK and Taiwan universities. More situations in other countries (i.e. USA) were discussed.

Therefore, the problem to be resolved by this study was whether the situation of extent of change in UK university libraries was different from the situation of extent of change in Taiwan university libraries. This study also wanted to raise critical issues with library reorganisation, and to find if radical reorganisation has been achieved or is in progress. What did the new structures look like in the two countries? Were there any models evolving which might be applicable to other libraries? If there was no blueprint or no single solution, were there any common problems and approaches recognised and implemented by them? The researcher also wants to identify a number

of related issues in order to generate some conclusions which accompanied reorganisation that were only briefly mentioned, discussed and revealed in literature review.

A number of subproblems were identified in order to provide a more complete analysis of the problem:

1. Is there a significant difference in extent of library reorganisation between UK and Taiwan universities?
2. Is there a significant difference in selected background factors of libraries (e.g. collection size, management style, organisational structure, information technologies) between UK and Taiwan universities?
3. Is there a significant difference in the environmental factors driving organisational structure change in libraries between UK and Taiwan universities?
4. Is there a significant difference in methods of library reorganisation between UK and Taiwan universities?
5. Is there a significant difference in aspects considered before library reorganisation between UK and Taiwan universities?
6. Is there a significant difference in goals of library reorganisation between UK and Taiwan universities?
7. Is there a significant difference in results of library reorganisation between UK and Taiwan universities?
8. Is there a significant difference in staff attitudes towards library reorganisation between UK and Taiwan universities?

### **1.3 Purpose of the Research**

The main purpose of this study was to examine the extent of library reorganisation within the UK and Taiwan universities. The principal differences and similarities on organisational structure changes between 1985 and 2001 were also examined. Therefore, this broad purpose was considered through a number of narrower objectives:

1. To investigate the extent to which university libraries have been reorganizing within UK and Taiwan universities.
2. To determine what environmental factors have driven organisational structure change in libraries within UK and Taiwan universities.

3. To identify the possible methods of library reorganisation within UK and Taiwan universities.
4. To describe the characteristics of organisational structure, the principal differences and similarities in organisational structure change of libraries within UK and Taiwan universities.
5. To explore the challenges of organisational structure change of libraries within UK and Taiwan universities.
6. To recommend a management model of organisational structure for university libraries based on the findings of the survey.

#### **1.4 Importance of the Research**

This study has been designed to explore trends and experiences of university libraries involving organisational structure changes in the UK and Taiwan. This study will compare the findings obtained from UK and Taiwan respondents with previous studies, surveys and reorganisation cases. An effort was made to provide in-depth empirical evidences from the UK and Taiwan to support the perceived connections among restructuring, staffing, technological change, and other influential factors in libraries. Since the period of study covers a long time (1985-2001), it certainly can reflect recent general development. This study endeavours to present a comprehensive picture of changes in higher education institutions libraries in the two countries. Therefore, the findings of this study do provide a general empirical basis about the principal driving forces behind changes. It is believed this study can provide assistance to library directors and their parent institutions' administrators in the two countries and other countries around the world concerned with the designing or modifying of their library organisational structure. Therefore, they can redefine their roles in knowledge-based and learning-based society, and could design an effective and responsive organisational structure to support their missions, to meet user's expectation, changing needs and other circumstances. Under this situation, university libraries can undoubtedly survive in such a competitive information society.

The reasons for choosing university libraries in the UK for the basis of comparison with that of Taiwan were as follows:

1. From the searching of relevant literature and electronic resources, there was more UK reorganisation case (including converged services) reported than that of Taiwan. This indicated that the development pace of library management in the UK was more rapidly

than that of Taiwan. If it is the case, the researcher believed that librarian of higher education institutions in Taiwan could learn the experiences of organisational changes from UK.

2. The study was to obtain important factual information related to organisational structure changes in the two countries, it could provide new insights for library managers and their parent institutions and the Ministry of Education in Taiwan in order to facilitate the transforming of higher education institutions libraries. It could also provide higher education sectors in the UK factual information about the library management situations in Taiwan.
3. It is commonly recognised that the differences in cultural, historical or economic status between countries may be factors contributing to differences in the development of higher education. And, the development of higher education institutions libraries will be inevitably influenced by the economic situation of a country. UK has long seen as 'developed' nation and Taiwan as 'developing' nation. It means that the pace of economic development in the UK is quicker than that of Taiwan. Under this circumstance, the researcher was interested in investigating the environmental factors of library organisational changes in the two countries to find out what were the principal forces behind organisational changes, outlining some of the important implementation issues that have arisen and evaluated the impacts.
4. Most of the major reorganisation surveys and reports on university library practice were American-centered, few were about European or Asian libraries. Particularly, there was no population study in the two countries on the investigation of the extent and nature of changes in the higher education institutions libraries. Therefore, it is worthwhile to conduct a population study to reveal the reorganisational situations in the two countries to assist mutual understanding and support. Moreover, the study will form the basis for future research of this topic in the two countries.
5. The total number of university libraries in the UK and Taiwan were not too large and was rather similar (In 1996, 98 in the UK, in 1998, 88 in Taiwan), and the members of the population were readily accessible to the researcher. Besides, small members of the study population met the budget limitation of the researcher.

## 1.5 Research Hypotheses and Methodology

'A variety of definitions of hypotheses can be found in the literature and they reflect slightly different perspectives or emphasis.' (Powell 1997) Babbie (1979) defines the 'hypothesis' as 'a statement of specific expectations about the nature of things, derived from a theory.' Mouly (1978) considers a hypothesis to be 'a tentative generalisation concerning the relationship between two or more variables of critical interest in the solution of a problem under investigation.'

A null hypothesis is 'a hypothesis that asserts that there is no real relationship between or among the variables in question. It involves the supposition that chance rather than an identifiable cause has produced some observed result. It is used primarily for purposes of statistical testing.' (Powell 1997)

Having identified and stated the research problems, thirteen null hypotheses based on the research problems were developed and tested in this study.

### A. Extent of library reorganisation

H1: There was no significant difference in extent of library reorganisation between UK and Taiwan universities.

### B. Selected background factors of libraries

H2: There was no significant difference in collection size of library between UK and Taiwan universities.

H3: There was no significant difference in management style of library between UK and Taiwan universities.

H4: There was no significant difference in organisational structure of library between UK and Taiwan universities.

H5: There was no significant difference in installation of library automated system between UK and Taiwan universities.

H6: There was no significant difference in provision of information technologies of library between UK and Taiwan universities.

H7: There was no significant difference in the impact of library automation and information technologies on the staffing pattern and working pattern between UK and Taiwan universities.

### C. Environmental factors of library reorganisation

H8: There was no significant difference in the environmental factors driving organisational structure change in libraries within UK and Taiwan universities.

### D. Methods of library reorganisation

H9: There was no significant difference in methods of library reorganisation between UK and Taiwan universities.

E. Aspects Considered before library reorganisation

H10: There was no significant difference in aspects considered before library reorganisation between UK and Taiwan universities.

F. Goals of library reorganisation

H11: There was no significant difference in goals of library reorganisation between UK and Taiwan universities.

G. Results of library reorganisation

H12: There was no significant difference in results of library reorganisation between UK and Taiwan universities.

H. Staff attitudes towards library reorganisation

H13: There was no significant difference in staff attitudes towards library reorganisation between UK and Taiwan universities.

Powell (1997) indicates that there are several sources of hypotheses, one of the most convenient and logical sources of hypotheses is a theory, in that it can be considered to be a broad hypothesis or a set of subhypotheses. However, theories seldom simply appear when needed. He then suggests that 'the findings of other studies reported in the literature are excellent sources of hypotheses. Existing and assumed relationships reported in research results often provide the basis for formulating hypotheses.' Mouly (1978) also states that 'some amount of data gathering, such as the recall of past experience, the review of the literature, or a pilot study, must precede the formulation and refinement of the hypothesis.'

Therefore, most of the research hypotheses in this study were formulated based on the review of the literature, and the findings of related reports and case studies. Several were tested according to the researcher's former studies (Liao 1991) and personal past work experience. Some research hypotheses were developed as a result of wider, more general reading of the literature. Examples of materials which lead to the formulation of the hypotheses are given as follows.

Hypothesis 1 was tested because a 1985 Office of Management Studies survey entitled, "Automation and Reorganization of Technical and Public Services", reported that among the 82 responding libraries had little change in organisational structures accompanying automation (Busch 1985). In another study done by Larsen (1991) entitled, "The Climate of Change: Library Organizational Structures, 1985-1990.", a questionnaire was sent to 216 academic library administrators to assess the extent to which libraries may have been restructuring since 1985



because of changes in information technology, in institutional or societal imperatives, and in user expectations.

Hypothesis 2 was tested because in Buttlar and Garcha's (1992) study entitled "Organizational Structuring in Academic Libraries" and in Fisher's (2001) study entitled "Impact of Organizational Structure on Acquisitions and Collection Development," there were indications that the collection size of libraries has a relationship with the extent of reorganisation. Larsen's (1991) study revealed that size of library may explain why some of the libraries do not have specific divisions.

Hypothesis 3 was tested because in Buttlar and Garcha's (1992) study, the management style of library was one of the survey items in the questionnaire. The questionnaire was sent to 138 state-supported college and university library directors with an attempt to determine how the work of academic librarians was structured. Brophy's (2000) book entitled "The Academic Library", also indicated that organisations differ widely in management style.

Hypothesis 4 was tested because functional- or subject-basis was discussed in Thompson's (1991) article entitled "Organising for Change in Academic Libraries: Context and Strategy". In a special section of the journal, *Library Acquisitions: Practice & Theory*, the trend of reorganisation of the acquisitions department was discussed. In six case studies, academic libraries changed their organisational structure in diversified methods (functional-based, format-based, subject-based or mixed structure was adopted by different libraries).

Hypotheses 5 to 6 were tested because in Harris and Marshall's (1998) study entitled "Reorganizing Canadian Libraries: A Giant Step Back from the Front," the perceived connections among restructuring, staffing, and technological change in libraries was studied. The survey investigated 182 academic and public librarians. Corbin's (1992) article also discussed some of the ways technology is influencing organisational change in libraries.

Hypothesis 7 was tested because the staffing pattern and working pattern will be affected by the introduction of library automation and other information technologies as indicated by various authors (Myers 1985, Corrick 1988, Christ et al. 1990, Dyer et al. 1993, Neal and Steele 1993, Christ 1994, Shaughnessy 1996, Harris and Marshall 1998). Harris and Marshall (1998) noted that the staffing structure and working pattern are changing, 'the distinction between librarians and nonprofessional staff has become "very blurred". Librarians' new professional role is to evaluate, train, and supervise those who work with the public', 'many of the library personnel are being redeployed, their duties streamlined and merged, and their job descriptions rewritten.'

Hypothesis 8 was tested because Drake's (2000) article entitled "Technological Innovation and Organizational Change Revisited" indicated that technology, accountability, funding, customer

demands, Total Quality Management (TQM), the effect of younger generations, distance learning, strategic planning, and collaborative learning are important environmental elements causing organisational change. 'Reasons for change' was one of the survey items in the questionnaire used in the Buttler and Garcha's (1992) study. Thirty-seven libraries reported that the leading reasons for the reorganisations were: changes in administration; to achieve increased efficiency; to improve services; the introduction of an online system; economic conditions. (Larsen 1991)

Hypothesis 9 was tested because in Larsen's (1991) study entitled "The Climate of Change: Library Organizational Structures, 1985-1990" mentioned that different methods of change were adopted. In Corbin's (1992) article, he indicated that 'the consolidation of similar functions scattered throughout the organisational structure' was one important aspect of organisational change.

Hypothesis 10 was tested because the aspects considered before change were discussed in Jennifer Cargill's (1989) article entitled, "Integrating Public and Technical Services Staffs to Implement the New Mission of Libraries". 'The climate of the library and the parent institutional climate', 'the extent of managerial support', 'staff strengths and weaknesses', 'how interested staff members are in the proposed innovation', and 'how resistant they are to change' are aspects that should be assessed before change.

Hypothesis 11 was tested because the goals of change may be different in individual libraries. As discussed in Jacobson's (1994) article entitled "Reorganisation: Premises, Processes, and Pitfalls", it was indicated that the goal of the management team at the Columbia University Health Science Library was to pursue a resilient organisation.

Hypothesis 12 was tested because in Buttler and Garcha's (1992) study, 'the result of change' was one of the survey items in the questionnaire.

Hypothesis 13 was tested because staff attitudes towards change is a decisive factor and must be properly managed to release the anxiety and sensitivities of staff and ensure the success of organisational change (Shaughnessy 1996; Reschen 1997; McCarthy 1998; Moran 1998). 'The attitudes of library administrators towards reorganisation' was also appeared in the survey questionnaire of Buttler and Garcha's (1992) study. Thompson's (1991) article entitled "Organising for Change in Academic Libraries: Context and Strategy" indicated that 'staff attitudes are vital in organising for change'.

The research discussed in this dissertation was undertaken to develop data about the extent of library reorganisation resulting from internal and external environmental forces. In this context, the background of libraries, environmental factors of, methods of, aspects considered, goals of, results of, staff attitudes towards, reorganisation were hypothesised to compare the difference in UK

and Taiwan universities with respect to library reorganisation. After collecting and analysing relevant data, all hypotheses were actually tested and the testing results are discussed in chapter 4 and 5.

To collect the data for statistical analysis, the researcher chose both postal and electronic questionnaire as the survey instrument. This research included two surveys of different time period:

1. Initial survey—composed of two stages. The first stage questionnaires were sent to all library directors within UK and Taiwan universities. The time period of survey in the UK and Taiwan was 1985-1995, and 1985-1997 respectively. The second stage questionnaires were sent to those who indicating convergence with other services, centers or departments etc. (according to the findings of the first stage survey, those libraries were identified for an in-depth survey).
2. Follow-up survey—using both postal and electronic questionnaires (it was used as a reminding questionnaire) to survey 58 library directors in UK university libraries and 55 library directors in Taiwan university libraries which had answered the initial questionnaires. The time period of survey in the UK and Taiwan was 1996-2001.

The details of research design and data collection will be described in chapter 3.

## **1.6 Limitations of the Research**

This research was subject to the following limitations:

1. The survey instrument (questionnaires) used in Taiwan was modified from the original version used in the UK due to different educational systems and environments in Taiwan. Some survey questions and items in the original version of questionnaires did not apply in Taiwan's situation. Therefore, they were not compared between UK and Taiwan (please see Appendices 5 and 6). This is discussed further in chapter 3.
2. All discussions were based on the review of related literature and on the survey results.
3. The target of this research was limited to university libraries (both public and private universities) in the UK and in Taiwan, excluding the other types of libraries.
4. This research was limited to the main library of each institution. All branch campus libraries and departmental libraries were excluded from the study.
5. The study population was limited to library directors in the UK and in Taiwan.

## 1.7 Definitions of Terms in this Research

In this thesis, certain terms were used with the meanings shown below:

### 1. Higher education institutions

‘Higher education institutions’ in this research implies only the university libraries in the UK and university/college libraries in Taiwan.

### 2. Organisation

- Sub-division and delegation of the overall management task by allocating responsibility and authority to carry out defined work and by defining the relationships that should exist between different functions and positions. (Singh 1997)
- The established pattern of relationships between the component parts of an organisation outlining both communication, control and authority patterns. Structure distinguishes the parts of an organisation and delineates the relationship between them. (Wilson and Rosenfeld 1990)
- The formal pattern of interactions and coordination designed by management to link the tasks of individuals and groups in achieving organisational goals. (Bartol and Martin 1994)
- The combination of facilities, personnel, property, policies, patterns, and capabilities, among other factors, that result in a functioning enterprise, whether private or public, revenue-seeking or nonprofit. (Cross 1995)

### 3. Organisational structure

Arrangement of the work of the organisation into units and management positions between which there are defined relationships involving the exercise of authority and the communication of instructions and information. (Singh 1997)

### 4. Organisational chart

A visualisation in graphic form of a company or other organisation, broken down by divisions, departments, and functional units and displaying the relationships between these units, the flow of communications, allocated responsibilities, and the chain of command. (Cross 1995)

### 5. Organisational climate

- In management, a variety of factors (e.g., leadership style, motivational forces, organisational communications, staff development opportunities) at work in an

organisation which are perceived positively or negatively by employees and influence their conduct. (Young 1983)

- The nature of the environment in which an organisation functions, including the locale, available personnel, political structure, governmental restrictions, labor unions, transportation composition, financial accessibility, and other considerations that affect the organisation's operations and stature. (Cross 1995)

#### 6. Reorganisation

- In management administration and planning, the alteration of a company's composition and capitalization and usually its executive and personnel structure, to meet changing needs, such as those triggered by acquisition by, or merger with, another company. (Cross 1995)
- New way of organising. (Collin 1998)

#### 7. Convergence

- "Convergence" implies mergers of services, integration, or just cooperation. (Godwin 1996)
- "Convergence" means the process of strategic re-alignment of learning and research support activities to provide more effective customer services in the changing teaching and learning environment. (Collier 1996)

#### 8. Innovative organisation

"Innovative organisation" implies more than a structure; it is an integrated set of components which work together to create and reinforce the kind of environment which enables innovation to flourish. (Singh 1997)

#### 9. Network organisation

A newly emerging organisation structure that involves managing an interrelated set of organisation, each specializing in a particular business function or task. This structure extends beyond the boundaries of any single organisation and involves linking different organisations to facilitate interorganisational exchange and task coordination. (Cummings 2001)

#### 10. Downsizing

- Interventions aim at reducing the size of the organisation. Although typically associated with layoffs and reductions in force, downsizing also includes attrition, early retirement, selling businesses or divisions, outsourcing, and delayering. (Cummings 2001)

- Refers to the planned elimination of positions or jobs. Downsizing may occur by the reduction of work (not just employees), as well as the elimination of functions, hierarchical levels, or units of an organisation. (Peters, Greer, and Youngblood 1997)

#### 11. Outsourcing

- The outside placement of work that had been performed within the organisation—is often explained in terms of the need for businesses to concentrate on their activities. (Birchall and Lyons 1995)
- The industrial term for the practice, now widely employed, of purchasing parts from a variety of outside suppliers. Many manufacturers have discovered that it is cheaper and more feasible for them to buy, rather than make, certain kinds of parts that are either specialized, require unique skills, or fluctuate widely in demand. (Cross 1995)
- The practice of hiring outside consultants, trainers, vendors, or other types of professionals or technicians rather than employing full-time personnel. (Tracey 1998)

#### 12. Reengineering

An intervention that focuses on dramatically redesigning core business processes. Successful reengineering often is closely related to changes in an organisation's information systems. (Cummings 2001)

## Chapter 2 Literature Review

Both the US and UK literature compose most of the review in this chapter. The literature falls into the following broad categories: journal articles (theoretical and anecdotal); surveys and case studies which are essentially primary evidence; major reports; books, proceedings, theses. The emphasis of this chapter will be put on the discussions on the following aspects: organisation and its operating environments; the development of internal and external environments of university libraries; approaches and ranges of the restructuring process; issues encountered in the process of reorganisation. A short summary concluded the literature review to give a whole picture of library reorganisation and some important factors worthy of in-depth pursuing in this survey research.

### 2.1 Organisation and Its Operating Environments

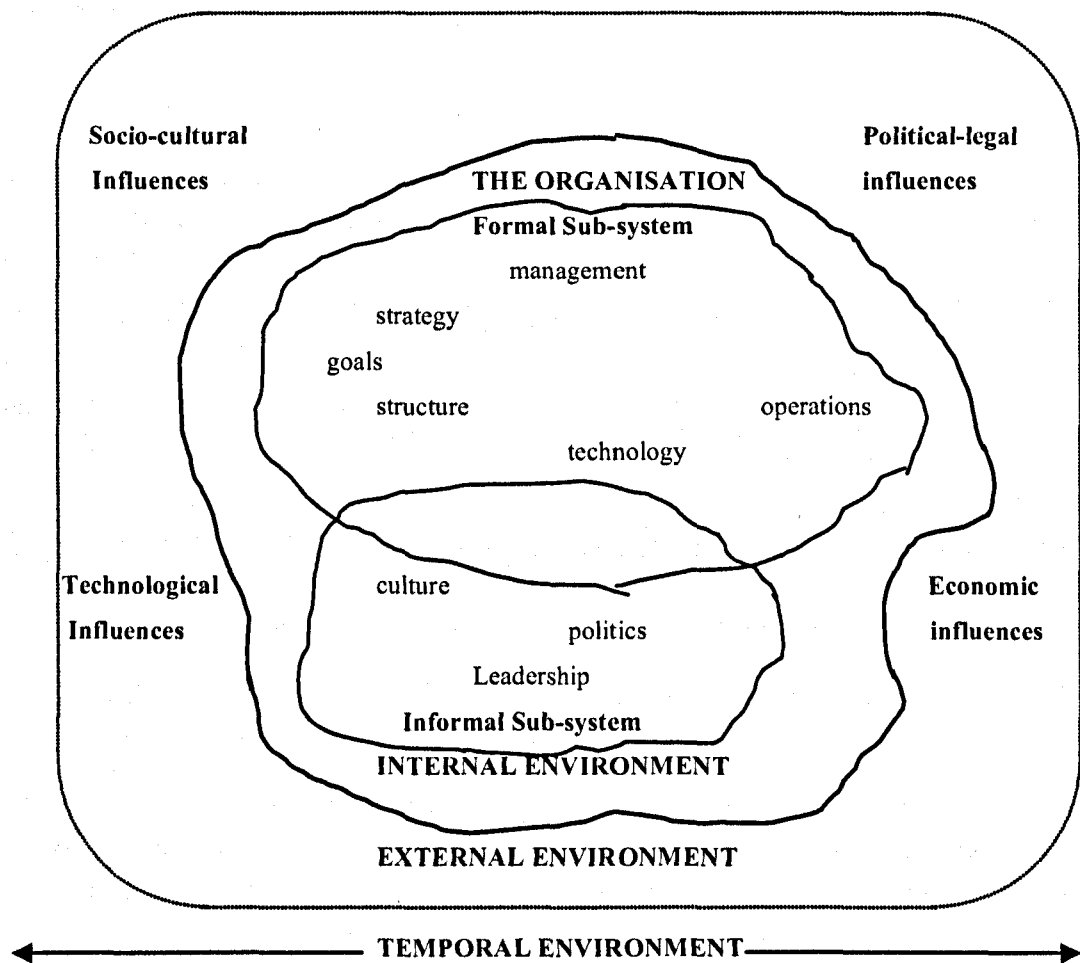
‘The purpose of any organisation is to accomplish a task or series of tasks and hence produce a product or deliver a service in response to a predetermined set of goals and objectives. Regardless of the actual structure an organisation adopts, classic management theory suggests that the structure should be based upon two general principles: Unity of objectives, and Efficiency. The first principle indicates that a structure is good if it fosters the contributions of all the units of the organisation to meeting the goals and objectives of the organisation. The second principle indicates that the structure is good if goals and objectives are met with a minimum of unplanned or unwanted consequences. Since an organisation’s products and services change over time, it means the structure of organisation should be adjusted or changed accordingly.’ (Fisher 2001)

Senior (1997) suggested that there are at least three types of environments which organisations operate in, which together make up the total ‘operating environment’ of an organisation. The environmental factors which act as triggers for organisational change can be identified into three aspects. First, the *temporal environment*, which encompasses the longer-term historical influences, such as the changes from an agricultural economy to one based on machines. Second, the *external environment* included political/legal influences, economic influences, technological influences, and socio/cultural influences as well as those forces which are pushing for globalization and an increasing concern with the physical environment (the PETS environment). Third, the *internal environment* (internal triggers for change) which consists of those organisational changes which are the first-line responses to changes in the external and temporal environments, that is changes in people (attitudes, beliefs, skills), scale of activities and organisational tasks, organisational strategy and structure, products or services, reward systems or use of technology.

Internal and external triggers for change are often interdependent forces for change within an organisation which are frequently the result of some external force. Any change of the above elements will have impact on the organisational structure.

Figure 2.1 is a stylized depiction of the concept of organisations as systems operating in multi-dimensional environments. The organisational system is affected by the influences of various environments. (Senior 1997)

Figure 2.1 The Organisational System Operating in Multi-dimensional Environments



Source: Data from Barbara Senior, Organisational Change (England: Pearson Education Ltd, 1997), 19.



## 2.2 The Development of Internal and External Environments of University Libraries

The environments of university libraries are changing over time, Drake (1993) indicated that the environment was characterized by technology, accountability, funding, customer demands. In addition, the effect of younger generation, distance learning, strategic planning, and collaborative learning are equally important in the current environment.

A special volume entitled “Libraries as User-Centered Organisations: Imperatives for Organisational Change” in *Journal of Library Administration* explored several major trends and influences causing organisational change in institutions of higher education and their research libraries: trends in economics, technological development, scholarly publishing, leadership and management, and demographics (Butler 1993). Another special volume entitled “Managing Change in Academic Libraries” in *Journal of Library Administration* also explored some driving forces behind most workplace change, for example, economics and technology are two important driving forces to academic libraries now.

Field (1998) concluded the imperatives for change including: ‘a substantial growth in taught and research student numbers; a diversification of the student body with more part-time, more distance-learning, more overseas, more mature, more fee-paying and more self-financing students; a growing emphasis on resource-based/independent learning and on the acquisition of study, IT and other generic skills, necessitating enhanced learner support; a customer base more knowledgeable about its needs and rights, and more demanding.

Searching the literature suggested that the internal and external factors that affect the organisational structure of university libraries should be considered from several aspects:

- the influences of development of higher education;
- the political and legal influences;
- technological influences;
- economic influences;
- socio-cultural influences;
- further influences.

The classification of influences above is very artificial, many of the imperatives being interlinked; institutions may face mixed forces surrounding them, such as shown in the Figure 2.1, as any organisational system faces a multi-dimensional environment which affects the operation and structure of the system. For the purpose of discussion, however, the six categories of factors affecting higher education institutions are discussed separately below.

## **2.2.1 The Influences of Development in Higher Education**

Over the past two decades (1980s and 1990s), the major challenges were: the expansion of higher education; a shift from teaching to learning; changes in the processes of information production; network learner support; development of electronic library etc. (Hanson 1998). The changes of higher education will have had massive impacts on university libraries, and accordingly, affect the organisational structure of university libraries. Two major influences: changes in teaching and learning, and lifelong learning are discussed in the following section.

### **2.2.1.1 Changes in Teaching and Learning**

Day and Edwards (1998) once indicated that 'Higher Education Library and Information Services are experiencing unprecedented levels of change associated with a radically altered educational landscape'. Hanson (1998) also pointed out that the main developments in university teaching and learning strategies are in line with national and international trends. Partington (1996) said that the first innovation in teaching and learning is the result of the "massification" of higher education and changes in society's attitudes to education. The Follett Report (HEFCE 1993) indicated that the major changes included: growth in student numbers; changes in the make-up of the student population, with more part-time and mature students, with more diversity in race, ethnicity, economic status and academic preparation. The expansion of universities and student entry has demanded new approaches to the management of learning, for example, increasing use of resource based (student centred, independent) learning, greater use of group work etc. The student-centred learning has implications for Library staff. The traditional library may change physically to become a 'learning resource centre' housing a wide range of print, electronic, multimedia and audiovisual sources. The instruction role of library staff increases, they must collaborate to a greater extent with staff in teaching and other central departments (Day and Edwards 1998). The collaborative relationship provide great opportunities for librarians to improve the quality of instructional materials and increase awareness and access to related information resources.' (Drake 2000). Much greater emphasis on independent study also places greater stress on library staffs as advisers and tutors (Brophy 2000). New course structures and teamwork approaches to teaching incorporate staff such as librarians and technicians, as well as academics (Hanson 1998).

The changing nature of the student population place changing requirements of library staff. For example, many mature students with little recent experience of information and study skills and part time students with little time available to acquire them will increase staff time spent on training and teaching users in study/library skills. (HEFCE 1993) If the new paradigm for university libraries is to be customer-driven and user-centered, then university libraries must reflect the reality of all users--their lives and histories, their rich cultural traditions—and must be responsive to the needs of all user populations. (Butler 1993)

Changes in teaching and learning are also affected by the developments in information and communication technologies which place new demands on libraries, students and their teacher.' (Drake 2000). Providing easy access to electronic resources has long been an issue for information professionals. Recently this concern has been exacerbated in the higher education sector with the encouragement and development of e-learning (Quinsee 2001). E-learning needs libraries to have the adequate systems and resources in support of it. (Field 2001). Rosenberg (2001) and Probst (1996) indicated that the development of the Internet and other instructional technologies are revolutionising the way of learning and research tools and the teaching pattern (i.e. distance learning). Many universities are offering courses over the Web to distance learners (Drake 2000). Networked Learner Support (NLS) is emerging as a new professional practice in higher education. It is recognized as a collaborative activity within and between institutions, cutting across departments such as library and computing services, teaching/learning support, staff development and academic departments' (Schwartz 1997). An example of this was in the book *LISU Annual Library Statistics 1999*, where the definition of 'library' has been widened to include Audio-visual aids, slide and tape production, photography, language centers etc. This may be in line with the moves to convergence being made in many institutions. (Creaser 1999)

Another change in teaching and learning is 'new approaches to quality assessment and performance indicators' which highlight the need to examine the role of libraries in supporting quality. The effectiveness of library and information services provision should be an important aspect in the assessment of the quality of teaching.' (HEFCE 1993)

The impact of changes in teaching and learning on libraries can be seen around the world. In the UK, such as the University of Lincoln, a new role has evolved called the *learning adviser* who works for the Learning Development Unit (LDU) which has replaced the library. These learning advisers tend to come from a library or computing background (Hepworth 2000). At Birmingham University, tutors are increasingly call upon Information Services staff to support them in creating e-Learning materials and courses (Jenkins 2002). At City University, a new section (e-Learning Unit) to implement to WebCT was established in the library to provide a focal point for

students to access electronic materials for distance learning. (Quinsee 2001). In the US, the Internet has also radically changed the teaching of adults. Courses online, interaction with fellow students and instructors, and access to research libraries are just some of the capabilities that are emerging. Penn State University, Florida State University, Kentucky Commonwealth Virtual University, State University of New York, University of Maryland, Western Governors University were a few examples from the hundreds of colleges and universities offering online curricula. (Rosenberg 2001)

Changes in the teaching and learning have led to changes in what is required of library staff. Libraries must respond to the changes at both the reactive and proactive levels (Hanson 1998). Library staff need to play an active role in supporting students in their teaching and learning (HEFCE 1993). To reinforce the 'teaching and learning culture' of the institutions, many institutions are working on creating a campus-wide information technology strategy and information strategy. (Edwards and Jenkinson 1998)

#### **2.2.1.2 Lifelong Learning**

The concern which is driving UK government education policy, and that of governments around the world at the start of the 21<sup>st</sup> century is how to build a society where all citizens can develop their full potential and which has the skills and knowledge to thrive in the increasingly competitive world economy. One of the main policy planks which has been employed to achieve these goals is to encourage lifelong learning for all. This was the challenge facing UK universities as they entered the 21<sup>st</sup> century. Universities sought ways to shift from 'mass education' to 'lifelong learning'. Their libraries would need to be an integral part of their response to this challenge (Brophy 2000). The implication of lifelong learning for academic libraries could be profound. Libraries should be well and securely positioned to develop a firm place within society, within corporations and within educational and other institutions. Therefore, libraries can become 'learning centres' and perhaps 'centres of learning'. The role of library staff is as information intermediaries--selecting the highest quality sources, ensuring that the most up to date sources are available, and making them all easily accessible (Brophy 2001). The Follett Report (HEFCE 1993) recommended libraries to change their services and the ways they were being delivered in order to provide the necessary support to lifelong learners.

#### **2.2.2 Political and Legal Influences**

The political and legal factors include: government policy, parent institution's plan or strategy, parent institutional culture, new legislation, etc. 'Because of the interactive nature of organisations, any successful major change program will require complementary and supportive political change. Library managers who understand the relationship between the values underlying organisational development and related political changes will be better positioned to ensure that the planned changes are successfully implemented'. (Lee 1993)

Day and Edwards (1998) indicated that 'the chief forces for change in higher education in the UK stem from political influences on the sector as a whole'. The political influences can be traced from the "Thatcher" years. During those years it quickly became clear that the universities were going to be opened up to public scrutiny. In achieving the government's policy (higher participation rates, more applied research, more relevance to national needs, better value for money and greater accountability), all universities are developing new teaching and learning methodologies; the pressure is reflected in the increasing demand for library and information services. Academics demand excellent service from their own libraries on site, supplemented by swift document delivery service and unfettered access to global information networks. Students demand access to all the books and information services. (Hannon 1998)

Brophy (2000) and Law (1998) examined several key government and other reports and initiatives which have influenced and shaped the academic library sector in UK, concentrating on those which occurred in the final decade of the 20<sup>th</sup> century. These reports and their main recommendations were as follows:

- The Parry Report (University Grants Committee 1967) recommended that universities should devote a minimum of around 6% of their revenue expenditure to the library.
- The Atkinson Report (University Grants Committee 1976) recommended new space norms for libraries.
- The Follett Report (HEFCE 1993) recommended that additional funding was found to enable two areas as national priorities: the development of library building; and a programme of development to enable the exploitation of the potential of information technology. This resulted in the establishment of the Electronic Libraries Programme (eLib).
- The Anderson Report (Joint Funding Councils 1996) recommended international collaboration was becoming more significant, especially for research teams, raising questions about library support. Academic librarians fostered 'academic integration' between the library, academic departments and other institutional services.

In Taiwan, following economic expansion and the development of democracy, the MOE revised 'University Law' in 1994, offering universities more academic and administrative independence. The relationship between government and universities was changed after the revision (MOE 2001). Some of the major changes in the university system which cause significant influence on the organisational structure change of libraries were as follows:

- Schools that are not economically viable shall be merged or integrated properly to ensure that resources are effectively used to cope with the multiple needs of the society and to enhance, complement and share resources among various regions.
- The successful entrance of WTO (World Trade Organisation) for Taiwan in 2002 also impacts the higher education system. The universities and colleges inevitably face more challenges from international competition. It is an opportunity for universities and colleges to transform themselves, for example, seeking cooperation with other universities nationally or internationally, merging with other institutions.
- Through self-adjustment and development of institutional potential, universities are expected to play a leading role in the entire learning society. They increase opportunities for adult education, organise extension education and on-the-job training in special areas, provide members in the workforce with means to re-enter the education stream and meeting the needs of lifelong learning.

In the US, several library reorganisation cases were also affected by the university's administration, for example, one factor leading to change of the Michigan State University Libraries was the recognition of changes of university administration (Ten Have 1993). Samford University's Davis Library took a TQM (Total Quality Management) approach to embark on organisational change in 1990. The approach was greatly affected by the university's administration. (Fitch, Thomason, and Wells 1993)

In China, smaller colleges and universities began to merge with larger universities by the early 1990, under a state-planning programme. Such mergers were a part of China's higher education reform. The wave of mergers among colleges and universities had a far-reaching influence on China's higher education and academic library services as well. One positive outcome was the library's ability to redesign positions and organisational structure that served the new library more efficiently. Duplicate positions were eliminated. Staff quality was improved, and staff morale was increased. The libraries had greater flexibility to redirect staffing to the most needed positions. (Huang 2000)

### 2.2.3 Technological Influences

Doubtlessly, the development of information and communications technologies (ICTs) is among the most important and most far-reaching influences on academic libraries. The effect of technologies on library services, operations and organisations will be different in different libraries. Dramatic changes occur when users and library staff use technology heavily (Drake 1993).

The impacts and opportunities of significant ICTs on university libraries can be examined from some main points: 1. Library automation; 2. Electronic materials; 3. The influence of the Internet; 4. The electronic libraries (eLib) Programme; 5. The information strategies; 6. The competition from the information industry; 7. The information commons.

In a study (Busch 1985) on automation reorganisation published by the Association of Research Libraries (ARL), its member libraries reported that the introduction of automation was the primary force contributing to organisational change. Johnson (1991) noted that the distinction between public and technical services also appeared to be eroding, communications within the library and outside organisations were different, library staff, their assignment of responsibilities, and library operations were affected by library automation.

In the UK, many libraries were using computer-based systems by the beginning of the 1970s. By the 1980s, semi-integrated systems appeared. By the early 1990s such systems had been expanded to include most library functions (Brophy 2001). Alongside various stages of development in library automation, libraries started to adopt computer-based information services. In the early 1970s academic libraries began to use commercial database systems to provide a specialist service to individual researchers. At the start of the 1990s, new services based on digitization of full text started to become widely available. By the mid-1990s, library management systems shifted from the 'integrated' second-generation systems towards relational database models that handled all operations seamlessly. Libraries endeavoured to find ways to integrate CD-ROM and other local services.

The Internet has caused a strong impact and great influence on the traditional libraries. Many libraries had realized that the original working processes and organisational structure were not suitable for the integrated system' (Maozhao, Xu, and Bin 1998). The advent of the World Wide Web (WWW), starting to impinge on library operations by the mid-1990s and the dominant front-end to their services by the end of the decade. At the start of the 21<sup>st</sup> century, users can independently access large amount of information resources across the Internet, particularly the access to full text. (Brophy 2000, 2001)

With the development of information technologies, a certain amount of library materials are now electronic, for example, digitised data, text, audio, video, and multimedia files. New services based on digitization of full text became widely available at the beginning of the 1990s. The digital content stored in electronic media significantly changed the infrastructure for information delivery. To use the digital content effectively demands libraries to have an adequate infrastructure. The implementation of the Joint Academic Network (JANET) was a key development to deliver the digital content. JANET was an ambitious project to provide high-speed network connections between all UK universities (Brophy 2000, 2001).

With the rapid development of digital content and the digitization technologies, a wide range of digital library projects (or the eLib programme) were launched in the UK academic libraries (Edwards 1993). eLib has provided UK academic libraries with access to some of the most advanced thinking and practice in the broad area of electronic library service development. During 1999, the concept of the DNER (The Distributed National Electronic Resource) emerged and has been described as 'a managed environment for accessing quality assured information resources on the Internet which are available from many sources'. Building on work undertaken within the eLib programme and elsewhere, the DNER offered a coordinated approach to the creation of a national strategy, infrastructure, content and services (Brophy 2000).

The implementation process of digital libraries involves many technical, staffing, and professional issues (Edwards 1993). Edwards (1993) once conducted a research project into the impact on people of electronic libraries at Northumbria University, UK. He examined the changing role and function of academic libraries and the increasing reliance on electronic networks to give access to information rather than local holdings. Field (2001) indicated that the development of hybrid libraries has shown how traditional information formats may co-exist with the electronic. A single technical infrastructure to underpin all information needs provides a scenario for library and administrative computing service to converge. Universities in the UK have recognised that administrative information systems and the key data are increasingly required by staff, student and other service providers. Neff (2000) also noted that the creation of digital learning environment is one of the driving forces pushing mergers of libraries and computer centers. Lovecy (1994) pointed out another pressure for convergence was 'the demand for information strategies'. The demand was from the Higher Education Funding Councils (HEFCs) by requiring the Universities in the UK to produce first IT strategies but subsequently Information Strategies, which cover the whole range of printed and electronic information, its storage, dissemination and manipulation, information from external sources and internal administrative information. Such strategies require input from library, academic computing and administrative computing services.



'Thanks to new, technology-driven models, more and more campus libraries offer a mix of traditional resources, technology, instruction, and collaborative and social space. They serve an ever-expanding role in supporting an institution's curriculum' (Albanese 2004). A new service centre—Information Commons (or Learning Center) which reflected the vision of the library of the future has been opening in university campus, such as University of Iowa, University of Missouri, University of Southern California. Behind the revamped service points of the new information commons, a new library organisation has also evolved, for example, Mt. Holyoke College (MHC) unveiled its take on the information commons in 2003. The commons functions as a conduit between the main library and Dwight Hall, which houses the library offices, state-of-the-art media labs, and computer workshops. Albanese (2004) pointed out that 'the information commons is a scalable, one-stop shopping experience for students and faculty, ...a student can find the information resources, the equipment, and the instruction to use it all in the library.' He also mentioned that 'for librarians and faculty, the information commons is still sometimes referred to as a bold new direction'. The content, expertise, design, and software are all major elements in the information commons. In Bailey and Tierney's (2002) article, the concepts of 'information commons' was reviewed, administrative and functional integration in an academic library information commons was described, potential problems were discussed, and solutions were suggested. Cowgill, Beam, and Wess (2001) indicated that changes in user needs resulted in Colorado State University libraries' decision to turn a traditional library computer lab into an information commons. The authors noted that 'training' quickly became a critical factor during implementation.

'Libraries have always been amongst the most important providers of information in higher education' (HEFCE 1993), however, in the era of networking, the library is not the only institution from which people can acquire information. Some online searching institutions (such as DIALOG), publishers (such as Academic Press, Elsevier), commercial companies (such as UMI company and EBSCO company), and library cooperation organisations (such as OCLC), all take up roles to supply the readers with the massive electronic information resources on the network. When an end-user can independently access vast information resources across the Internet, using the World Wide Web (WWW) as the medium for delivery, for example, conducting search through the 'Google', 'Yahoo' or other search engines, this gives a severe challenge to the existence of the library. 'The traditional view of the "library" as the sole repository and supplier of information needed to support teaching, learning and research is no longer adequate. ... To the user, the place where data is held will be relatively unimportant' (HEFCE 1993). How can the libraries prove their importance when facing new competition from the information industry? The only answer is that

libraries need to play a new role as information intermediaries—selecting the higher quality sources, ensuring that users access the most up to data sources very easily (Brophy 2000). All of this demands their institution had adequate internal infrastructure to supply to the readers not only its catalogue and collections in the storage, but also some characterized consulting services (Maozhao, Xu, and Bin 1998). Librarians can also add significant value to information and make a difference in educational and research outcomes (Drake 1996). For example, in the UK, implementation of the Joint Academic Network (JANET) was a project aimed to connect all UK universities network in order to enhance the library services. (Brophy 2000)

Field (2001) stated that within the UK, the technological and information impetus for change has been given emphasis by the policies of Government and the four Higher Education Funding Councils. To meet the needs for IT developments within the Higher Education sector in the UK, two reports with strategic importance were published. One was 'The Follett Report' (which was published in 1993), and 'The Dearing Report' (which was published in 1997). One of the key conclusions of the Follett Report were: 'The exploitation of IT is essential to create the effective library service of the future'. The recommendation resulted in substantial sums of non-formula funding for higher education libraries. The funding is channelled through the Joint Information Services Committee of the Higher Education Funding Council (JISC). (Milne 1998). The key recommendations of the Dearing Report were: 'All higher education institutions in the UK should have in place overarching communications and information strategies by 1999/2000; higher education institutions should ensure that all students have open access to a networked desktop computer by 2000/2001, and all students will be required to have access to their own potable computer by 2005/06. (Milne 1998)

In Taiwan, the automation of library and information services began in 1972. In early 1980s, with the advance of computer technology and its increased capability in processing Chinese characters, libraries began to develop electronic systems. With the support of the MOE (Ministry of Education, Taiwan), library automation in the college and university libraries has developed more successfully than that of other types of libraries. Especially, with the strenuous promotion of the Taiwan Academic Networks (TANet) by the Ministry of Education after 1990, the library automation has been developed on system integration and network basis, and great progress has been made in the automation of academic libraries and information operations. In 1990, the MOE implemented the 'Three-year Development Plan of the Campus Network' and supported main universities and colleges to set up their own campus network, therefore, computer resources available in the campus were integrated. The planned network also served as the transmission channels for academic teaching and research. Most university and college libraries have

implemented integrated automation systems. During the last ten years of the twentieth century, most large libraries in Taiwan began to change their old automation systems, the Internet was employed, and the online databases were extensively used. The library automation in Taiwan had been developed from the respective efforts to the standardized levels and electronic library. Such progress owed to two important factors: one was the joint ventures of library and information scientists and the support of the governments at various levels; the other was the progress of the computer and network communication technology .(Hu 1998) (Chou and Lin 1998)

#### **2.2.4 Economic Influences**

Many changes in educational institutions and libraries were the persistent decline of the economy, the drop in the purchasing power of libraries, and the rapidly rising costs of information products (Butler 1997). Technology is making it easier to carry out the librarians' role as information providers. But technology has also made overall operations more costly in most libraries (Boisse 1996). New technologies have become new cost centres for libraries and research institutions, with their potential for radically altering communications and knowledge management, whilst at the same time they have broadened rather than replaced the array of information formats and services needed by faculty and students. Librarians were forced to adopt and adapt to a new paradigm that requires greater investment in information access, service in response to demand, and extensive collaboration with resource sharing partners, information vendors, publishers and technologists. (Butler 1997)

Michalko (1993) believed that societal debates about higher education were about a redefinition of the product or output of the academic enterprise, but that the common response to economic pressures focused on resources rather than output. The result was confusion in institutions of higher education and in their research libraries which were suffering under even greater pressures to redefine their output. He advised that administrators and librarians might look to the general features of the landscape to put the university's and the library's economic reality into perspective.

In the UK, because of political and financial factors, higher education institutions are being encouraged to collaborate for the benefit of the research community. Milne (2000) indicated that the reason for the higher education institutions to collaborate was that no library was able to meet the existing and potential information needs of all its users. Closer co-operation and partnership in the library and information domain were to reduce unnecessary

duplication of effort, to optimize the use of resources, to extend provision in areas not previously or fully covered, and to provide value for money across the publicly-funded UK library system as whole. That is why four funding bodies of UK Higher Education (HE) funded The Research Support Libraries Programme (RSLP). The aims of the programme are to promote collaborative and cross-sectoral work. The programme's vision is to facilitate the best possible arrangements for research support in UK libraries. Almost all of the projects currently funded by the programme are consortial, and many are cross-sectoral. (Milne 2000)

In the US, state governments, taxpayers, and private donors demand accountability for all expenditures. Universities create new departments to deal with tools to measure results and performance and have a hard look at operations and their reengineering for more efficiency because of the imperatives for assessment and accountability. Development, fund-raising, and stewardship become one of the fastest growing areas for employment in higher education. Now libraries are building development staffs very quickly. (Drake 2000)

The difficulties of parent institutions are in finding the resources to continue supporting the library at the same level as in the past. City, county, and state governments as well as colleges and universities are experiencing the same problem. There is also the need to deal with the rapid rise in costs associated with library operation. The top is the inflation of the costs of books and journals (around 15 percent per year), and the costs associated with human resources, e.g. salary and benefits cost (Boisse 1996). For example, the University of Alberta Library restructured its services to clients because of facing a 20% budget reduction (Distad and Hobbs 1995). Economic realities have made institutional mergers a growing trend in higher education. One example was Pennsylvania State University, which under economic pressure, adopted the strategic planning process for the merger of the libraries at Harrisburg and Schuylkill campuses (Stimatz and White 1997). The same situation also occurred in Washington State University, when it was facing \$5 million in budget cuts, it merged three branch libraries with the main library, eliminated ten staff, shaved the library budget, centralized serials check-in, and consolidated the media unit. (Rogers 2000)

In China, colleges and universities used to be governed by several parent organisations. Such funding and management model caused each college and university to function in isolation, created duplicate programmes and exacerbated competition for funds and resources among these schools. In the early 1990s, the State Council and the State Educational Commission wanted to implement better use of funding and resources for higher education, thus required that colleges and universities improve the management system. Because mergers

could alleviate the pressure of tight funds for library acquisitions, the state government, departmental ministry, and provincial government committed to allocate more funds than before to support colleges and universities during the mergers, including additional funds to support libraries. (Huang 2000)

### **2.2.5 Socio-Cultural Influences**

Social and cultural influences also play a vital role in organisational change. The influences could be discussed from several aspects: rising information needs and expectations of users and staff, scholarly publishing and scholarly communication.

#### **2.2.5.1 Rising Information Needs and Expectations of Users and Staff**

The greatest effect of technology is on customer services. Information filtering and selection of appropriate resources become more important aspects of the customer services in libraries. Library users have greater and more immediate information needs for school, work, and lifelong learning. Their expectations are continually rising. They expect more personalized library service to learn about and acquire information (Johnson 1996). They demand the library provides all the new media that contain the information they are seeking, and they also expect interlibrary loan or document delivery service to be fast, easy, and inexpensive or free (Boisse 1996). As users' expectations have risen and LIS have striven to adopt more user-oriented approaches, it become ever more difficult to live up to the demands. (Day and Edwards 1998)

Customer services librarians in large universities have to deal with a greater variety of customer's wants, habits and desires. New ways of working and new awareness of what is possible has changed customer expectations of libraries and creating the need for new organisational structures to provide flexible and responsive information and library services. (Drake 1993)

In the UK, the expectations of students and their parents have of the higher education system have increased. Institutions need to provide an integrated, effective and "one-stop shop" provision of facilities, of information and learning resources. Funding Councils had launched a variety of mechanisms to support these policies. The compilation of a formal institutional learning and teaching strategy is now mandatory. Commencing with the Follett Report in 1993, and facilitated by the Information Strategies Steering Group of the Joint Information Systems Committee established in 1994, universities and colleges have been steered towards the production

of integrated information strategies. This initiative became the driver for many organisational and operational convergence in the UK. (Field 2001)

#### **2.2.5.2 Scholarly Publishing and Scholarly Communications**

Scholarly publishing and scholarly communications have also been affected by the technological development. Karen Hunter (1993) detailed the economic and technological pressures that are causing scholarly publishers to realize that business as usual is no longer an option. The changes force changes in the market, for example, declining economics of traditional publishing, new market demands, the move to electronic products and services, shifts in attitudes about copyright, and industry realignment. The move to electronic publishing will allow publishers to become more user oriented rather than product oriented. These changes will have effects on research libraries.

Access to the Internet has revolutionized scholarly communication. The distinction between informal communication, formal communication, and publication becomes blurred. The nature of scholarly work and the relative value of these new modes of scholarly discourse are against the traditional discourse of print journals. The immediate issues for librarians are copyright issue of this new medium, and how to collect and preserve the content. The next shift in the process toward the virtual university is the facilitation of cooperation between researchers separated by time and space. The traditional classroom lecture is no longer necessarily the most efficient method of instruction as programs for distance learning bring the instruction to the student and as multimedia and interactive software packages free students from the restrictions of the traditional classroom. These developments present a particular problem for libraries in providing bibliographic instruction and information resources in an environment not yet fully electronic. (Probst 1996)

The academic research library's position in scholarly communication has developed from a plainly passive stance for most of twentieth-century history to an active role of restructuring and strengthening that system in recent decades. Schwartz (1997) considers that academic research librarianship has already recognized that scholarly communication will be its ultimate business. Discourse on the commonalities of scholarly communication and information society would encourage a reinterpretation of traditional academic values, principles of higher education, and library services. The mission of research universities and their libraries (i.e. supporting teaching, research, and service) needs to be reshaped in the wake of the rapidly evolving scholarly communication system. Steele (2003) suggested that in the revolution of scholarly communication

and academic publishing allied to the technological changes, libraries should play the role of “knowledge banks” or “research banks”. Libraries should understand and facilitate the changes in scholarly communications and networked knowledge. Libraries have to become much more proactive in their institutional roles, in the new paradigms for the creation, distribution and access of information. The collections that librarians draw upon will become increasingly distributed, the boundaries of the library are more ‘diffuse’ and libraries more deeply engaged in the creation and dissemination of knowledge.

### **2.2.6 Further Influences**

Further factors, such as development of library building or requirement for space, senior staff vacancies, arrival of a new director, personnel change (loss or gain) other than the director, outsourcing, etc. affect the likelihood of organisational change, but they are not principal influences in themselves (Fisher 2001).

In the UK, the development of library building was recommended by the Follett Report and that additional funding was found to enable it, whether through refurbishment and expansion, or through new building. The recommendation ‘increased the potential for housing the library and computing services in one, purpose-designed centre and so encouraged physical merger. This opportunity was a strong incentive for merging services at the University of Hertfordshire’ (Sutton 2000). Other examples in the UK include Salford (Harris 1988), and Liverpool John Moores (Sykes & Gerrard 1997). Similar situations were taking place in the US. For example, ‘because of ‘plans for an addition to the building’, and ‘one department head’s resignation’, Stanford University’s Davis Library initiated a plan for vast organisational change in order to provide the opportunity to reallocate personnel (Fitch, Thomason, and Wells 1993). Northwestern University Library underwent reorganisation in anticipation of ‘a new building’ (Horny 1987). General Library System in the University of Wisconsin, Madison also reorganised because the need for space and shelving in the main Memorial Library. (Gapen 1989)

Another precipitating factor has been the departure or retirement of a service head. Then the vacancy provided an opportunity for the administrators to reexamine the organisational structure of the library (Hu 1998). For example, Clemson University Libraries made major organisational change because of ‘position vacancy’ (Boykin and Babel 1993). University of New Mexico General Library merged acquisitions department and the serials department because the serials department head left the department (Bordeianu 1998). University Libraries of Notre Dame embarked on an evolutionary change in the workflow, job assignment, and organisation of the acquisitions

department because the assistant head of the department took another position (Gleason and Zeugner 1998). Sutton's case studies (2000) suggested that retirement of the computer centre manager, or the departure of the university librarian created opportunities for merging. 'vacancies seem to be catalysts when merger is already a favoured option, rather than a *prima facie* reason for merging'.

'Outsourcing is also becoming a vital ingredient in organisational development and restructuring. The purpose of outsourcing is to concentrate added-value by retaining and developing the core business while buying in the non-core services.' (Birchall and Lyons 1995). The concept and practice of 'outsourcing' was initially adopted in business, and later on, more and more libraries tried to outsource their non-core activities to improve their operations with limited human resources. For example, increased use of outsourcing collection development, copy cataloguing, and physical processing of materials resulted in reorganisation of Technical services at Stanford University Libraries. They began reengineering the processes by which library materials are acquired and cataloged. (Propas 1998)

From all of the papers so far discussed, we can conclude that many factors contribute to organisational change, such as: changes in teaching and learning, political and legal forces, technological advancement, economic pressure, social imperatives, etc. However, the ranking and importance of those reasons was not comprehensively described in the literature. Therefore, the researcher wanted to find out which major reasons were noted by most of the university libraries in the UK and Taiwan. Besides, were there any changes in the factors causing change during the past decade in the two countries.

The introduction of library automation has been indicated as one of the reasons for change; however, the relationship between types of automated system installed (integrated vs single) and the extent of library reorganisation was not reported by any one of the authors. Other ICTs services (eg. online catalogue, CD-ROM, digital collection) were considered to be relevant to organisational change. What kind of ICTs services were among the most important ones was not discussed in the literature either and that was one of the interesting points that the researcher will investigate.

Economic influences have long been emphasised in library management. In an era of customer-oriented services, is the economic factor still the main concern of library managers? Or, has its importance decreased? This issue did not get very much attention in the literature.

Scholarly publishing & scholarly communication is believed to have an impact on the role of library staff and library services of HE institutions. However, the extent of its impact was not identified. Furthermore, the researcher believed that other influences, such as 'to facilitate



management function’, ‘join library consortia/cooperative programme’, which were not revealed in the literature, are still worth an in-depth investigation.

Changes above are not only forcing library managers to re-examine the library’s basic services but also the organisational structures to support those services. The changes also have implications for library staff, their role as information provider and their status in the professional community faced with challenges. The new paradigm for university libraries will be customer-oriented and library staff must be responsive to the needs of differing users.

**2.3 Approaches and Ranges of the Library Reorganisation**

Organisation structures should be designed to fit with at least five factors: the environment, organisation size, technology, organisation strategy, and worldwide operations. Organisation effectiveness depends on the extent to which its structures are responsive to these contingencies (Cummings and Worley 2001). ‘As an organisation changes its strategy to respond to political, economic, technological or socio-cultural changes in its external environment, therefore its structure changes to maintain a strategy-structure relationship. The goal of reorganisation is to create a more efficient organisation that will fulfill its mission more successfully even while promoting the personal and professional development of the individuals of the organisation’. (Boisse 1996)

In the book ‘*Restructuring Academic Libraries: Organisational Development in the wake of technological change*’, Schwartz (1997) has suggested three approaches for significant restructuring outcomes. These approaches to the planning process are:

- *coupling independent streams* of problems, solutions, participants, and opportunities;
- *fostering collaborative realignments* between organisations on campus and in a consortium;
- *Coordinating academic programme goals* related to information resources and services in an integrated campus network.

In addition, the different kinds of restructuring *outcomes* can be categorized in terms of five ranges of a restructured, boundary-spanning organisation as shown in Figure 2.2.

Figure 2.2 Ranges of Boundary Spanning

| Ranges of Boundary Spanning       |                                  |                                    |                                   |                                     |
|-----------------------------------|----------------------------------|------------------------------------|-----------------------------------|-------------------------------------|
| 1                                 | 2                                | 3                                  | 4                                 | 5                                   |
| Public &<br>Technical<br>Services | Library &<br>Computing<br>Center | State or<br>Regional<br>Consortium | Network &<br>Academic<br>Programs | Library,<br>University<br>& Society |

- Range 1—Reorganisation of units within a library, for example, convergence of public and technical services;
- Range 2—Convergence of the library with the computing center--realignment of campus computing partnerships;
- Range 3—Collaborative programmes within a consortium—redevelopment of state and regional library consortia;
- Range 4—Encompassing the library's parent institution as a whole, involves the redesign of academic programmes (research and curricular programmes) in an integrated network environment;
- Range 5—Revising the library's and university's joint service mission to society in the age of electronic information.

As the scope of boundary spanning expands, the concept of "organisation" changes as well. At range 1, the organisation is a *rational order* of relatively specific goals and formal structures. At both range 2 and range 3, the organisation is an *alliance*, less formally structured, with more problematic and collective pursuits. At ranges 4 and 5, the organisation is an *open system* of coalitions of shifting interest groups that develop goals by negotiation; the structure of a particular coalition, its activities, and their outcomes are all strongly influenced by environmental factors. (Schwartz 1997)

Restructuring efforts are usually couched in terms of the immediate surroundings of a single organisation. Table 2.1 was the outcomes of reorganisations listed in the 1995 ARL survey (with percentiles representing only the third of its members that reported organisational changes). Except for "partnerships with other academic libraries," those ARL library organisational changes were confined to range 1, there seems to be little involvement by members of the university community outside of the library. (Schwartz 1997)

Of the reorganisation case studies of university libraries in America, most of them have undertaken a *library-wide* reorganisation which were confined to range 1, some were confined to range 2, several extended to range 3 and 4, and few extended to range 5. Collaborative realignments go beyond the boundary of a single organisation to encompass a functional convergence of the library with the computing center (range 2) and with other libraries in a consortium (range 3). Such cross-organisational development would seem to entail a higher order of complexity, or difficulty. (Schwartz 1997)

Table 2.1 1995 ARL Survey Outcomes

| 1995 ARL Survey "Outcomes"     |                                         |                                                                  |
|--------------------------------|-----------------------------------------|------------------------------------------------------------------|
| <u>Number of ARL Libraries</u> | <u>Percentage of Survey Respondents</u> | <u>Type of Organisational Change</u>                             |
| 25                             | 71%                                     | Reallocation of personnel                                        |
| 11                             | 31%                                     | Movement of personnel from technical services to public services |
| 2                              | 4%                                      | Movement of personnel from public services to technical services |
| 5                              | 14%                                     | Reallocation of monies from materials budget to operating budget |
| 4                              | 11%                                     | Reallocation of monies from operating budget to materials budget |
| 9                              | 26%                                     | Entered into partnerships with other academic libraries          |
| 17                             | 49%                                     | Increased allocation of funds for training and development       |
| 17                             | 49%                                     | Reallocated resources to automation/networking units/activities  |

### 2.3.1 Case Studies of the Single-Organisation Experience

During the past two decades (1980-2000), most of the organisational change cases were undertaken in a single *library*. (see for example, Walker 1987, Andrews 1988, Christ et al. 1990, Creth 1991, Crooker et al. 1991, Larsen 1991, Barker 1992, Cummings et al. 1992, Dewey 1992, Neal and Steele 1993, Crist 1994, Jacobson 1994, Clack 1995, Bowers et al. 1996, Cook 1996, Harris and Marshall 1998, Conaway 2000, Drake 2000, Grigg 2000, Wakimoto 2000, Fisher 2001, McLaren 2001, Niles 2001, Webb 2001, Freeborn 2002, Williams 2002, FYI 2002).

The first common method adopted was to integrate the traditional division of 'Technical Services' and 'Public Services', this method was widely related to the introduction of library automation. Even when the integration of 'Technical Services' and 'Public Services' was commonly used, Busch's (1985) survey, however, revealed that 'radical restructuring' was occurring in relatively few libraries after library automation. Although some experimentation with modifications to the traditional organisational structures had occurred, there had been little change in organisational structures accompanying automation as libraries seemed reluctant to make

significant changes to these structures. Larsen's (1991) survey of organisational change in 216 American university libraries between 1985-1990 found that the majority of respondents still utilised a structure of a technical services division and a public services division after automation, most libraries had become more integrated since automation. The finding indicated that the traditional divisional structure continued to provide an efficient platform for supporting library services. But the responsibilities delegated to both technical and public services were being shifted and their respective roles within the library changed. Buttlar and Garcha's (1992) study also found that automation prompted integration. A majority of the libraries were organised along the traditional bifurcated pattern of technical and public service functions, but some reported that, within the last five years they have reorganised in a way that integrated or blurred these two divisions. Extensive use of the committees, task forces, subject-based assignments, split assignment, and job rotation which crossed departmental or divisional lines to moderate the built-in limitation of the divisional structure was reported by many libraries.

Besides the point of integration of technical services and public services, other methods adopted can be found in the literature (Fisher 2001, Brewer 1997). Fisher's (2001) study suggested that moving one or more of the functions from one unit to another or combining them into a newly created unit was adopted by a number of libraries in the last five years. Brewer (1997) noted that, besides organisational change occurring within a library, another concept—"Learning Centre" was the latest in the series of Post-Follett academic library buildings to come on stream with an emphasis on its role in relation to the University Teaching and Learning Strategy. For example, in 1997, the new Learning Centre at Derby University opened replacing the largest of the University's 5 libraries. The Learning Centre was intended to become a prime focus for student independent access to IT facilities in the University, and to achieve this without convergence of Library and Computer Service management.

### **2.3.2 Service Convergence**

'Computing has made rapid development as a support service within universities, initially (from the 1960s) in research and now increasingly in teaching. The distinction between Library and Computing services has blurred, with the increasing use of information and communication technologies (ICT) in the creation of the "e-library". Some universities have decided that the best approach to the converging roles is to merge the support services into one unit.' (Discombe 2003) Law (1998) also indicated that the post-Follett building programme has concentrated on learning

and resource centres and on information centres, where the two groups of user support staff from library and computing centre are brought together.

Inspecting the theory and practice described in the literature, the meanings of convergence are multiple, some definitions are more restricted (for example, Field 2001) while some are broader (for example, Sutton 2000, Milne 1998). The restricted definition of convergence centred on the merger of library and academic computing services within an institution under a single executive director (Field 2001). The definition is important, since 'the theory of converging libraries and computer centres originated in the US, during the early 1980s preceding the British interest which began in the mid-1980s because the application of information technology in libraries had an earlier impact in the US' (Sutton 2000). Battin (1984) believed that a combination of the skills and facilities of both the library and computing service can facilitate the development of electronic library. This close relationship can only be established with organisational change. The convergence of library and computer service acquired wider attention because the problems facing many institutions' computing services and libraries were similar. Computer Services were at increasing risk from competitors. Academic departments may initiate, and manage, their own facilities without assistants from computer services. Libraries also face challenges from the global market for information, the "new scholarship", commercial information brokers. Both services need to constantly define and redefine their roles. (Revill 1992)

Corrall (2000) mentioned that 'a broader definition of convergence generally describe the coming together, merging or blending with related technologies, services, roles and operations. The structure and scope of converged information services varies considerably. In the further and higher education sectors, convergence more often refers to the confluence not just of computing and networking technologies, but of information conduit and content into an enlarged information organisation'. Sutton (2000) indicated that 'converged services' sometimes include a variety of other departments, such as audiovisual or media services, educational development, print services, teaching and learning initiatives, and even student counselling (Sutton 2000). The inclusion list for merged services indicated in SCONUL investigation was more than fifteen different service permutations. (Field 2001c)

The subject of convergence was firstly discussed in the 1988 issue of the *British Journal of Academic Librarianship*. Most of the important concepts with convergence were introduced in that issue and case studies brought about most of the significant implications for convergence were included. 'Convergence' was also highlighted in other literature (for example, Sykes and Gerrard 1997). Another important article, which appeared in the *Achieving Cultural Change in Networked Libraries*, was a first thorough review of the literature in the 1980s and 1990s relating to service

convergence in both the US and UK and focused on the relationship of the library with the computing service (Sutton 2000). Some of the main points of debate, as well as the principal theoretical constructs and models were drawn out in that article.

The Fielden Report (Fielden Consultancy 1993) is concerned in general with human resource issues surrounding convergence. It also distinguished between “organisational or formal convergence” and “operational or informal convergence”. In the former category services are brought together for management purposes; and in the latter the detailed functions or operations of the services are changed or merged. It is not strictly necessary to have organisational convergence for operational convergence to take place. It is also the case that services can be organisationally converged while making slow progress with converging operationally.

Varied methods of service convergence were found in the literature. Pugh’s (1997) study showed that a minority of institutions in the sample achieved fully integrated services embracing managerial, administrative, physical, technical and operational unity. Voluntary cooperation at head of service level with integration achieved via report and other mechanisms overseen by a Pro Vice Chancellor was indicated by a small number of cases. Corral (2000) noted two kinds of the management arrangements of convergence. One is ‘merged service’, integrated at all levels, and unified under a single executive director, the other is ‘collaborative provision’ based on informal co-operation of separate services. Other common models includes: formal co-operation, based on a service level agreement; peer co-ordination, with one service head acting/rotating as lead partner for strategic planning and budget bids; administrative unification, with common reporting lines via a senior administrative (or academic) officer and/or an information strategy committee. Milne (1998) noted that there are very different models for convergence of library and computing services. They may be characterised by one or more of the following:

- A ‘Director of Information Services’ or similar heading the service.
- A common chairman of library and computing committees.
- A pro vice chancellor or equivalent responsible for library or computing activity.
- Simple good will between the services.
- A peer co-ordinator in charge.

‘Although convergence began in the US, it has been proportionately more pervasive in the UK’ (Field 2001). Lovecy (1994) indicated that in the last decade there has been a tendency for Library and Computing Services to become closer, in some cases merging into a single service for effectively managing information. One force behind the tendency came from the recommendation of the Follett Report (HEFCE 1993). The report produced the pressure for convergence. It suggested that there are many advantages in organisational convergence, particularly in enabling an

integrated information strategy to develop (Law 1998). After the report, it would be hard to find many UK higher education institutions without some manifestation of converged behaviour (Field 2001). Discombe (2003) once examined the management of Information Resource Services in the UK Higher Education. He indicated that a wide variety of functions have been brought within the remit of the new utilities produced by organisational convergence. During the past two decades, various studies have documented the spread of convergence in the UK higher education sector. Royan (1994) found thirty-five institutions operating on an information supremo model. In 1997, Push's questionnaire survey of the entire sector suggested that around fifty universities and colleges had converged (Field 2001). By May 2001, figures from a Web-based survey published by the SCONUL (Standing Conference of National and University Libraries) and the UCISA (Universities and Colleges Information Systems Association) and collated by the author showed that the number of converged and non-converged institutions was roughly equal. (Field 2001)

The spread of convergence in the UK higher education sector during the 1990s was also studied by Gray (1986), Edwards (1993), Lovecy (1994), Collier (1994), Brewer (1997), Pugh (1997, 1997a, 1997b), Revill (1992), Royan (1993; 1994), Stone (1998), Milne (1998), and Field (1998, 1999, 2001). Field (2001) once reviewed the extent and nature of convergence of information services in the UK higher education sector; traced the history of convergence since the 1980s; discussed the principal factors behind it, and the implementation issues; evaluated its impacts. He also provided a select bibliography of convergence for further study to refer. Among them, St Andrew's College of Education in Glasgow was among the British pioneers of convergence (Gray 1986). The appointment of Lynne Brindley as Pro-Vice-Chancellor for Information Technology at the University of Aston in 1987 was often seen as the beginning of the movement in the UK (Lovecy 1994). But Lovecy (1994) believed that the appointment of Colin Collin Harris as Director of Academic Information Services at the University of Salford in 1988 was the first case in the UK of a service with a single executive head (Harris 1988). Other early implementers between 1985 and 2000 were Liverpool Polytechnic (Revill 1992), De Montfort (Collier 1994), Luton (Stone 1998), Polytechnic South West (Sidgreaves 1988), Stirling (Davis 1998, Royan 1990), Liverpool John Moores (Sykes 1998), King's College London (Milne 1998), Birmingham (Field 1998, 1999), Keele (Foster 1997), Plymouth (Discombe 2003) universities.

In the US, 'despite its early impact on the UK debate, convergence in the US takes place in a very different cultural context in which alternative relationships to the administrative merger of libraries and computer centres predominate.' (Sutton 2000) Field (2001) noted that, in the USA, the "true" convergence, based upon the concept of the "chief information officer", can be traced back to circa 1980, with early implementations at Carnegie Mellon University, California State University

at Chicago, Columbia University, MIT, Rice university, the Virginia Polytechnic Institute. (Flowers, Keck, and Lindquist 1995)

During the last 20 years, it has become common for US universities to form information technology units with an executive level administrator (often has a title such as Chief Information Officer, Associate Provost for Information Technologies, or Vice President for Information Resources and Technology). For example, at the Bradley University the Cullom-Davis Library has been a sub-unit of an Information Resources and Technologies unit. In smaller universities, one of the existing unit heads (i.e. the library director or the director of computing) is asked to serve as a coordinator of all information technology units (hereinafter referred to as chief information officer (CIO). In a larger university, the chief information officer is likely to be a separate position. Often, the library and the computer center are the largest sub-units in an Information Technology unit. Other units which are frequently a part of Information Technologies include: audio-visual services, campus radio and television services, telecommunications, and networking services. (Johnson 1997)

Not all of the converged services can remain forever successful; converged services can be finally deconverged because of the change of climate or focus. For example, at University of Luton, in January 1992, the three services' heads (Head of Library Services and Head of Computer and Media Services) were asked to propose an implementation plan for convergence. In 1993, a newly appointed Head of Learning Resources was to realign the roles within the management team by joint agreement. However, in January 1997, due to the slowdown in student expansion and subsequent pressure on University finances, the university library was seen more clearly as a mix of digital and print based information sources which should be organised with a customer focus. In July 1997, the deconvergence was undergone as the library moved into the newly completed Learning Resources Centre. The relationship between library and former colleagues remained a strong, cross-departmental teamwork. (Stone 1998)

### 2.3.3 Other Ranges

Range 3 (in Fig 2.2 above) involves a redevelopment of state and regional library consortia which marks a new stage of *resource sharing*. Within the UK, the regional Funding Councils have established a Joint Information Systems Committee (JISC) serving the needs of the whole academic community. In taking a national strategic view of library, information and networking policy—and funding it nationally—JISC initiatives, including the “Electronic Libraries Programmeme”, have transformed the working lives of academics, students and librarians. Besides, the Consortium of



University Research Libraries (CURL) has included the libraries of all the foremost research universities in the UK and Ireland (Hannon 1998). In the US, examples of this were OhioLINK's experience and CIC (The Committee on Institutional Cooperation) Libraries experience. The former project covered an array of practical concerns: institutional versus consortium collection responsibilities, economies of scale in statewide acquisition of electronic resources, a consortium's political leverage in licensing issues, and the transforming role of local subject bibliographers. The later project, the collaborative realignments, are vertical (intra-institutional)—involving nearly all academic and administrative units—as well as horizontal (cross-institutional). There were opportunities for academic libraries to work with other key academic groups, such as the directors of campus computing centers, the university press directors, and other faculty and administrative units. (Kohl 1997)

Range 4 involves a redesign of research and curricular programmes in the networked environment. As Charles R. McClure and Cynthia L. Lopata found in a 1996 survey, universities have had a very difficult time attempting to determine an operational definition of the campus network because each of its manifold components—infrastructure, resource content, user support, and management (governance, planning, and fiscal aspects of the network)—involves a different kind of cost-benefit analysis. (Schwartz 1997)

Creth (1994) gave an example of collaboration of faculty, librarians, and computing professionals to respond to the challenge of technology. The Main Library at the University of Iowa opened an "Information Arcade" in 1992 to encourage and facilitate the integration of electronic information resources into the academic curriculum and into research activities. Different expertise of more than 40 individuals drawn from the faculty, the Libraries, and the Academic Computing Center have made the project successful.

From 1987 to 1993, University of Minnesota launched a project—Integrated Information Center (IIC) experiment focusing on both technical integration and organisational integration to bring together all the support and delivery of information services to support the networked end-user. An organisational entity was formed to lead, manage, and support the integration of information services. (Branin, D'Elia, and Lund 1993)

Allen and Williams's (1994) article '*Innovation: Who's in Charge Here?*' proposed a key insight for university and college libraries to become an innovative organisation and work better in the application of information technology. In order to support campus-based innovation for academic information technology, and also to position the library for leadership, the library can have collaboration with teachers, computing center, or local technology companies. The advantages

of collaboration are: 1) sharing the risks and costs; 2) sharing and expanding both expertise.

Range 5 revises the library's and university's joint service mission to the society. Example of this was a 1996 special reorganisation project involving public and academic libraries happened in San Jose. The San Jose Public Library and San Jose State University decided to open a joint-use library in 2003. For the first time in this country, these two libraries will be totally combined in one building. The idea was born of fiscal necessity. By pooling resources, construction of a new state-of-the-art library became possible. Without the partnership, chances of replacing existing inadequate city and university facilities were slim. The joint library project will make possible a life-long learning center and regional educational hub for San Jose. (Conaway 2000)

Over the past two decades, organisational change in university libraries in the UK and US, gained much attention in the literature. Most of the topics focused on the discussion of the methods of both single-organisational change and service convergence. Nevertheless, as the topic on the change in management tiers was seldom raised, we could not predict whether the organisational structure becomes flattened or taller after change in the future? At present, convergence offered the university the best management for its information resource services. 'Notwithstanding these various alignments of services, the library and the computing unit are generally the largest and the most decisive players within a converged organisation' (Discombe 2003). Who will take the leadership in the new structure, however, remains unidentified in most literature.

Moreover, few articles were related the situation which occurred in the Asian countries. Therefore, we could not know what has happened in the Asian HE institutions' libraries. Blurring of technical services with public services, creation of new function/departments, combination of similar functions or consolidating service points, elimination of function/departments, movement of function/departments, name changes were considered the mostly adopted methods in the single-organisational change. What were the methods used in Asian HE libraries? What are the characteristics of the changes of functions and services and their positions in the structure? Moreover, changes in teaching and learning, promoting of lifelong learning, and tremendous use of ICTs provides the opportunity for the library to cooperate with academic units and other support services on the campus. If this becomes an emerging trend in library and information services, then, what happened in the university libraries in the Asian countries? Are they changing in the same direction and pace with the western world? If so, what are the nature and extent of the changes? What problems have been faced? Much remains to be discovered in these topics.

## **2.4 Issues Encountered in the Process of Reorganisation**

Reorganisation is seen as a response to the pressures of higher education environment (Sidgreaves 1988). It will inevitably be faced with new challenges or obstacles in the process of change. For example, the change of staffing pattern, working pattern; human resources problems (i.e. staff attitudes toward reorganisation; staff education and training programme); cultural barriers between merged services etc. Schwartz (1997) even indicated that ill-planned radical change would prove costly and unwieldy. Drake (1993) believed that vision, commitment, staff development and training, and changes in culture, values and behaviors are necessary to the successful implementation of the new organisation. Case studies in the sample of Pugh's (1997) survey indicated the importance of consultative processes, leadership, boundary spanning structures, teams, devolved management and decision making and a sharp focus on the learning process and customer services if the converged service is a fully converged service.

### **2.4.1 Changes of Staffing and Working Pattern**

Introduction of library automation and new technologies is one of the most important reasons for change and had a major impact on the working pattern (type of tasks, the nature of the work and job content, job autonomy and methods of control, the working environment) and staffing pattern (the level of responsibility assigned, skill requirements, status and career paths, patterns of relationships, work groups and communication ) in libraries (Dyer et al. 1993). Professional/support staff roles and relationships came under closer scrutiny with the introduction of automation and technologies. Johnson (1991) and Myers (1985) indicated that technology absorbs many routine tasks, many of the task previously done by professional librarians have been transferred to support staff, particularly the more routine aspects previously performed by professionals. Other functions are moved upward as more planning, co-ordination, and specialized subject analysis is taking place at the professional level. Shaughnessy (1996) even mentioned that library administrators have sought to enlarge and enrich the jobs assigned to support staff, as they have encouraged the academic and professional staff to assume less routine work.

When University of Iowa Libraries introduced library automation, the staffing patterns were also changed to take the advantages of new system. They used the method of staff realignment to share different duties; staff assignment to facilitate communication and interaction; decreased staff size; upgraded position; multiple roles, staff spend some time doing selection work and

bibliographic instruction, binding and marking (Christ et al. 1990). Christ (1994) reported that six academic library administrators under his investigation, used managerial strategies that included reducing the staff complement, redeploying professional staff away from functional roles such as reference, and establishing work teams in order to flatten the organisational structure

Harris and Marshall (1998) suggested that the impact of restructuring on staffing included: reduced staffing levels; increase in the deployment of work team in organisation which 'take on much of the work formerly done by senior staff before cuts'; library personnel are being redeployed, their duties streamlined and merged, their job descriptions rewritten, the staff who have survived organisational downsizing must work harder and assume a variety of new tasks, often working in more than one department.

#### **2.4.2 Staff Attitudes towards Reorganisation**

'Managing organisational change is problematic largely because human beings are programmed to resist or at least be cautious about change. Change is often perceived as threatening, painful, disruptive and sometimes dangerous.' (Tidd, Bessant, and Pavitt 2001). 'The personal attitudes will become the most difficult issue to manage (Branin, D'Elia, and Lund 1993). Therefore, staff attitude is a very important factor to the success or failure of library reorganisation. Organisational change will produce feelings both of anxiety and impatience due to the fact that programmes, operations, and services in the library must continue throughout both the design and transition phases of the project, restructuring processes become significant "add-ons" to the staff's work load (Shaughnessy 1996). Boykin and Babel (1993) mentioned that organisational change requires library staff at all levels difficult intellectual and emotional adjustments. The library needs to give a proper regard for the feelings and sensitivities of reassigned staff.

'Staff education and training', 'effective communication', and 'staff participation' were among some of the methods to deal with negative staff attitudes. In the 1998 ALA Midwinter Conference, several heads of technical services shared their experience and opinions about how to develop strategies to help staff adapt to the process of change. The important methods included: effective training; pay attention to issues associated with staff adjustment to change; peer mentors; good communication and administration realignment (McCarthy 1998). 'Staff resistance has both cognitive and emotional components. Some of this resistance can be resolved in formal ways—by training, communicating information, etc.—but emotional responses—anxieties about loss of status, power, influence, fear of risk-taking, etc.—cannot be directly. Instead it is necessary to create a

climate in which these concerns can be surfaced, issues and conflicts can be addressed and in which individuals can find reassurance' (Tidd, Bessant, and Pavitt 2001). Moran (1998) noted that effective communication is a critical need throughout the entire process. This communication needs to be both external, for the academic library is part of a larger organisation that needs to be informed about the proposed changes, and internal. If employees are not kept well informed about proposed changes, rumors will be rampant and cause employees' anxiety'. Johnson (1988) suggested that 'Staff participation' should begin early in the reorganisaiton process. 'Library manager needs to motivate staff to accept the reorganisation and work toward it rather than fight against the change'.

Staff in libraries has to be educated and trained on the new structure and how it functions. Staff development and training needs to be provided to all employees (Moran 1998). If the reorganisation involves reallocation or reassignment of personnel, the education and training can make the staff learn the new knowledge and skills required for the new tasks (Distad and Hobbs 1995). Usually, a new workflow which eliminates redundancies and streamlines operations has to be designed to take maximum advantage of new organisation. In a review article by Edwards (1993) identified the importance of the need for initial training and ongoing staff development for library and information service staff if library moves towards convergence with other departments. When the University of Alberta Library took positive steps to restructure its services to clients, it established an 'Office of Staff Training and Development' to in charge of the tailoring of new public service positions to mesh with the talent, skill-set, subject-expertise, personal interests, rank, and seniority of reassigned staff. (Distad and Hobbs 1995)

### **2.4.3 Cultural Barriers**

It is usually considered or anticipated as a frightening task if the reorganisation involves the integration with other institutions. The position level of staff will become more complicated; culture clashes or conflict (different policy towards service provision) between two organisations will occur. The decisions of organisational structure depend a great deal on the idiosyncratic traditions and cultures of each institution. For example, the IIC (Integrated Information Center) project launched by University of Minnesota faced a variety of organisational challenges related to such issues as levels of authority and control; mission and role ambiguity; cohesion and conflict among different work groups and cultures; and bureaucratic inertia and resistance to change. (Branin, D'Elia, and Lund 1993)

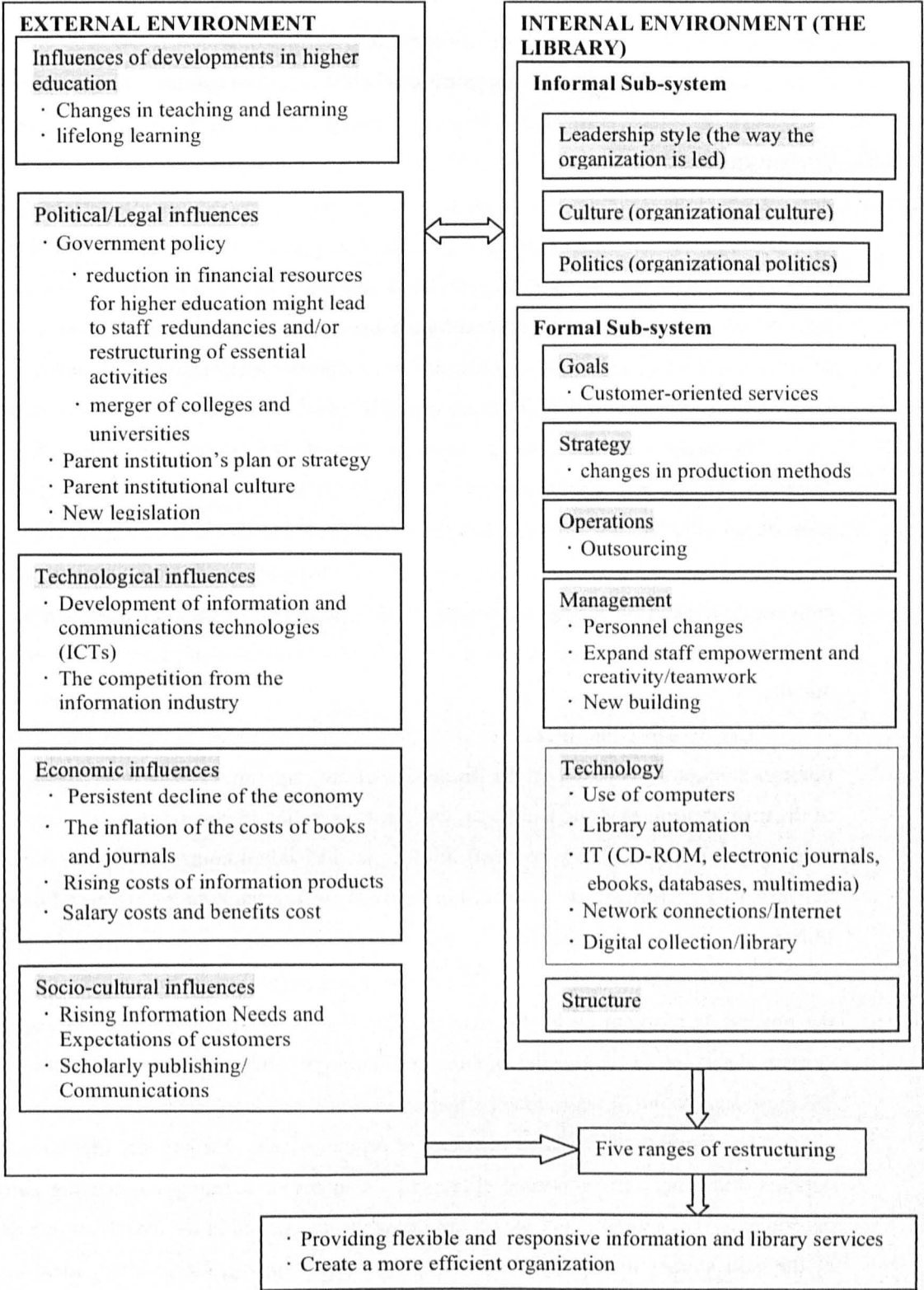
The cultural difference between the converged services was raised in a number of papers including Lovecy (1994), Foster (1997), Stone (1998), and Field (1998). Lovecy (1994) indicated that different ethos/culture usually becomes one of the major obstacles when organisational structure change involves more than two services (Lovecy 1994). Foster (1997) pointed out that management barriers—the integration of the ‘two cultures’ were encountered when Keele university underwent information convergence.

Some authors, on the contrary, had a more optimistic view about the significant cultural differences issue in the process of merging and propose a solution, for example, when Luton University (UK) conducting a service, many of the irritating interdepartmental rivalries disappeared (Stone 1998). Field (1998) also noted that the cultural issues in the University of Birmingham have been successfully tackled without affecting the service to end-users (Field 1998).

The results of organisational change could be either advantageous or disadvantageous. Varied difficulties and obstacles will inevitably face individual libraries under different circumstances. Until now, the literature on staffing and working patterns impacted by library automation and ICTs has not dealt with the actual changes in the demands of human resources and how the work has been really affected. Therefore, we could not get the whole picture of that issue. In general, role changes and shift of tasks and responsibilities between professional and support staff were believed to be the trend and they will cause staff sensitivities and anxiety. Nevertheless, staff attitudes towards change have not gained very much description in libraries. Culture clashes and difference were also one of the major obstacles encountered. Many authors in the literature suggested that ‘good communication’, ‘staff participation’, and ‘staff training and education’ were among some of the effective methods to resolve the problems. But, which level of library staff (eg. top manager, senior manager, middle manager) could have the opportunity to participate the change process seems not the focus of the authors.

To summarise the external and internal driving forces impacting on university libraries in the past two decades, the researcher drew a chart (please see Figure 2.3) to show the relationship between those imperatives and the final decision of a certain range of restructuring.

Figure 2.3 The Elements of Internal and External Environment Contributing to Organisational Change



Source: Drawing by the researcher—Shiow-Man Liao

## 2.5 Summary

This chapter reviews a substantial published literature and case studies to identify the forces for change and the nature of organisational change in the higher education institutions' libraries around the world; extensive description was on the experience of change in the UK and Taiwan universities. Important issues encountered in the change process are also revealed. In general, the internal and external factors can be identified principally as: changes in teaching and learning; encouragement of lifelong learning; political and legal factors; rapid development of information and communications technologies; economic pressures; rising information needs and expectations of users and staff; scholarly publishing and scholarly communication; further influences (eg. constructing of a new building, changes in staff).

In response to the driving forces facing HE institutions' libraries, possible models are evolving or proposed in the literature. Among them, single organisational change has occurred in most of the libraries. Since 1980s, service convergence involving more than one institution has also gained attention in the literature and become an emerging trend in universities. The definition of convergence, its history and its nature is also discussed in this chapter. Varied solutions and suggestions for dealing with negative staff attitudes towards change have been proposed by some authors.

Up to now, the literature on organisational changes in higher education institutions' libraries has mainly focused on the discussion of the imperatives of change, approaches and ranges of the restructuring process, and issues encountered in the process of reorganisation; it has not dealt much with extent of library reorganisation in an individual country, or even made a comparison between two countries. The relationship between library background (size of library, structure of library, etc.) and library reorganisation was only noted in one article (Buttlar and Garcha 1992).

Usually varied aspects should be considered before organisational change is initiated or in the process of reorganisation, for example, the climate of the library and the parent institutional climate, the extent of managerial support, staff strengths and weaknesses, staff attitudes towards etc. All those aspects did not gain much attention in the professional literature.

Furthermore, diversified methods of organisational change were mentioned; nevertheless, detailed divisional and functional alignments, changes of working and staffing patterns were not described in the literature, and we do not know which method is the most common one. Since most of the case studies in the literature did not provide a organisational chart, therefore, we can not



identify the existence of basic library functions (such as cataloging, reference) and their location within the organisational structure. A flattened organisation with non-traditional teams or working groups seems to be the new philosophy of modern organisational arrangement, but there are few discussions of major changes of management levels in the literature. If the organisational change involves service convergence then, who is in charge of the change process and who will be the leader of the new structure? Since the role of university libraries is becoming more active then, are the names of library services changing accordingly? The results of organisational change, whether they are positive or negative, will be the concern of every library manager. There was not much literature which provided a thorough assessment of such results.

Organisational change—particularly the reasons for change, methods of change, and the obstacles encountered—is described. Besides the main points discussed in this chapter, other important issues which are taking place or triggered by the changes will be also the focus of the research and described in the following chapters.

## **Chapter 3 Research Design and Data Collection**

Having identified the research problem, and formulated hypotheses, the researcher was ready to select a methodology for her study.

Two research methods, 'case study' and 'survey research', have been considered by the researcher. Although the case study is well suited to collecting descriptive data and is often useful as an exploratory technique, however, it involves intensive analyses of a small number of subjects rather than gathering data from a large sample or population (Powell 1997). In contrast to case study, survey research is used to gather contemporary data, and is better suited to studying a large number of, and geographically dispersed, cases. Also, survey research is generally considered to be more appropriate for studying personal factors and for exploratory analysis for relationships. (Powell 1997). Since the main purpose of this study is to collect data from all the university libraries (they are very geographically dispersed) in both the UK and Taiwan to assess the extent of reorganisation, and make comparison among the factors and issues related to organisational change. Therefore, the researcher selected the survey research as the methodology.

Several types of survey studies can be selected, for example, one is 'exploratory surveys', often conducted as qualitative research; they merely suggests insights or hypotheses: they can not test them. A second general type of survey is 'analytical and descriptive surveys'; 'analytical survey' is appropriate for data that are quantitative in nature and that need statistical assistance to extract their meaning. But in practice, most researchers seem to consider an analytical survey as essentially a kind of descriptive survey, and do not distinguish them. For collecting quantitative data for statistical analysis, the researcher selected descriptive survey. The basic purposes of descriptive surveys usually are to describe characteristics of the population being studied, estimate proportions in the population, make specific predictions, and test associational relationships. (Powell 1997)

Basic steps of survey research includes six stages: formulating objectives, selecting the population, selecting data collection techniques and instruments, data collection, coding the data, analyzing and interpreting the results. (Powell 1997)

### **3.1 Formulating Objectives**

The objectives of the study are indicated in chapter 1.

### 3.2 Selecting the Population

This study was not a sampling but a population study. It meant the data was from all of a population both in the UK and Taiwan. The reason for undertaking a population study, rather than a sampling study, was that the entire population (university libraries) in the two countries was not too large or expensive to manage. The study was composed of two surveys in the two countries, the initial survey (composed of two stages of survey) and the follow-up survey, and in each survey, the population selected was also different. It was as follows:

#### 1. Initial survey

At the first stage, the study population was composed of all library directors (or equivalent managers) within the UK and Taiwan universities. The number in the UK was 98, in Taiwan 88. At the second stage, according to the findings of the initial survey, university libraries which converged with other services/centers/ departments etc. were identified for conducting an in-depth survey. The number in the UK was 10, in Taiwan 12, respectively.

#### 2. Follow-up survey

In May 2002, the researcher conducted a follow-up survey to investigate more up-to-date information about library reorganisation within UK and Taiwan universities. This survey was aimed to make cross-section comparison of the extent of library reorganisation between UK and Taiwan universities and also make longitudinal comparison between the initial survey and follow-up survey. The number in the UK was 58, in Taiwan 55.

The survey population in the UK was identified from "The Times Good University Guide 1995-1996, edited by John O'Leary and Tom Cannon"; the survey population in Taiwan was identified from "The Directory of Universities and Colleges, 1997, edited by Ministry of Education, Division of Higher Education, Taiwan". In UK universities, with the notable exceptions of Oxford, Cambridge, and London, the principle of one main library is the norm. Hence, for Cambridge University and Oxford University which had many College's libraries beside the main university library, just the main university library directors were the survey target. The number was based on one each for Cambridge and Oxford. Nevertheless, for colleges of the University of London and University of Wales, they were counted as separate institutions, because of their independent administration system.

In Taiwan, if a university had departmental or branch libraries (i.e. National Taiwan University) in the same or separate campus beside the main library, only the main library director was the survey target. The number was based on one each for all universities libraries.

Faced with changes of internal and external environment, the view, the vision, and the leadership styles of library directors (university librarians) will affect the decision-making or the

type of strategies that they choose in undergoing the transition. Therefore, all questionnaires used in this survey research were addressed to library directors in order to explore their perceptions about organisational structure change. Nevertheless, the researcher can only presume that all the returned questionnaires were completed by the library directors (or equivalent) themselves.

For the convenience of description, the respondents from the UK university libraries will be referred to as the 'UK' or 'UK respondents', the respondents from the Taiwan university libraries will be referred to as the 'Taiwan' or 'Taiwan respondents'.

### **3.3 Data Collection Techniques and Instruments**

In conducting survey research, the researcher has several data collection techniques at his or her disposal. The observation, the interviews, and the questionnaires are three most commonly used techniques, but not exclusively, used in survey research (Powell 1997). Having considered the research objectives, subject, priorities, and limitation of the investigation (in terms of time and cost) of the researcher, and weighing the various pros and cons of each method, the researcher decided to use mail questionnaire to collect the necessary data. The advantages of 'mail questionnaire' over the interview and observation as data collection instrument are: (Powell 1997)

- The travel time and cost were the major concern of the researcher. Mail questionnaire can facilitate the collection of large amounts of data in a relatively short period of time (data recovery time is typically two to several weeks) and is usually relatively inexpensive to administer. The survey targets in this study are very geographically dispersed. It demands the researcher a lot of travel time. Under this situation, it would be very difficult for the researcher to travel to all universities in both countries to interview library managers. Furthermore, the average cost of personal interview is more expensive than that of mail questionnaire.
- The questionnaire, especially the mail questionnaire, tends to encourage frank answers. It also can be quite effective at measuring attitudes because the participants can complete the questionnaire without the researcher's being present.
- Mail questionnaire helps to eliminate interviewer bias. The fixed format of the questionnaire tends to eliminate variation in the questioning process. The contents and organisation of the questions will not change once they have been written in their final version.
- The reactions of the researcher during personal interview can affect the respondent's answers. Such reactions can bias future responses of the participant. Mail questionnaire has no such problem

- Mail questionnaire allows participants to complete, within limits, at their leisure time. This encourages well-thought-out, accurate answers.
- It is easier to do follow-up with mail questionnaire than personal interview.
- Observation is best suited for describing and understanding behavior as it occurs. It is less effective for gathering information about a person's perceptions, beliefs, attitudes, etc. Therefore, observation is not an appropriate method of gathering all the data that the researcher required for this study.

The instruments were both postal and electronic questionnaire. The survey instrument, validated through a pilot study, was proved to be sufficient to support this study.

The questionnaire was basically consisted of three parts:

Part I: Information about the library.

Part II: Information about reorganisation

Part III: Respondents' comments/concerns

The "Initial Survey Questionnaire" used in the UK (please see Appendix 3-2) was composed of 31 items. The "Initial Survey Questionnaire" (please see Appendix 4-2) used in Taiwan was composed of 22 items. The "Further Survey Questionnaire" used in the UK (please see Appendix 3-4) composed of 14 items. The "Further Survey Questionnaire" (please see Appendix 4-4) used in Taiwan composed of 10 items. The "Follow-up Survey Questionnaire" used in the UK (please see Appendix 3-6) and Taiwan (please see Appendix 4-6) was composed of 19 items. Most of the questions were fixed-response (structured questions), also known as closed questions, limiting the participants to a checklist of possible replies. Several questions were open-ended (unstructured questions) which allowed participants to reply freely according to their individual situation.

The questionnaires used in the initial survey (first stage and second stage) in Taiwan were modified from the original version of questionnaires used in the UK (please see Appendices 5 and 6 for comparison of different versions of questionnaires). The reasons for modification were as follows:

1. The researcher found that some questions (items) which appeared in the UK's questionnaires were not applied in university libraries in Taiwan due to different environmental factors (i.e. educational system, culture etc.). Therefore, these questions or items were omitted.
2. The survey period for the initial survey (both first stage and second stage) conducted in the UK was earlier than that in Taiwan. Therefore, the researcher decided to move several questions (items) in the second stage of the initial survey questionnaire in the UK

to the first stage of the initial survey questionnaire in Taiwan to gather useful data at this stage.

The questionnaires used in the follow-up survey in the two countries were the same.

In order to make it easier for library administrators in Taiwan to answer the questionnaires, the researcher had translated the English version of questionnaires used for both surveys into a Chinese version.

### 3.4 Data Collection

The period for data collection was between 1995 to 2001. Both surveys in the UK and Taiwan were composed of two investigations—initial survey, and follow-up survey. (See Tables 3.1 to 3.3)

1. The first stage of the initial survey--The period in the UK and Taiwan was 1985-1995, and 1985-1997 respectively.
2. The second stage of the initial survey--The period in the UK and Taiwan was 1996, and 1998 respectively.
3. Follow-up survey—The period in the UK and Taiwan was 1996-2001.

The differences in the period for data collection were due to the researcher's personal situation. The researcher was living in the UK when the first stage of the initial survey conducted in 1996, therefore, the period of data collection was decided to be from 1985 to 1995. The researcher went back Taiwan in October 1996 and the survey was conducted in 1998. In order to collect a more up-to-date information about library situation in Taiwan, the period for data collection was extended to 1997 (which was from 1985 to 1997). The different data collection period may result in some difficulties in the description and explanation of the survey results. However, the researcher believes that such differences in the two countries will not affect very much the survey results.

Table 3.1 The Data Collection Time of the Initial Survey (First Stage) in the UK and Taiwan

| Country | Data collection time |
|---------|----------------------|
| UK      | 1985-1995            |
| Taiwan  | 1985-1997            |

Table 3.2 The Data Collection Time of the Initial Survey (Second Stage) in the UK and Taiwan

| Country | Data collection time |
|---------|----------------------|
| UK      | 1996                 |
| Taiwan  | 1998                 |

Table 3.3 The Data Collection Time of the Follow-up Survey in the UK and Taiwan

| Country | Data collection time |
|---------|----------------------|
| UK      | 1996-2001            |
| Taiwan  | 1996-2001            |

3.4.1 Data Collection in the UK

On November 6<sup>th</sup>, 1995, the initial survey questionnaire (Appendix 3-2) was sent to each survey target of the 98 universities. They were personally addressed and in the absence of a name, the researcher put the title of ‘University Librarian’ or ‘Director of Library’. Each survey reply was coded on the envelope to conduct a focused follow-up. At the end of November, the response rate was just 49%. A reminder questionnaire was sent to non-respondents in January 1996. At the end of January, a total of 61 questionnaires were completed and returned (only 58 were useable), and the usable response rate reached 59%, a satisfactory response rate.

On July 6<sup>th</sup>, 1996, the first stage of the initial survey results had been finished. The researcher was interested in some special findings and would collect more information. A second stage of the initial survey questionnaire (Appendix 3-4) was designed and mailed to the ten university libraries indicating that they had merged with other services, center, department. At the end of July, a total of seven questionnaires were returned, the response rate was 70%.

On May 6<sup>th</sup>, 2002, a follow-up survey questionnaire (Appendix 3-6) was designed and mailed to 58 survey targets in the UK. Three weeks later, only 24 were received. A reminder questionnaire (electronic questionnaire) was mailed to the non-responding libraries. One week later, seven were received, the response rate reached 53%. The reason for doing the follow-up survey was to compare the different aspects of reorganisation that happened within university libraries between two survey periods, and to reflect the up-to-date situation.

### 3.4.2 Data Collection in Taiwan

On March 5<sup>th</sup>, 1998, the survey instrument used in the first stage of the initial survey in the UK was modified (some questions were omitted, new questions were added, please see Appendix 4-2) and sent to 88 survey targets in Taiwan. A total of 55 questionnaires were completed and returned (they were all useable), and the response rate was 63%. Because the response rate was very close to that of UK, the researcher did not do the follow-up survey.

From the initial survey, a total of twelve libraries mentioned that their library organisation have been changed involving merging/cooperation with other services/departments/centers etc. On September 3<sup>rd</sup>, 1998, a second stage of the initial survey questionnaire used in the UK was also modified (Appendix 4-4) and was sent to these university librarians for collecting some data in this issue. A total of nine questionnaires were completed and returned (seven were useable), and the response rate was 75% which was similar to UK's.

On May 6<sup>th</sup>, 2002, the same follow-up survey questionnaire used in the UK (Appendix 4-6) was sent to 55 survey targets in Taiwan. Three weeks later, 31 replies were received, and the response rate reached 56%.

The response rate both in the UK and Taiwan can be summarized in the following tables (Tables 3.4 to 3.6).

Table 3.4 The Usable Response Rate of Initial Survey (First Stage) in the UK and Taiwan

| Country           | UK  | Taiwan |
|-------------------|-----|--------|
| Sent              | 98  | 88     |
| Received          | 58* | 55     |
| Response Rate (%) | 59  | 63     |

\* Sixty-one responses but only fifty-eight were useful

Table 3.5 The Usable Response Rate of Initial Survey (Second Stage) in the UK and Taiwan

| Country           | UK | Taiwan |
|-------------------|----|--------|
| Sent              | 10 | 12     |
| Received          | 7  | 7**    |
| Response Rate (%) | 70 | 58     |

\*\* Nine responses but only seven responses were useful



Table 3.6 The Usable Response Rate of Follow-up Survey in the UK and Taiwan

| Country           | UK | Taiwan |
|-------------------|----|--------|
| Sent              | 58 | 55     |
| Received          | 31 | 31     |
| Response Rate (%) | 53 | 56     |

Looking at table 3.4 to 3.6, the response rate was quite appropriate for the analysis of this research, although the researcher would expect a higher response rate, for example, more than 75%. The moderate response rate may be explained from three aspects: Firstly, the length of the questionnaire may affect the intention of library directors to complete the questionnaire. A few respondents did indicate that they spent a lot of time to answer the questionnaire. Therefore, some library directors may not have been able to find the time to complete the questionnaire; secondly, the working experience of library directors may relate to their willingness to complete the questionnaire. If the library directors had not been on that position very long, they might find the questionnaire difficult to complete; finally, the understanding of the definition of ‘reorganisation’ of library directors may also relate to the response rate. While the researcher has tried to define the term of ‘reorganisation’ on the questionnaire, some library directors may not have a thorough understanding of the meaning of ‘reorganisation’. They may not answer the questionnaire even though they had undergone such a change.

3.5 Coding the Data

Once the questionnaires were collected, the researcher had checked all the data for their usefulness. This step was often referred to as ‘cleaning’ to avoid problems in subsequent statistical analysis. The cleaning of the data involved reading the results, checking for surprising responses and unexpected patterns, verifying and checking the coding of the data. After a thorough cleaning, they were coded numerically into *SPSS 8.0 for Windows* (SPSS: Statistical Package for the Social Sciences) software program’s data editor. Each item was given a variable label and a code. For single response questions, the code for the item was the number of the answers selected. For multiple response questions, the researcher conducted “Multiple Dichotomy Analysis”, two particular code (1) and (0) were used to indicate an effective value. 1 was used in these cases if the item was ticked and 0 if it was not ticked. (1

referred to “answered” value, 0 referred to “unanswered” value). If the person failed to place a tick alongside at least one item (whether it was single response question or multiple choice questions), then the missing value code of 9 was assigned to all items. Inappropriate responses to the questionnaire were double-checked manually to ascertain the source of mistakes, and were then replaced by correct answers if available. All those useful questionnaires were included in the data analysis. The process of translating question items to machine readable numbers was the final phase of the data collection. This became the raw data for statistical software SPSS analysis (SPSS 8.0 for Windows).

### **3.6 Analyzing and Interpreting the Results**

The researcher chose both descriptive statistics and inferential statistics to analyze and interpret the data. The statistical package, statistical program for Social Sciences (SPSS-X), was used to analyse and obtain the result in the study.

The researcher used descriptive statistics to summarize and describe all the survey results, i.e., the single response questionnaire item, the frequency of variables, the percent of variables, the valid percent of variables and the cumulative percent of variables. For multiple response questionnaire items, Multiple dichotomy analysis was used. The researcher also used inferential statistics to test hypotheses to determine if observed differences between groups or variables are ‘real’ or merely due to chance. As the data were analysed for this paper, consideration was given to the underlying fact that these statistics were only inferential in nature. No attempt was made to infer causation, and only the associations of variables was considered as the data were presented. The study presented data at the .01 and .05 significance level. The researcher made interpretations and conclusions in the study based upon the criteria presented in this section of the report. However, all of the exact correlations, significance levels, and statistics in general are presented throughout the study so that the reader may evaluate the data from his/her own perspective. The researcher may make statements of opinion supporting or not supporting the hypotheses which were forwarded.

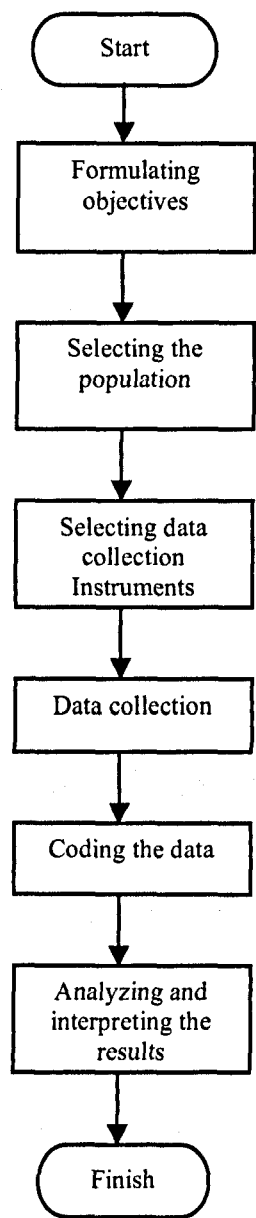
The researcher adopted Crosstabs (Crosstabulation Table) or contingency Table (coefficient) to proceed *Correlation analysis* and establish the degree of relationship between variables or among groups of variables. *Chi-Square test for goodness of fit* was used to analyze a single categorical variable, and allow the researcher to determine if differences in frequency existed across response categories. *Chi-Square test for independence or relatedness* was used to

analyze the relationship between two categorical variables to determine whether there was a significant relationship between variables, the level of significance was also analyzed.

For comparison, a t-test was used to determine if a difference exists between the sample mean and the hypothesised mean, df (degree of freedom) and two-tail significance. If the value for two-tail significance was less than .05 ( $P < .05$ ) or less than .01 ( $P < .01$ ), then the difference between the means was significant. There are two versions of the t-test. One is used when the two sets of scores to be compared come from a single set or sample of people or when the correlation coefficient between the two sets of scores is high. This is known as the related or correlated t-test. If the two sets of scores come from two different samples of people, then the *uncorrelated or unrelated t-test* is used. In SPSS this sort of t-test is called an independent samples t-test. The *unrelated t-test* was used to calculate whether the means of two sets of scores were significantly different from each other (Howitt & Cramer 1999, 103, 109). Therefore, the researcher adopted unrelated t-test to test the hypothesis.

The procedure of this study presented in this chapter can be summarized as the following flowchart (Fig. 3.1):

Figure 3.1 The Flowchart of the Study



## Chapter 4 Survey Results in the UK

This chapter presents a detailed analysis of data about the relevant aspects of library reorganisation within UK universities. For descriptive and explanatory purposes, a frequency distribution is used to display the frequency of occurrence of each score value. The frequency distribution is presented in tabular form or in graphical form (for example, bar charts or, pie charts)

### 4.1 General Issues of Library Reorganisation

#### 4.1.1 Extent of Library Reorganisation

The extent of library reorganisation differs in two survey periods. The first initial survey referred to the period 1985-1995 and the follow-up survey referred to the period 1996-2001. In the initial survey, 45 (78%) of the respondents' libraries had undergone reorganisation, only 13 (22%) had not. Among the reorganised libraries, 10 (22%) had reorganised twice during this period, and 10 (22%) had reorganised more than twice. It showed that the reorganisation frequency in this period was high. Although the percentage of reorganised libraries in the follow-up survey had decreased, there were still 17 (55%) of the respondents undergoing reorganisation (Table 4.1). Among them, 2 (12%) libraries had twice reorganisation experience. Figure 4.1 showed the change of extent of library reorganisation in the two survey periods. Since the survey period between initial survey and follow-up survey was different, the former one was between 1985 and 1995, the latter one was between 1996 and 2001, this may explain why the extent of library reorganisation in 1996-2001 was decreasing. The conclusion can further be enhanced by the findings of the future plans for reorganisation of which 47% respondents in the initial survey and 30% respondents in the follow-up survey had such plans. (Table 4.2)

Table 4.1 Library Reorganisation within UK Universities, by Survey Period

| Survey period | N  | Reorganised<br>(%) | Unreorganised<br>(%) |
|---------------|----|--------------------|----------------------|
| 1985-1995     | 58 | 78                 | 22                   |
| 1996-2001     | 31 | 55                 | 45                   |

Note: N, or the database—from which the percentages are derived.

Figure 4.1 Extent of Library Reorganisation in UK, by Survey Period

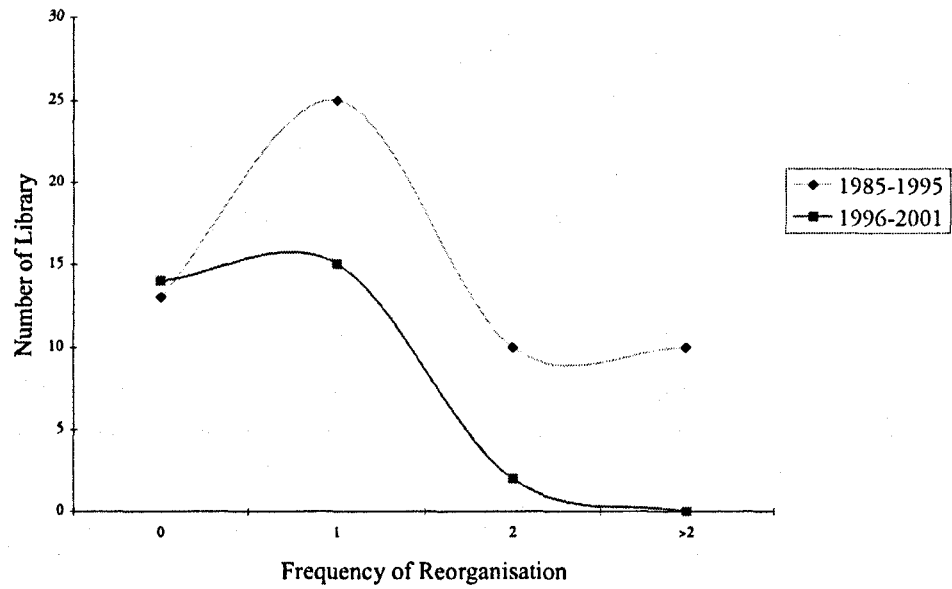


Table 4.2 Plan for Library Reorganisation, by Survey Period

| Plan for reorganisation | 1985-1995 |         | 1996-2001 |         |
|-------------------------|-----------|---------|-----------|---------|
|                         | N         | Percent | N         | Percent |
| Reorganised             | 27        | 47      | 8         | 30      |
| Unreorganised           | 22        | 39      | 11        | 41      |
| Do not know             | 8         | 14      | 6         | 22      |
| In progress             | *         | *       | 2         | 7       |
| Total                   | 57        | 100     | 27        | 100     |

\*: Means this item was not listed in the questionnaire

4.1.2 The Relationship between Library Reorganisation and the Background of Libraries

In the initial survey, the researcher investigated the background of university libraries in UK which included the stocks of the library; the library automation system; new information technologies the library used; the management style of the library; the organisational structure of the library. In the follow-up survey, the researcher investigated the new information technologies and the organisational structure.

For analysis purposes, the researcher defined the size of university libraries as: small-sized libraries—had stocks less than 100,000 volumes; medium-sized libraries—had stocks between 100,000 and 499,999 volumes; large-sized libraries had stocks between 500,000 and 999,999 volumes; extra large-sized libraries had stocks more than one million volumes. The result showed that most of university libraries in UK ranging from medium-sized to extra large-sized. Table 4.3 presents the relationship between size of libraries and extent of reorganisation. Pearson Chi-square showed that there was no significant relationship between size of libraries and extent of reorganisation (two-tailed Fisher exact  $p= .444$ ). This finding was different from other survey findings. Fisher (2001) found that small academic libraries were less likely to reorganise than other size of libraries (Fisher 2001, 415). Fisher’s finding was also supported by Drake (1996) who emphasized that large research libraries dealing with a variety of customers have to be more adaptable and flexible than smaller libraries with fewer users and less diverse educational and research programs. It is more likely that large research libraries will re-engineer to create a structure that will enable services to fulfill library and institutional missions.

Table 4.3 Reorganisation of University Libraries in the UK (1985-1995), by Size

| Size of library*   | N  | Percent | Reorganised (%) | Unreorganised (%) |
|--------------------|----|---------|-----------------|-------------------|
| Less than 100,000  | 1  | 2       | 100             | 0                 |
| 100,000 to 499,999 | 26 | 45      | 77              | 23                |
| 500,000 to 999,999 | 17 | 29      | 88              | 12                |
| 1 million or more  | 14 | 24      | 64              | 36                |
| Total              | 58 | 100     |                 |                   |

\*: Size of library means the number of stocks in individual library

Management style is different depending on the history, culture, location and resources of libraries. Usually, one main library is popular in university. Nevertheless, when the universities expand their campus, there may be a branch library to provide services for faculty, staff, and

students. Some departmental libraries are established for the demands of customers in that department. Branch or departmental libraries can be centrally or independently managed. Under most circumstance, technical services are centrally processed in main library. The departmental or branch libraries are responsible for public services. If the departmental or branch libraries are totally independent, they are responsible for both technical and public services. The initial survey result showed that the percentage of libraries consisting of decentralized departmental or branch libraries was higher than that of centralized management. Table 4.4 presents the relationship between management style of libraries and extent of reorganisation. Pearson Chi-square showed that there was no significant relationship between management style of libraries and extent of reorganisation (two-tailed Fisher exact  $p=1.000$ ).

Table 4.4 Reorganisation of University Libraries in the UK (1985-1995), by Management Style

| Management Style | N  | Percent | Reorganised (%) | Unreorganised (%) |
|------------------|----|---------|-----------------|-------------------|
| Centralised      | 25 | 44      | 80              | 20                |
| Decentralized    | 32 | 56      | 78              | 22                |
| Total            | 57 | 100     |                 |                   |

Organisational structure describes how the overall work of the organisation is divided into subunits and how these subunits are coordinated for task completion.' (Cummings and Worley 2001) Corral (2000) indicated that an organisation is usually organised on a *functional* or *market* (along service or geographical lines) or a *mixed* structure. And a *matrix* structure (grid or multiple command structure) is to combine a functional focus with a product or market focus, so the individuals have two roles and two bosses. It was obvious that the 'matrix organisation' which is (normally) functionally designed in terms of its vertical axis, but designed on some other principle (product, customer, region) in terms of its horizontal axis was becoming an emerging category of organisational form in university libraries (Senior 1997). Senior further indicated that 'with a matrix organisational design, decisions can be decentralised to the functional and divisional/project-level managers. This facilitates speed of operation and decision-making. Staff belonging to particular functional departments have the opportunity of working with staff from other functional departments, such as 'cross-functional teams' according to the organisation's priorities.'

In the initial survey, respondents mostly (79%) organised their structures in a combined functional/subject-based pattern (or mixed pattern), 12% were functionally-organised, only 9% were organised on a subject basis (Fig. 4.2). In the follow-up survey, the direction for organisational



structures was changed. The number of respondents choosing the 'functional' and 'subject-based' organisation increased. Nearly one third chose 'functional' organisation, and 13% chose 'subject-based' organisation. The researcher replaced the 'combined functional/subject pattern' used in the initial survey with the 'matrix organisation' instead in the follow-up survey. The finding showed that 52% of the respondents adopted matrix organisation, (Fig. 4.3).

The researcher's finding was close to other research. In 1992, *Library Acquisitions: Practice & Theory* carried a special section dealing with the reorganisation of acquisitions departments. Six case studies from academic libraries were presented (Berkeley, Emory, Iowa, Louisville, Wisconsin-Madison, and Yale). However, there was little consensus among these libraries with the results of their reorganisation. While Berkeley moved from a format-based structure (separate acquisitions for monographs and for serials) to a function-based structure with centralised acquisitions (Barker 1992), Iowa and Louisville took the opposite approach and adopted structures by format (Wachel 1992) (Niles 1992). Wisconsin moved from a format-based structure to a more decentralised structure based on subject. Yale gave up a decentralised subject oriented structure and went back to a centralised acquisitions department. (Dewey 1992) (Ogburn 1992)

Table 4.5 presents the relationship between organisational structure of libraries and extent of reorganisation. In the initial survey, Pearson Chi-square showed that there was no significant relationship between organisational structure of libraries and extent of reorganisation (two-tailed Fisher exact  $p = .626$ ). In the follow-up survey, Pearson Chi-square test showed that there was no significant relationship between organisational structure of libraries and extent of reorganisation ( $p = .554$ ). It indicated that even though the organisational structure had been changed over time compared to the initial survey, there was no significant relationship between organisational structure of libraries and extent of reorganisation. The organisational structure of libraries had no impact on reorganisation.

Figure 4.2 Pie-diagram of Organisational Structure of University Libraries in the UK, 1985-1995

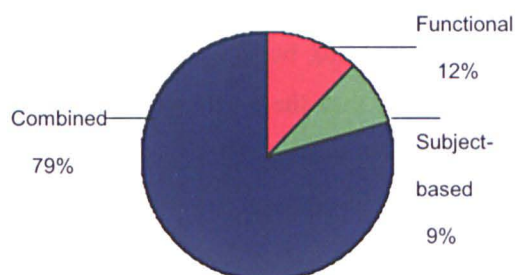


Figure 4.3 Pie-diagram of Organisational Structure of University Libraries in the UK, 1996-2001

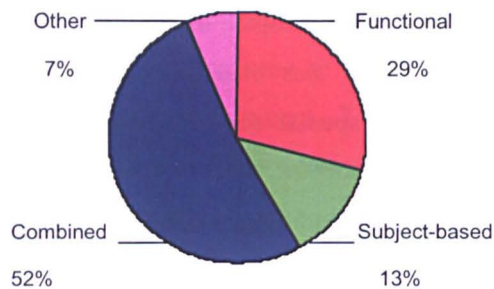


Table 4.5 Reorganisation of University Libraries in the UK, by Organisational Structure

| Organisational structure | 1985-1995 |                 |                   | 1996-2001 |                 |                   |
|--------------------------|-----------|-----------------|-------------------|-----------|-----------------|-------------------|
|                          | N         | Reorganised (%) | Unreorganised (%) | N         | Reorganised (%) | Unreorganised (%) |
| Functional               | 7         | 71              | 29                | 9         | 44              | 56                |
| Subject-based            | 5         | 60              | 40                | 4         | 50              | 50                |
| Combined                 | 46        | 80              | 20                | 16        | 56              | 44                |
| Other                    | 0         | 0               | 0                 | 2         | 100             | 0                 |
| Total                    | 58        |                 |                   | 31        |                 |                   |

In the initial survey, the survey period of 1985-1995 was when university libraries in the UK moved from single function automated system to semi-integrated or integrated automated system. Therefore, the researcher investigated the relationship between extent of reorganisation and the type of automated library system. The result showed that 74% of the respondents installed integrated automated library system, and 26% of the libraries installed single system. The libraries with an integrated automated library system were more likely to conduct organisational change than those with a single system (Table 4.6), but the Chi-square value (two-tailed Fisher exact  $p=.066$ ) was not significant. It indicated that there were no significant differences in the frequency of automated system towards reorganisation. This finding was different from other literatures. Hu (1997) suggested that the organisation changed from moving people from the technical services division to the public services division after the library implemented an integrated library system. (Hu 1997)

Table 4.6 Reorganisation of University Libraries in the UK (1985-1995), by Using Automated Library System

| Automated Library System | N  | Percent | Reorganised (%) | Unreorganised (%) |
|--------------------------|----|---------|-----------------|-------------------|
| Integrated               | 43 | 74      | 84              | 16                |
| Single                   | 15 | 26      | 60              | 40                |
| Total                    | 58 | 100     |                 |                   |

As to the introduction of information technologies in libraries, most respondents in the initial survey indicated that they had introduced an online catalogue (97%), CD-ROM (99%), online database (93%), network (100%), and e-mail (91%) (Table 4.7). Other new information technologies used by libraries included student workstations, multi-media, interactive video, public access PCs, world wide web, word processing, spreadsheet, databases etc.

Electronic information resources/services had been provided during the last decade of the 20<sup>th</sup> century. Therefore, the researcher asked questions concerning the IT application in university libraries in the follow-up survey. The results showed that all respondents had introduced electronic journals/books. More than half the respondents had provided electronic document delivery and distance learning services. Nearly half of the respondents had also provided digitized collection and images/multimedia services. (Table 4.8)

In the initial survey, most (90%) respondents in the initial survey agreed that the application of library automation and new information technologies did facilitate the management efficiency of library.

Table 4.7 Information Technologies Provided by University Libraries in the UK, 1985-1995

| Information technologies | N  | Percent |
|--------------------------|----|---------|
| Network                  | 58 | 100     |
| CD-ROM                   | 57 | 98      |
| Online catalogue         | 56 | 97      |
| Online database          | 54 | 93      |
| E-mail                   | 53 | 91      |
| Others                   | 7  | 12      |

0 missing cases; 58 valid cases

Table 4.8 Electronic Resources/Services Provided by University Libraries in the UK, 1996-2001

| Electronic resources/services | N  | Percent |
|-------------------------------|----|---------|
| Electronic journals, ebooks   | 31 | 100     |
| Online catalogue              | 31 | 100     |
| CD-ROM/Online database        | 30 | 97      |
| Web sites or Internet sites   | 30 | 97      |
| Electronic document delivery  | 17 | 55      |
| Distance learning             | 16 | 52      |
| Digitized collection          | 15 | 48      |
| Images services/multimedia    | 13 | 42      |

0 missing cases; 31 valid cases

Staff in academic libraries has generally been composed of three types of employees: professional librarians, support staff, and student workers. Most professional librarians have earned a master's degree in library or information science; many also hold a second master's degree or doctorate in another discipline. Members of the support staff in libraries have a wide range of skills. These employees were often called nonprofessionals to distinguish them from the professional librarians. The student assistants usually work part-time, and are assigned the routine tasks for which extensive training is not required.

What is the impact of library automation and information technology on library staffing patterns and working patterns? The results showed that library automation has changed the content of jobs and required new knowledge and skills for the staff. Table 4.10 reveals that most respondents (87%) agreed that staff jobs and duties were redesigned. Workflow and job description were revised (78%) to precisely reflect the actual situations. Meanwhile, library automation has produced new positions (65%) and moved routine functions to lower levels staff. Staff positions needed reclassification. Because computers can absorb most predictable tasks, therefore, some positions could be eliminated (39%).

All the impacts described above provided libraries with the opportunity to change the professional/support staff roles (89%), and to conduct 'staff reassignment' (39%) (Table 4.9). The result indicated that the need for professional staff remained almost balanced. The researcher also has the same viewpoint, that is library operations are changing rapidly and adapting to new

demands, projects, and responsibilities, but the demands for professional staff will not decrease with the introduction of library automation and other ICTs technologies. The finding was further supported by the viewpoints of Johnson (1991, 1996), and Drake (2000). Johnson (1991) noted that library automation did not simplify the role of professional staff even though many responsibilities formerly carried out by professional staff were transferred to support staff. Automation complicated the operational decisions, therefore, the professional librarian need to deal with planning and goal setting, system analysis, and boundary-spanning issues (Johnson 1991). Teaching, marketing the library and its services, staff training, and liaison activities would become the new roles of professional staff (Johnson 1996). 'The librarian's role has expanded to negotiator, trainer, manager of information and knowledge, and content expert' (Drake 2000). The researcher's finding went against the view of Harris and Marshall (1998) who maintained that the roles of professional are becoming redundant after library automation because other levels of staff can substitute.

The findings also revealed that more libraries (37%) increased their support staff positions rather than decreased them after library automation. The result was contrary to other literature (Johnson 1991) which emphasized that library automation would reduce lower level positions. Employees in support positions would find their work more varied, interesting, responsible, and productive. A majority of the respondents reported that lower level jobs have been upgraded to reflect greater autonomy and accountability, new and more complex tasks, and higher rewards.

The reason that libraries needed more support staff was that libraries were driven by budgetary pressures and constant technological change. Staff redeployment, especially through the assignment of greater responsibility to staff working in the lower-paid, lower status ranks of the organisational hierarchy became the current managerial practice. The cost to hire support staff was less expensive than that of professional staff. Libraries may seek this way to save staffing cost. Meanwhile, as libraries moved from 'automated to electronic status', many new IT related services were also provided. The roles performed by library workers are being changed significantly. The demands of human resources can not possibly be reduced. (Harris and Marshall 1998)

The researcher also found that working patterns were changed (Table 4.10). Nearly half respondent indicated that library automation and application of information technologies provided their staff a more flexible workplace. It can be understood that staff can easily share the same bibliographic database after library automation. But less than a quarter of libraries indicated their staff working time became more flexible after library automation. The findings suggested that the library automation could not replace the traditional working style completely. Staff like to have human contact as usual (such as communication, negotiation). Flexible working time will reduce the opportunity for social activities.

**Table 4.9 The Impact of Library Automation and Information Technologies on Library Staffing Pattern, 1985-1995**

| Impact of library automation and IT         | N  | Percent |
|---------------------------------------------|----|---------|
| Changes in professional/support staff roles | 48 | 89      |
| Staff reassignments                         | 21 | 39      |
| More support staff                          | 30 | 37      |
| More professional staff                     | 7  | 13      |
| Fewer professional staff                    | 6  | 11      |
| Fewer support staff                         | 5  | 9       |
| Other                                       | 4  | 7       |

4 missing cases; 54 valid cases

**Table 4.10 The Impact of Library Automation and Information Technologies on Library Working Pattern, 1985-1995**

| Impact of library automation and IT   | N  | Percent |
|---------------------------------------|----|---------|
| Redesigning staff jobs and duties     | 47 | 87      |
| Revising workflow and job description | 42 | 78      |
| Producing new positions               | 35 | 65      |
| More flexible working place           | 25 | 46      |
| Eliminating some positions            | 21 | 39      |
| Position reclassification             | 16 | 30      |
| More flexible working time            | 12 | 22      |
| Other                                 | 1  | 2       |

4 missing cases; 54 valid cases

#### **4.1.3 The Relationship between Library Reorganisation and the Environmental Factors**

Libraries implemented reorganisation projects for a variety of reasons, no matter whether they were external or internal.

Data from Table 4.11 shows the reasons contributing to the organisational change. These reasons were also found in the study of Larsen (1991). Investigating the reasons from different

aspects (services, management, economic, socio-cultural, and technology), the researcher found that 'services reasons' was ranked first in the initial survey while ranked second in the follow-up survey. 'Management reasons' were ranked second in the initial survey, but ranked first in the follow-up survey. Technological reasons were about the same importance in both surveys. Socio-cultural reasons were also shown by about one third libraries in both surveys. Among them, 'changes in human expectations' was reported by more than one third of respondents. Again, the economic reason was expressed by about one third (36%) in the initial survey but was much less important (6%) in the follow-up survey. The finding was also similar with Hu's (1997) study who found that 'insufficient budget' was not the important reason for library reorganisation.

The follow-up survey results, in some way, implied the emerging trend found in recent library literature (i.e. libraries developed digitized collection, digital library; the influences of parent institution has increased; changes in higher education and scholarly publishing/communication which were affected by the acceleration of computer networking). But three reasons (i.e. joined library consortia/cooperative programme, changes in demographics, constructed a new building) found in the literature were not indicated by any library.

Evidently, 'to enhance customer-oriented services' and 'to facilitate management function' were two main reasons for library structural change in both surveys, even though the ranking of reasons differed between two surveys. We can conclude that reasons contributing to organisational structure change will change with different periods under different environmental situation, no matter whether they are internal or external.

Table 4.11 The Reasons for Library Organisational Change

| Reasons for change                                                           | 1985-1995 |         | 1996-2001 |         |
|------------------------------------------------------------------------------|-----------|---------|-----------|---------|
|                                                                              | N         | Percent | N         | Percent |
| <b>Services</b>                                                              |           |         |           |         |
| To improve services/ Provided new services                                   | 37        | 82      | 7         | 41      |
| <b>Management</b>                                                            |           |         |           |         |
| To increase efficiency                                                       | 31        | 69      | *         | *       |
| To facilitate management functions                                           | 20        | 44      | 10        | 59      |
| Change in administration/ Administrative changes in 19<br>parent institution |           | 42      | 7         | 41      |
| Constructed a new building                                                   | *         | *       | 0         | 0       |
| Change of personnel                                                          | *         | *       | 9         | 53      |

| Reasons for change                                   | 1985-1995 |         | 1996-2001 |         |
|------------------------------------------------------|-----------|---------|-----------|---------|
|                                                      | N         | Percent | N         | Percent |
| <b>Economic</b>                                      |           |         |           |         |
| Change of economic conditions                        | 16        | 36      | 1         | 6       |
| <b>Socio-cultural</b>                                |           |         |           |         |
| Change in human expectations                         | 16        | 36      | 6         | 35      |
| Changes in higher education                          | *         | *       | 4         | 24      |
| Change of demographics                               | *         | *       | 6         | 30      |
| Changes in scholarly publishing/communication        | *         | *       | 1         | 6       |
| <b>Technology</b>                                    |           |         |           |         |
| Developed digitized collection, digital library      | *         | *       | 5         | 30      |
| Technological—the introduction of library automation | 13        | 29      | *         | *       |
| Technological—the introduction of other IT           | 13        | 29      | *         | *       |
| Technological—the introduction of online catalogue   | 4         | 9       | *         | *       |
| Introduced new technologies                          | *         | *       | 1         | 6       |
| <b>Other</b>                                         | 9         | 20      | 6         | 35      |

\*: Means this item was not listed in the questionnaire

#### 4.1.4 Aspects Considered before Library Reorganisation

A variety of elements—institutional aims, educational character, relationships with local authorities or other governing authorities, personalities, history, etc.—must be taken into account when developing institutional structures and organisation (Sidgreaves 1988). Having considered the importance of elements above, the researcher asked ‘which aspects did this library consider before reorganisation?’ In the initial survey, the most important aspect was ‘the parent institutional climate (82%)’. The second important aspect was ‘staff strengths and weaknesses (73%)’. More than half of the respondents indicated that they also considered ‘the extent of managerial support (55%)’ and ‘the climate of the library (52%)’. Table 4.12 shows that ‘staff attitudes (how interested (46%) or how resistant (41%)) towards the change’ was a very important aspect to be considered when structure changed. Finally, another 8 respondents cited a variety of aspects. These aspects included:



the developments in electronic services and networking; changing technology; the current service problems; increasing independent learning, resource based learning; the organisation of the library; organisational requirement; staffing and other budgets; needs of the service.

In the follow-up survey, the researcher used open question questionnaire intended to collect more respondents' opinions about this question. Thirteen important aspects were considered before reorganisation.

- Provide better or new services
- Organisation culture
- Goals and objectives of the library
- Organisational planning/strategy: library strategy more closely into University (organisation) strategy; including more of infrastructure computing and of ILRS (Information and Learning Resource Services).
- Organisational changes: put in an additional management tier; integrating the Issue Desk with Information Services to provide a more coherent service.
- Parent institution changes—increased emphasis on customer focus but also need for more efficient working, growing convergence between Library and Computing Services.
- Efficient use of IT (new library management system) & improved customer service ethos with more effective liaison between the Library and academic departments; development of IT for learning support.
- Saved management costs
- Better utilization of human resources
- Human resources strengths and abilities
- Increased staff job satisfaction
- Increased staff communication and cooperation
- Synergies in work flows

The aspects considered in reorganisation between two surveys periods shared some common characteristics. For example, both indicated the importance of the parent institutional climate, the climate (culture) of libraries, the staff's ability and attitude towards change, the managerial issue, the organisational requirement, the current service problems, the development of IT, and the budget cuts. The main difference in the follow-up survey was that the respondents put more emphasis on staffing issue. Staff job satisfaction, and staff communication/cooperation were also considered (two libraries).

Table 4.12 The Aspects Which Library Considered before Reorganisation, 1985-1995

| Aspects considered                        | N  | Percent |
|-------------------------------------------|----|---------|
| The parent institutional climate          | 36 | 82      |
| Staff strengths and weaknesses            | 32 | 73      |
| The extent of managerial support          | 24 | 55      |
| The climate of the library                | 23 | 52      |
| How interested staff members are          | 20 | 46      |
| How resistant staff members are to change | 18 | 41      |
| Other                                     | 8  | 18      |

14 missing cases; 44 valid cases

#### 4.1.5 Goals of Library Reorganisation

The goals of library reorganisation in different survey periods were similar. Many respondents wanted to improve/pursue a more flexible organisational structure. More than half of the respondents wanted to increase staff communication and cooperation. But the percentage of taking full advantages of the development of information technologies in the initial survey was higher than the follow-up survey. However, many respondents in the follow-up survey indicated that its goals were better utilization of human resources (88%) (Table 4.13). Both survey results showed that the reorganisation came as a result of an overall effort to improve current organisational structure. The ranking of better use of information and communication technologies was lower in the follow-up survey. How to provide new services brought by the rapid development of information and communication technologies became one of the main goals when organisational change was implemented.

Table 4.13 The Goals of Library Reorganisation

| Goals of reorganisation                       | 1985-1995 |         | 1996-2001 |         |
|-----------------------------------------------|-----------|---------|-----------|---------|
|                                               | N         | Percent | N         | Percent |
| Better utilization of human resources         | *         | *       | 15        | 88      |
| Improved organisational structure             | 35        | 78      | 12        | 71      |
| Greater flexibility                           | 32        | 71      | *         | *       |
| Increased staff communication and cooperation | 27        | 60      | 11        | 65      |

| Goals of reorganisation                          | 1985-1995 |         | 1996-2001 |         |
|--------------------------------------------------|-----------|---------|-----------|---------|
|                                                  | N         | Percent | N         | Percent |
| Provided new services                            | *         | *       | 10        | 59      |
| Took full advantage of library automation and IT | 26        | 58      | 8         | 47      |
| Increased job satisfaction                       | 25        | 56      | 6         | 35      |
| Increased production                             | 14        | 31      | 4         | 24      |
| Decreased costs                                  | 11        | 24      | 5         | 29      |
| Other                                            | 11        | 24      | 6         | 35      |

\*: Means this item was not listed in the questionnaire

#### 4.1.6 Methods of Single-Organisational Reorganisation

A number of reorganisation methods were mentioned in the literature. Example of these included: single-organisational reorganisation (reorganisation of units within a library); libraries converge with other services/department inside campus; libraries converge with other libraries outside campus; libraries participate in a consortia etc. Sometimes, libraries use a combination of more than one method at the same time, depending on its special and individual situation.

In this section, the researcher describes only the single-organisational change. The relevant issues of convergence will be detailed in section 4.2.

In the initial survey and in the follow-up survey, most reorganisation cases were single-organisational reorganisation. Two most popular methods used by these libraries were 'creating new functions/departments/units' and 'combination of functions'. Although in the initial survey, 77% of respondents (Table 4.14) indicated that 'the organisation of this library is based on separate technical/public services functions', only 18% of the respondents (Table 4.15) had integrated public services and technical services during reorganisation.

More respondents in the initial survey used the method of 'renaming departments', 'integration of public services and technical services' than that in the follow-up survey. It indicated that these two methods were seldom used in the follow-up survey. One reason may be that the libraries have already changed most of their departments' names in the initial survey to reflect the actual operation of those departments. The methods adopted by respondents in the follow-up survey were more versatile. 're-engineering' and 'downsizing' were two new methods reported by respondents in this survey. The situation which university libraries in the follow-up survey period faced were more complicated than in the initial survey. The idea of reengineering was first introduced by business (Singh 1997), and eventually adopted by the libraries' community. Therefore, libraries had to do some fundamental rethinking and radically redesigned the library core

process to achieve dramatic improvement in measures of performance, such as cost, quality, service and speed. The idea of 'downsizing' was usually the result of pursuing a more effective utilisation of library staff or the result of budget constraints.

Table 4.14 The Organisation of Library Based on Separate Technical/Public Services

| Separate technical/public services | N  | Percent |
|------------------------------------|----|---------|
| Yes                                | 41 | 77      |
| No                                 | 12 | 23      |
| Total                              | 53 | 100     |

Table 4.15 The Methods of Single-organisational Reorganisation

| Methods of reorganisation                             | 1985-1995 |         | 1996-2001 |         |
|-------------------------------------------------------|-----------|---------|-----------|---------|
|                                                       | N         | Percent | N         | Percent |
| New functions or departments (units) created          | 31        | 69      | 5         | 42      |
| Combination of functions                              | 19        | 42      | 5         | 42      |
| Departments (units) renamed                           | 19        | 42      | 2         | 17      |
| Functions or departments (units) eliminated           | 15        | 33      | 4         | 33      |
| Reengineering                                         | *         | *       | 4         | 33      |
| Other                                                 | 15        | 33      | 4         | 33      |
| Downsizing                                            | *         | *       | 2         | 17      |
| Integration of public services and technical services | 8         | 18      | 1         | 8       |
| Dispersion of functions                               | 7         | 16      | *         | *       |

\*: Means this item was not listed in the questionnaire

Since 'creating new functions/departments/units' and 'combination of functions' were two common methods of reorganisation whether in initial survey or in follow-up survey, then, what were the characteristics of the new functions/departments/units? How was the combination of functions/departments proceeded? Some libraries even changed names of function/department, what were the new names?

Both survey results indicated some characteristics of newly created functions or departments/units:

- Many newly created functions/departments emphasized computer and communication-based services. The word 'System', 'Network/Networking', 'Information Technology', and 'Computing' appeared in the list of departmental names.
- Teaching and learning support was more emphasized. Libraries created 'School Teams', 'Teaching Support Team', 'Faculty Teams', 'Subject Team', 'Learning & Research Support'.
- The difference between the two surveys was that libraries in the follow-up survey (which created 'Electronic Information Services', 'Online services department', and 'Digital Library Focus') were to respond to the demands of rapid development of electronic information resources, digitized collection, digital library, and the versatility of library collection etc.

Combination of functions/departments/services had occurred in nearly half of the respondents in both surveys. Several common ways were used:

- Combining different aspects of liaison.
- Combining similar functions in different departments: One library had combined 'Record Creation' in Acquisitions and Cataloguing. This was mostly due to the automated operation of these two departments, hence the creation of a bibliographical record to be utilized in different departments.
- Combining several departments into a much larger department or division: For example, one library had combined Cataloguing, Book Processing, and Binding to form Technical Services Department; another library had combined Acquisitions, Cataloguing, and Serial Department to form Technical Services.

The method of changing names of function/department was adopted by nearly half of the respondents in both surveys. Examples were as follows:

- 'Reader Services' department was changed to different names, for example, 'Academic Information Services', 'User Services', 'Document Delivery Services', and 'Customer Services'.
- 'Technical Services' was renamed as 'Resources/System', 'Bibliographical Services', and 'Management Services'.
- 'Cataloguing Department' was changed to 'Database department', 'Bibliographic Services Department', and 'Technical Services department'.

- Because library had shifted its focus from library automation issues to electronic information services, 'Automation Department' was renamed as 'Networked Information Department'.
- To respond to the increasing demands of users to access the appropriate resources fast, the 'Inter-Library Loan' was renamed as 'Current Awareness & Document Supply'.

The methods of reorganisation above suggested that libraries endeavour to move away from the traditional library's functions towards information-oriented and users/customers-oriented services.

#### 4.1.7 The Advantages and Disadvantages of Library Reorganisation

The results of reorganisation can be both advantageous (positive) and disadvantageous (negative).

Investigation of the frequency table (Table 4.16) for the multiple dichotomous set indicated that 'services improvement' was the most recognized positive result of reorganisation. The advantages of reorganisation in both surveys were very similar, only the ranking was different. More respondents in the follow-up survey reported that the reorganisation can improve staff 'communication and cooperation (80%)' and 'cost reduction (40%)'. The percentage of 'increased staff satisfaction' in the initial survey was higher than that in the follow-up survey (52% vs 33%).

Table 4.16 The Advantages of Library Reorganisation

| Advantages of reorganisation              | 1985-1995 |         | 1996-2001 |         |
|-------------------------------------------|-----------|---------|-----------|---------|
|                                           | N         | Percent | N         | Percent |
| Improved services/ Provided new services  | 38        | 91      | 12        | 80      |
| Effective use of human resources          | *         | *       | 12        | 80      |
| Effective use of equipment and facilities | *         | *       | 10        | 67      |
| Shifting responsibilities                 | 28        | 67      | *         | *       |
| Increased productivity/efficiency         | 27        | 64      | 8         | 53      |
| More flexible organisational structure    | 25        | 60      | 10        | 67      |
| Improved communication and cooperation    | 24        | 57      | 12        | 80      |
| Increased staff satisfaction              | 22        | 52      | 5         | 33      |
| Cost reduction                            | 7         | 17      | 6         | 40      |
| Promotion of staff to a higher level post | *         | *       | 4         | 27      |
| Other                                     | 3         | 7       | 0         | 0       |

\*: Means this item was not listed in the questionnaire

The negative results in both surveys were mostly different and can only be inspected individually (Table 4.17). Both surveys revealed that 'staff stress' or 'staff resistance' was a problem faced by the library and can not be underestimated.

Table 4.17 The Disadvantages of Library Reorganisation

| Disadvantages of reorganisation                      | 1985-1995 |         | 1996-2001 |         |
|------------------------------------------------------|-----------|---------|-----------|---------|
|                                                      | N         | Percent | N         | Percent |
| Produces staff stress                                | 15        | 36      | *         | *       |
| Complex subordinate/supervisor reporting structures  | 15        | 36      | *         | *       |
| Staff resistance                                     | 11        | 26      | 9         | 69      |
| Boundary disputes between services                   | *         | *       | 6         | 46      |
| Different ethos (culture) of organisation            | *         | *       | 4         | 31      |
| Inadequate equipment to meet job demands             | 7         | 17      | *         | *       |
| Geographic (location) issues                         | *         | *       | 4         | 31      |
| Negotiation/communication/cooperation issues         | *         | *       | 3         | 23      |
| Inappropriate furniture                              | 5         | 12      | *         | *       |
| The status (post level) of staff                     | *         | *       | 3         | 23      |
| Different mission/strategies                         | *         | *       | 2         | 15      |
| Staff training and development                       | *         | *       | 0         | 0       |
| Maintenance problems on computers or other equipment | 4         | 10      | *         | *       |
| Different organisational structure                   | *         | *       | 1         | 8       |
| Other                                                | 3         | 7       | 2         | 15      |

\*: Means this item was not listed in the questionnaire

#### 4.1.8 Staff Attitudes towards Change

The finding showed a rather high percentage (96%) of positive attitudes towards reorganisation (Table 4.18), there was still nearly one third of respondents expressed negative attitudes. 11 (24%) libraries indicated a 'mixed' staff attitudes towards change among the respondent indicated 'acceptance' and 'objection'.

Table 4.18 Staff Attitudes towards Reorganisation, 1985-1995

| Staff attitudes | N   | Percent |
|-----------------|-----|---------|
| Acceptance      | 43* | 96      |
| Objection       | 12* | 27      |
| Unknown         | 1   | 2       |

13 missing cases; 45 valid cases

\*: This question is a multiple-choice question. 11 respondents indicated a 'mixed' attitude by ticking both 'acceptance' and 'objection' item at the same time.

Who suggested the reorganisation programme? This question was not listed in the initial survey questionnaire but was asked in the follow-up survey. Seventy-seven per cent of the change plan was decided by the library itself (Table 4.19). The finding suggested that libraries played an active role in this issue.

Table 4.19 Who Suggested the Reorganisation Programme, 1996-2001

| Institution        | N  | Percent |
|--------------------|----|---------|
| Parent institution | 5  | 29      |
| Government         | 0  | 0       |
| Library            | 13 | 77      |
| Other              | 3  | 18      |

Table 4.20 The Elements Included in Reorganisation Programme, 1996-2001

| Elements of reorganisation programme           | N | Percent |
|------------------------------------------------|---|---------|
| Inspection of individual task/job analysis     |   |         |
| Converge operations as overlaps are identified |   |         |
| Staff communication opportunities/tools        |   |         |
| Transfers of staff                             |   |         |
| Implementation schedule                        |   |         |
| Recruitment of key personnel                   |   |         |
| Identification of key post holders             |   |         |
| Revise work flowchart/job description          |   |         |
| Education/retraining of staff                  |   |         |
| Set up a Task Force                            |   |         |
| Apply additional funding                       |   |         |



| Elements of reorganisation programme | N | Percent |
|--------------------------------------|---|---------|
| Construction of a new building       |   |         |
| IT and information strategies        |   |         |
| Other                                |   |         |

\*: Means this item was not listed in the questionnaire

## 4.2 Issues of Convergence

The meaning of *convergence* for this research was of great variety, it included: library service merges/combines/integrates/cooperates/links/associates/amalgamates with other service/department/library.

‘Mergers of various kinds have been rather a general feature of recent efforts to improve the effectiveness of higher educational institutions. Most experience has so far been reported from those self-regulating systems in which government policy has dictated reforms to be implemented by individual institutions themselves, such as the United Kingdom.’ Whenever merger is concerned, there are many procedures, conditions and problems that are commonly encountered, wherever the institutions are and whatever types they happen to be (Sanyal 1995, 51). Mergers can take place at different levels, for example, mergers at the national level, mergers at the institutional level, mergers at the departmental level, and that cooperation short of merger can consist of the sharing of teaching and research staff or services. (Sanyal 1995, 53)

The definition of service convergence for this research was more inclusive. It included converging with Media Services, Communication Services, learning and research support, student support services, etc. beside the Computing Services.

In this section, the researcher will explore the extent of convergence and relevant issues surrounding convergence in the higher education sectors in the UK.

In the initial survey, seven convergence cases were reported and which referred to 16% of reorganisation cases; in the follow-up survey, five convergence cases were reported which referred to 29% of reorganisation cases. The extent of convergence was evidently increased with time.

The period for convergence in the initial survey occurred between 1989 and 1995 (see Appendix 7) which was more dispersed and was very coincidental with the survey period (1985-1995). But the convergence activities occurred between 1999 and 2000 in the follow-up survey which concentrated on the last two years of the survey period (1996-2001) (see Appendix 7).

It can be seen from Table 4.21 that the top two motives of convergence was to pursue a more effective administration, and to cooperate in supporting teaching, research, and learning.

Eighty percent of respondents in the follow-up survey indicated that overlapped missions and strategies of converged services were the motive to change. Since different services have their own expertise, they can exchange and expand both specialisation through convergence. Findings in both surveys suggested that different resources (i.e. equipment, facilities, and staff) can be shared or integrated with each other through convergence in order to save administrative cost. 'To create a digital learning environment' was indicated by 40% of respondents in the follow-up survey. It meant the convergence was brought by the development of teaching and learning innovation (i.e. distance education) which became emerging trend in the last several years. Finally, nearly one third of respondents in the initial survey reported that convergence brought the benefit of 'centralised staff training'.

Table 4.21 The Reasons for Library Convergence

| Reasons for convergence                                                  | 1985-1995 |         | 1996-2001 |         |
|--------------------------------------------------------------------------|-----------|---------|-----------|---------|
|                                                                          | N         | Percent | N         | Percent |
| Cooperation in supporting teaching, research, and learning               | 7         | 100     | 5         | 100     |
| More effective administration/Increased the organisation's effectiveness | 7         | 100     | 4         | 80      |
| Overlapping missions and strategies                                      | *         | *       | 4         | 80      |
| Exchanges of specialization between organisations                        | 5         | 71      | *         | *       |
| More economic administration                                             | 4         | 57      | *         | *       |
| Sharing of equipment and facilities                                      | 3         | 43      | 3         | 60      |
| Creation of digital learning environment                                 | *         | *       | 2         | 40      |
| Sharing of staff/ Integration of (technical) staff                       | 3         | 42      | 2         | 40      |
| Centralized training of staff                                            | 2         | 29      | *         | *       |
| Other                                                                    | 1         | 14      | *         | *       |

\*: Means this item was not listed in the questionnaire

'Initially convergence was mostly about libraries re-aligning with computing services, but media, audiovisual, educational technology and staff development services are often now included. However, as the trend in higher education moves away from teaching-centred to learning-centred approaches and it is operationalized through technology-based, resource-based, open and distance learning methodologies, the distinction between those providing learning support services and those providing teaching services also becomes blurred.' (Collier 1996)

Corrall (2000) once indicated that in the higher education sector, the ranges of services with which libraries have been combined includes: Academic computing (especially user support services); Administrative data processing or management information systems; Audiovisual provision, including television production units; Careers information and advisory services; Computer-based learning and educational technology; Language laboratories and lecture theatres; Photography, printing and publishing; Telephones.

The survey revealed that 'Computer/Computing service' and 'Media/Audio-Visual service' ranked as the top two services which libraries had converged with (Table 4.22). But the percentage of 'Media/Audio-Visual service' was reduced in the follow-up survey while the percentage of 'Language Centre', and 'Teaching/Learning Support' were higher than that of initial survey. The result reflected one trend that the importance of the roles of the latter two services may capture more emphasis in universities and therefore resulted in more convergence with libraries to promote the services. The reason of reduced convergence between 'Library' and 'Media/Audio-Visual service' needs further exploration. Because of the libraries becoming converged with other services, the title of 'Library' was changed to 'Learning Services' or 'Information Services'.

Table 4.22 The Services/Departments Which Converged with the Library

| Services/departments       | 1985-1995 |         | 1996-2001 |         |
|----------------------------|-----------|---------|-----------|---------|
|                            | N         | Percent | N         | Percent |
| Computing service          | 7         | 100     | 4         | 80      |
| Media/Audio-Visual service | 4         | 57      | 2         | 40      |
| Information services       | 3         | 43      | *         | *       |
| Language centre            | 2         | 29      | 2         | 40      |
| Learning resources service | 2         | 29      | *         | *       |
| Teaching/Learning support  | 1         | 14      | 2         | 40      |
| Other                      | 3         | 43      | 1         | 20      |

\*: Means this item was not listed in the questionnaire

The condition of convergence indicates the varying degrees of association, usually with the institutions which are at a distance or have a specialised role or ethos: sponsorship, affiliation, accreditation, franchising, consortia. These types of linkage permit institutions to retain their independence while joint teaching, research and service activities can be organised more effectively, e.g. library networks, franchising courses, consortia for continuing education. Most disagreements in initial negotiations concern the extent to which units can retain their

independence. In any type of convergence, the general rule has been to centralise strategic planning, financial control, fund raising and provision of services. However, since the converging institutions had previously been accustomed to responsibility for decision-making, it has often been possible to devolve many management responsibilities to the component units, with the allocation of a lump sum budget. One example of this took place in East Anglia (United Kingdom), where two institutions merged to form a polytechnic while four other colleges opted for association but with independent management, their funds being channeled through a central administration (Sanyal 1995). The initial survey showed that the condition of convergence were 'completely converged (50%)', one third was 'completely converged but retained a certain degree of autonomy' (Table 4.23). The result indicated that even though the convergence was inevitable, some convergence problems (i.e. different ethos, culture) could be different from one case to another and may not be overcome within a short time. Therefore some cases preferred to keep some degree of independence.

Table 4.23 The Condition of Convergence, 1985-1995

| Condition of convergence                                     | N | Percent |
|--------------------------------------------------------------|---|---------|
| Completely converged                                         | 3 | 50      |
| Completely converged but retain a certain degree of autonomy | 2 | 33      |
| Other                                                        | 1 | 17      |
| Total                                                        | 6 | 100     |

There are some distinctions between different methods of convergence. Organisational/managerial convergence indicates two services are effectively merged into one; operational convergence indicates two services worked closely together, perhaps under the direction of a single senior manager; strategic convergence; technological convergence; cultural convergence; and functional convergence. Some convergence would only involve converging enquiry service with fully integrating front-line staff dealing with any questions that arise, passing them on to experts when necessary (Brophy 2000). In the initial survey, most respondents (86%) preferred the method of 'networked organisation', through networking and alliances. More than one third (43%) convergence involved 'staff transfer' or 'function/service transfer. Besides, one convergence case had grouped all converged services in one building and another convergence case had created liaison post/position in separate organisations (Table 4.24). But in the follow-up survey, all convergence cases adopted organisational/managerial convergence (Table 4.25). Under this circumstance, various aspects of converged services can be centrally and effectively managed. If

organisational convergence becomes an emerging trend was seldom discussed in most literatures, except in Fielden Consultancy (1993) report which predicted ‘Organisational convergence will continue to take place, but it will be driven largely by personal and political factors within each institution.’ It indicated that the timing for institutions to act on convergence is when a natural vacancy occurs; or when there is a performance issue or lack of confidence in one particular service or its head.

In the initial survey, the problem about the level of staff (top managers, senior managers, middle managers, etc.) who participated in the convergence process, most respondents (83%) answered staff at all (or most) levels (Table 4.26). It indicated that the opportunity of staff to be involved in the change process was important.

Table 4.24 The Convergence of Services, 1985-1995

| Method of convergence       | N | Percent |
|-----------------------------|---|---------|
| Networked organisation      | 6 | 86      |
| Staff transfer              | 3 | 43      |
| Function/Service transfer   | 3 | 43      |
| Creating liaison post       | 1 | 14      |
| Combination in one building | 1 | 14      |

0 missing cases; 7 valid cases

Table 4.25 The Convergence of Services, 1996-2001

| Method of convergence                 | N | Percent |
|---------------------------------------|---|---------|
| Organisational/Managerial convergence | 5 | 100     |
| Total                                 | 5 | 100     |

Table 4.26 Level of Staff Participated in the Convergence Process, 1985-1995

| Level of staff      | N | Percent |
|---------------------|---|---------|
| Staff at all levels | 5 | 83      |
| Top managers        | 4 | 67      |
| Senior managers     | 3 | 50      |
| Middle managers     | 3 | 50      |

1 missing cases; 6 valid cases

Who suggested the convergence plan? Corral (2000) noted that information service managers are not always directly involved in decisions to restructure their services, but there have been examples where they have taken the initiative to do so, in collaboration with other service heads. This research suggested that four convergence cases (67%) were decided by 'parent institutional policy' (Table 4.27). One case was the 'government policy'. One case was the library's own policy.

'Factors that determine the extent and effectiveness of convergence include financial and human resources, managerial style of the institution and individuals, the physical dispersion of sites and services, the technical complexity of the organisation and its operations, organisational politics, individual personalities, service cultures and staff competencies.' (Corral 2000) Therefore, some factors above are usually considered in the convergence programme. For example, 'construction of a new building' is to put together all the merged services in one building in order to avoid the communication and negotiation problem. One of the very local circumstances for University of Salford to consider a merger of computing service with library was a planned extension to the library building. When two major departments were brought into one building, the development of an integrated service and collaboration between the two groups can be facilitated (Harris 1988). The elements included in the convergence programme were listed in Table 4.28. All respondents indicated revising job description.

Table 4.27 Who Suggested the Convergence Plan, 1985-1995

| Institution        | N | Percent |
|--------------------|---|---------|
| Parent institution | 4 | 67      |
| Government         | 1 | 17      |
| Library            | 1 | 17      |
| Other              | 1 | 17      |

Table 4.28 The Elements Included in Convergence Programme, 1985-1995

| Elements of reorganisation programme       |   |         |
|--------------------------------------------|---|---------|
|                                            | N | Percent |
| Revise job description                     | 7 | 100     |
| Staff communication opportunities/tools    | 6 | 86      |
| Inspection of individual task/job analysis | 4 | 57      |
| Transfers of staff                         | 4 | 57      |
| Implementation schedule                    | 4 | 57      |

| Elements of reorganisation programme |   |         |
|--------------------------------------|---|---------|
|                                      | N | Percent |
| Set up a Task Force                  | 4 | 57      |
| Revise work flowchart                | 3 | 43      |
| Education/retraining of staff        | 3 | 43      |
| Construction of a new building       | 3 | 43      |
| Apply additional funding             | 2 | 29      |
| Recruitment of key personnel         | 1 | 14      |

1 missing cases; 7 valid cases

Since service convergence involved more than one leader from different organisations, then, who was in charge of managing the convergence process?

In the initial survey, more than half (57%) of respondents answered it was 'Information Service director' (Table 4.29), one of them was the former Librarian. In the follow-up survey, three (60%) cases were library directors who were in charge of the change process.

To the question 'Who was the leader of the new organisation?' Both surveys indicated that 'Library director' usually took the leadership (Table 4.30). Among them, one has been promoted to the position of 'Information Service director' in the new structure, so a new Librarian was then appointed. Another case was the leader had a new title, 'Head of Learning Services. This finding was similar to that indicated in the literature. Field (2001) found that 'within the UK at least, it is notable that the majority of heads of converged services have been recruited from professional backgrounds.' Pugh (1997) reported that 63% of converged services were led by librarians, 10% by computer manager, and 8% by academics. Law (1998) found that "nationally the ratio of appointment appears to run at perhaps 5:1 in favour of librarians".

Table 4.29 Person in Charge of Convergence Process

| Person in charge                   | 1985-1995 |         | 1996-2001 |         |
|------------------------------------|-----------|---------|-----------|---------|
|                                    | N         | Percent | N         | Percent |
| Information Service director       | 4         | 57      | *         | *       |
| Library director                   | 2         | 29      | 3         | 60      |
| Computer service director          | 1         | 14      | 0         | 0       |
| New external appointee             | 1         | 14      | 1         | 20      |
| Parent institutional administrator | 1         | 14      | 1         | 20      |
| Team work                          | 1         | 14      | 0         | 0       |

\*: Means this item was not listed in the questionnaire

The survey results suggested that the library director had more autonomy and power. He played a more active and important role in the course of library reorganisation during recent years (1996-2001) than in the initial survey period (1985-1995). The finding was also supported by Allen and Williams (1994), who thought that libraries can play the leadership in providing campus-wide information services if they work closely with teachers, and the computer center.

Table 4.30 Leader of the New organisation

| Leader of the new organisation     | 1985-1995 |         | 1996-2001 |         |
|------------------------------------|-----------|---------|-----------|---------|
|                                    | N         | Percent | N         | Percent |
| Library director                   | 4         | 57      | 3         | 60      |
| Information Service director       | 2         | 29      | *         | *       |
| Computer service director          | 1         | 14      | *         | *       |
| New external appointee             | 1         | 14      | 1         | 20      |
| Parent institutional administrator | 0         | 0       | 0         | 0       |
| Other                              | 0         | 0       | 1         | 20      |

\*: Means this item was not listed in the questionnaire

Library Services were obviously improved through convergence and new services can also launched. Law (1998) had also noted this advantage of convergence. He said that the biggest potential of convergence lies in the area of shared services. These can range from new services such as electronic journal to the sharing of service points. The cooperation and communication between organisations had been also improved. Human resources, equipment and facilities were also more effectively utilized after reorganisation. Many reported an increase in administration efficiency. Besides, a more flexible structure was also the positive result of convergence (Table 4.31).

The advantage of 'save money on administration/cost reduction' was increasing its importance in the follow-up survey. Usually, a converged service may involve the consolidation of budget, therefore, the biggest single advantage is the creation of a single large budget-holder. It indicated that budget can be well managed which leads to a quite proper concentration on information strategies and the prioritization of ambitions. There should be opportunities for improved value for money. The findings were also similar to Pugh's (1997cc) finding which noted two main benefits of convergence were budgets had increased after convergence and staffing establishments had grown.



Table 4.31 The Advantages of Convergence

| Advantages of convergence                                          | 1985-1995 |         | 1996-2001 |         |
|--------------------------------------------------------------------|-----------|---------|-----------|---------|
|                                                                    | N         | Percent | N         | Percent |
| Improved services/Provided new services                            | 7         | 100     | 4         | 80      |
| Effective use of human resources                                   | 6         | 86      | 4         | 80      |
| Effective use of equipment and facilities                          | 6         | 86      | 3         | 60      |
| Improve cooperation and communication                              | 6         | 86      | 5         | 100     |
| Efficiency on administration/Increased productivity and efficiency | 5         | 71      | 3         | 60      |
| More flexible structure                                            | 4         | 57      | 4         | 80      |
| Promotion of staff to a higher level post                          | 2         | 29      | 1         | 20      |
| Increased staff satisfaction                                       | *         | *       | 1         | 20      |
| Save money on administration/cost reduction                        | 1         | 14      | 2         | 40      |
| Other                                                              | 1         | 14      | 0         | 0       |

\*: Means this item was not listed in the questionnaire

The disadvantages-or perhaps better the challenges-facing converged services are equally clear (Lovecy 1994, Law 1998). Table 4.32 showed that 'the anxieties and sensitivity of staff' and 'staff resistance to change' issues were reported by many respondents in the initial survey and in the follow-up survey, respectively. Sanyal (1995) noted that the anxieties and sensitivities of staff have been a particular problem and have been alleviated by regular communications and consultations, re-training and opportunities for promotion or upgrading of status.' Therefore, he suggested that 'it is often particularly important to maintain a balance in status between the senior administrators of the institutions.' 'All staff need assurances that they will have not less favourable conditions, that any retirements will be voluntary, and there will be possible benefits.'

'Different ethos of organisation' was another serious problem reported by many respondents in both surveys. The survey results were very similar to those mentioned by Sanyal (1995), Collier (1996), and Law (1998). Sanyal indicated that differing ethos of institutions has been a serious obstacle in some merger cases. Collier (1996) believed the fact that differences in culture exist between the constituent professional groupings within converged services. But she mentioned the perceptions will fade in time, as staff become accustomed to work together, but divisive issues like this should be addressed in the staff development programme. In a fully converged service model there is such a range and diversity of skill requirement and the staff development programme will contain a range of skill-specific training activities. Law (1998)

pointed that very few institutions have attempted wholesale merger for the reason of different cultures, preferring to recognise the value of cultural diversity and to build on the strengths of each tradition.

Collier (1996) indicated that convergence has affected the considerable state of flux and turmoil within British higher education. It is evident that it is now a dominant factor in the development of learning support services and will not be reversed. The trend will be towards more convergence in institutions and it will increasingly be underpinned by management restructuring. The trend towards more convergence was clearly revealed in this research with the increased extent of convergence in the follow-up survey period.

The percentage of 'communication and cooperation' problem was quite similar in both surveys; it again reflected the problem was not diminishing with time. Several serious obstacles in the initial survey became less serious in the follow-up survey. The problem of 'staff training and development' was reported by 71% of respondents in the initial survey, but was not a problem in the follow-up survey. The percentage of 'geographic issues' and 'different structure' were dramatically reduced in the follow-up survey. 'Different mission' between organisations and 'the status (post level) of staff were indicated by more than 40% of respondents but only indicated by 20% of respondents in the follow-up survey. The decreased percentage of some disadvantages may be attributed to a more efficient management and well-developed IT environment. Therefore, some obstacles can be easily avoided or overcome in the process of convergence.

Lovecy (1994) indicated that 'accommodation' was also a challenge for service convergence if the converged institutions (i.e. Libraries and Computer Centres) may not be close to each other even in small to medium-sized universities. Any attempt to move the staff to mirror physically new staffing structures may be doomed to failure on the grounds of insufficient suitable space in the right places. Nevertheless, this problem did not appear very seriously from the survey. Only one respondent indicated that 'construction of a new building' was the problem which they had encountered in the process of convergence.

Table 4.32 The Disadvantages of Convergence

| Disadvantages of convergence       | 1985-1995 |         | 1996-2001 |         |
|------------------------------------|-----------|---------|-----------|---------|
|                                    | N         | Percent | N         | Percent |
| Resistance to change               | *         | *       | 4         | 80      |
| Different ethos of organisation    | 6         | 86      | 3         | 60      |
| Boundary disputes between services | *         | *       | 2         | 40      |
| Geographic issues                  | 6         | 86      | 1         | 20      |

| Disadvantages of convergence           | 1985-1995 |         | 1996-2001 |         |
|----------------------------------------|-----------|---------|-----------|---------|
|                                        | N         | Percent | N         | Percent |
| The anxieties and sensitivity of staff | 6         | 86      | *         | *       |
| Staff training and development         | 5         | 71      | 0         | 0       |
| Different structure                    | 5         | 71      | 1         | 20      |
| The low morale of staff                | 4         | 57      | *         | *       |
| Negotiation/Communication/ cooperation | 3         | 43      | 2         | 40      |
| Different mission                      | 3         | 43      | 1         | 20      |
| The status (post level) of staff       | 3         | 43      | 1         | 20      |
| Financial condition                    | 2         | 29      | 0         | 0       |
| The extent of independence             | 2         | 29      | *         | *       |
| Technology issues                      | 1         | 14      | 0         | 0       |
| Construction of a new building         | 1         | 14      | *         | *       |

\*: Means this item was not listed in the questionnaire

### 4.3 Summary

In both surveys, some organisational charts were provided by UK respondents with the replied questionnaires. Not all of them enclosed both organisation charts before and after change; the researcher selected all those charts for both situations (before and after change) for discussion and comparison. The description of characteristics of organisational structure change involves a lot of charts, therefore, it was not reported in this chapter; another chapter (see Chapter 7) will have a more detailed discussion and presentation.

## Chapter 5 Survey Results in Taiwan

This chapter presents a detailed analysis of data about the relevant aspects of library reorganisation within Taiwan universities.

As in the UK survey, a frequency distribution was used to display the frequency of occurrence of each score value. The frequency distribution was presented in tabular form or, in graphical form (for example, bar charts or, pie charts).

### 5.1 General Issues of Library Reorganisation

#### 5.1.1 Extent of Library Reorganisation

The extent of library reorganisation within Taiwan universities is presented at Table 5.1. It showed that the difference of extent was small. In the initial survey, a total of 38 (70%) of the respondents had undergone organisational structure change, 15 (28%) had not. Among the reorganised libraries, 8 (21%) had twice reorganised during this period, and 5 (13%) had reorganised three times. It suggested that the reorganisation frequency in this period was high. In the follow-up survey, 67% of the respondents had undergone organisational structure change. The result suggested that the extent of reorganisation in both survey periods were high and very similar. As for the near future plan of reorganisation, 38% of the respondents in the initial survey and 24% of the respondents in the follow-up survey had such plans. It seemed that the future plan of reorganisation decreased in the follow-up survey. This warrants further investigation. (Table 5.2)

Table 5.1 Library Reorganisation within Taiwan Universities, by Survey Period

| Survey period | N  | Reorganised<br>(%) | Unreorganised<br>(%) | Do Not Know<br>(%) |
|---------------|----|--------------------|----------------------|--------------------|
| 1985-1997     | 55 | 70                 | 28                   | 2                  |
| 1996-2001     | 31 | 67                 | 33                   | 0                  |

Note: N, or the database—from which the percentages are derived.

Table 5.2 Plan for Library Reorganisation, by Survey Period

| Plan for reorganisation | 1985-1997 |         | 1996-2001 |         |
|-------------------------|-----------|---------|-----------|---------|
|                         | N         | Percent | N         | Percent |
| Reorganise              | 20        | 38      | 7         | 24      |
| Unreorganise            | 17        | 32      | 6         | 21      |
| Do not know             | 16        | 30      | 9         | 31      |
| In progress             | *         | *       | 7         | 24      |
| Total                   | 53        | 100     | 31        | 100     |

\*: Means this item was not listed in the questionnaire

### 5.1.2 The Relationship between Library Reorganisation and the Background of Libraries

In the initial survey, the background of university libraries in Taiwan included the stocks of the libraries; the management style of the libraries; the organisational structure of the libraries; library automation system; and introduction of new information technology. In the follow-up survey, the background of new information technologies used and organisational structure of the library were investigated.

The researcher classified the size of university libraries into: small—stocks less than 100,000 volumes; medium—stocks between 100,000 and 499,999 volumes; large—stocks between 500,000 and 999,999 volumes; extra large—stocks more than one million volumes. The survey showed that 89% of university libraries in Taiwan ranged from small to medium-sized. Table 5.3 indicates that large-sized libraries were more prone to reorganise than small-sized. This finding was similar to that of Fisher's (2001) and Drake's (1996). Drake (1996) indicated that larger libraries have the tendency to reorganise for they are more adaptable. Nevertheless, there was no significant relationship between size of libraries and extent of reorganisation.

Table 5.3 Reorganisation of University Libraries in Taiwan (1985-1997), by Size

| Size of library*   | N  | Percent | Reorganised<br>(%) | Unreorganised<br>(%) | Do Not Know<br>(%) |
|--------------------|----|---------|--------------------|----------------------|--------------------|
| Less than 100,000  | 14 | 26      | 62                 | 38                   | 0                  |
| 100,000 to 499,999 | 34 | 63      | 71                 | 26                   | 3                  |
| 500,000 to 999,999 | 4  | 7       | 75                 | 25                   | 0                  |
| 1 million or more  | 2  | 4       | 100                | 0                    | 0                  |
| Total              | 54 | 100     |                    |                      |                    |

\*: Size of library means the number of stock in individual library

Seventy five percent of the libraries were centralized while only 25% were decentralized. One library indicated that its technical services and administrative support were centrally managed, while public services were decentralized. Nevertheless, there was no significant relationship between management styles of libraries and extent of reorganisation.

Table 5.4 Reorganisation of University Libraries in Taiwan (1985-1997), by Management Style

| Management Style | N  | Percent | Reorganised<br>(%) | Unreorganised<br>(%) | Do Not Know<br>(%) |
|------------------|----|---------|--------------------|----------------------|--------------------|
| Centralised      | 41 | 75      | 73                 | 27                   | 0                  |
| Decentralised    | 14 | 25      | 64                 | 29                   | 7                  |
| Total            | 55 | 100     |                    |                      |                    |

In the initial survey, 96% of all respondents indicated that libraries were functionally-organized; only one library organized on a subject basis and one was combined functional/subject pattern (Fig. 5.1). In the follow-up survey, 74% of the respondents were functionally-organized, but 22% respondents had switched to either subject-based or matrix pattern. It showed that many university libraries in Taiwan still preferred to organize their structure by functions. But some libraries began to seek other ways for organizing their libraries. (Fig. 5.2)

In the initial survey, the Pearson Chi-square value can not prove that there was a significant relationship between organisational structure and extent of reorganisation. In the follow-up survey, the Pearson Chi-square value indicated that there was no significant relationship between organisational structure and extent of reorganisation. (Table 5.5)

Figure 5.1 Pie-diagram of Organisational Structure of University Libraries in Taiwan, 1985-1997

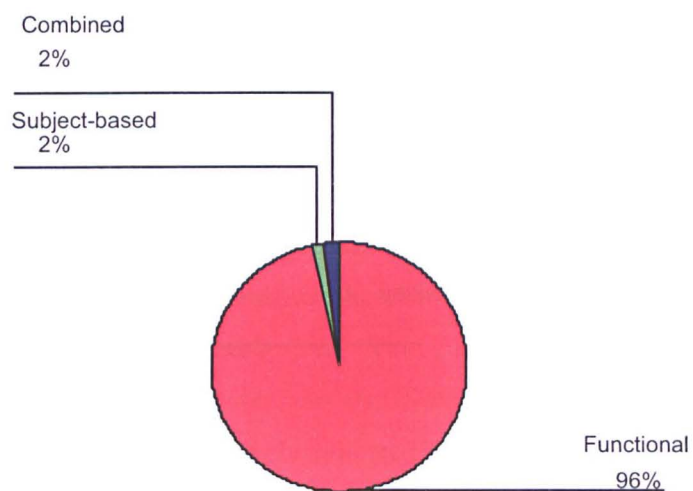


Figure 5.2 Pie-diagram of Organisational Structure of University Libraries in Taiwan, 1996-2001

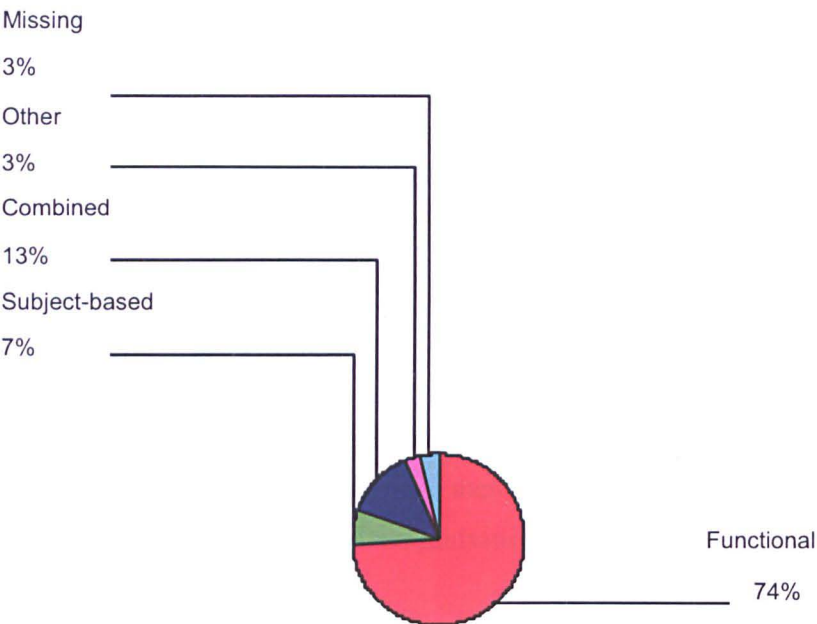




Table 5.5 Reorganisation of University Libraries in Taiwan, by Organisational Structure

| Organisational structure | 1985-1997 |                 |                   | 1996-2001 |                 |                   |
|--------------------------|-----------|-----------------|-------------------|-----------|-----------------|-------------------|
|                          | N         | Reorganised (%) | Unreorganised (%) | N         | Reorganised (%) | Unreorganised (%) |
| Functional               | 53        | 71              | 29                | 22        | 55              | 45                |
| Subject-based            | 1         | 0               | 0                 | 2         | 100             | 0                 |
| Combined                 | 1         | 100             | 0                 | 4         | 100             | 0                 |
| Other                    | 0         |                 |                   | 1         | 100             | 0                 |
| Total                    | 55        |                 |                   | 29        |                 |                   |

Eighty two percent of the respondents chose integrated automated library system and 18% installed the single system (Table 5.6). The Chi-square value was 0.249 with a significance of 0.883 ( $p>0.05$ ). There were no significant differences in the frequency of an automated system towards reorganisation. It indicated that there was no relationship between the automated system (integrated system or single system) and the extent of library reorganisation.

Table 5.6 Reorganisation of University Libraries in Taiwan (1985-1997), by Using Automated Library System

| Automated library system | N  | Percent | Reorganised (%) | Unreorganised (%) | Do Not Know (%) |
|--------------------------|----|---------|-----------------|-------------------|-----------------|
| Integrated               | 44 | 82      | 71              | 27                | 2               |
| Single                   | 10 | 18      | 70              | 30                | 0               |
| Total                    | 54 | 100     |                 |                   |                 |

The most widely used information technologies in university libraries were network (100%), CD-ROM (96%), and email (83%) (Table 5.7). Other new information technologies used by libraries included WWW, Gopher, virtual union catalog, AV etc. Ninety three percent of the respondents replied that the introduction of library automation and information technology did facilitate management function of libraries.

In the follow-up survey, new information technologies or services which libraries adopted or provided became much more versatile compared to the initial survey (Table 5.8). Most libraries had provided 'electronic journals/books' (90%), and 'web sites/Internet sites services' (97%). Even 'images services/multimedia', and 'electronic document delivery' services were provided by more

than 70% of the libraries. About one third of libraries had a digital collection and some had distance learning services. The service 'online catalogue' had significantly increased from just over half of the libraries in the initial survey to all of the libraries by the time of the follow-up survey. The use of 'online database' had also increased by a very similar amount. It indicated that those two services have become very important in university libraries.

Table 5.7 Information Technologies Provided by University Libraries in Taiwan, 1985-1997

| Information Technologies | N  | Percent |
|--------------------------|----|---------|
| Network                  | 54 | 100     |
| CD-ROM                   | 52 | 96      |
| E-mail                   | 45 | 83      |
| Online catalogue         | 31 | 57      |
| Online database          | 30 | 56      |
| Others                   | 3  | 6       |

1 missing cases; 54 valid cases

Table 5.8 Electronic Resources/Services Provided by University Libraries in Taiwan, 1996-2001

| Electronic resources/services | N  | Percent |
|-------------------------------|----|---------|
| Online catalogue              | 31 | 100     |
| CD-ROM/Online database        | 30 | 97      |
| Web sites or Internet sites   | 30 | 97      |
| Electronic journals, ebooks   | 28 | 90      |
| Images services/multimedia    | 24 | 77      |
| Electronic document delivery  | 22 | 71      |
| Digitized collection          | 10 | 32      |
| Distance learning             | 4  | 13      |

0 missing cases; 31 valid cases

Library operations and services are changing rapidly and adapting to new demands, projects, and responsibilities which were brought by application of information technologies. For example, online services bring more people into the library building in some libraries and fewer people are coming to the library in others. Most libraries have used shared cataloguing to reduce the size of

cataloguing departments. The need to catalogue electronic resources and to make them available demands catalogers and indexers who can add value to records by adding metadata and descriptions of intellectual content. Development of digital collection will consume many hours of staff time and will have impact on staffing structure. (Drake 2000, 55-56)

To comply to the demand of a successful customer service, the role of the librarian has expanded to negotiator, trainer, manager of information and knowledge, and content expert. As libraries provide more technological related services, the staffing pattern and working pattern will change accordingly. Seventy three percent of the respondents indicated that they needed ‘more professional staff’ (Table 5.9); only 2% needed ‘less professional staff’. More than half (62%) of the libraries had reassigned their staff. Forty percent of respondents reported that they had changed professional/support staff roles and 35% needed more support staff, whereas only 6% needed fewer support staff. Aside from changing staffing pattern to meet the demands of technological application in libraries, working pattern was also adjusted (Table 5.10). Many libraries had redesigned staff jobs and duties (78%), revised workflow and job description (74%). Producing new positions were also commonly used (63%), while nearly half (48%) of the respondents indicated that they had reclassified staff positions.

Johnson (1991) stated that job reclassification was quite appropriate because the introduction of library automation will change the nature of tasks. Staff members have been reclassified into higher level positions. It was consistent with the present findings.

Table 5.9 The Impact of Library Automation and Information Technologies on Library Staffing Pattern, 1985-1997

| Impact of library automation and IT         | N  | Percent |
|---------------------------------------------|----|---------|
| More professional staff                     | 38 | 73      |
| Staff reassignments                         | 32 | 62      |
| Changes in professional/support staff roles | 21 | 40      |
| More support staff                          | 18 | 35      |
| Fewer support staff                         | 3  | 6       |
| Other                                       | 2  | 4       |
| Fewer professional staff                    | 1  | 2       |

3 missing cases; 52 valid cases

Table 5.10 The Impact of Library Automation and Information Technologies on Library Working Pattern, 1985-1997

| Impact of library automation and IT   | N  | Percent |
|---------------------------------------|----|---------|
| Redesigning staff jobs and duties     | 42 | 78      |
| Revising workflow and job description | 40 | 74      |
| Producing new positions               | 34 | 63      |
| Position reclassification             | 26 | 48      |
| More flexible working place           | 15 | 28      |
| More flexible working time            | 7  | 13      |
| Eliminating some positions            | 5  | 10      |

1 missing cases; 54 valid cases

### 5.1.3 The Relationship between Library Reorganisation and the Environmental Factors

Data from Table 5.11 shows the factors contributing to the organisational change. Inspecting the factors from different aspects (services aspect, management aspect, economic aspect, socio-cultural aspect, and technology aspect), the researcher found that 'services reasons' and 'management reasons' were two main reasons for organizational change in both surveys, even though the ranking was different. Technological reasons ranked third but had the same importance in both surveys. Socio-cultural reasons were also indicated by some libraries in both surveys. Among them, 'changes in human expectations' was reported by more respondents in the follow-up survey than that in the initial survey. The rapid development of information technology has changed the information needs, habits and desires of library customers, therefore, the expectations of library customers were continually increasing. The economic reason was not reported by many libraries, especially it was not emphasized by any library in the follow-up survey. The follow-up survey results implied that the socio-cultural reasons require more emphasis. 'Changes in higher education', and 'change of demographics' were noted by some libraries. It indicated the influence of innovation in teaching and learning (e.g. student-centred learning) and the encouragement of lifelong learning during the last several years have significantly changed the role of the university libraries. Libraries have to support services for a greater variety of customers. Although the impact of 'changes in scholarly publishing/communication' on the services of academic libraries was reported in literature (Drake 1993, Hunter 1993, Probst 1996, Schwartz 1997, Hannon 1998, Steele

2003), very few (10%) libraries thought it was the reason that contributed to the change. The researcher believes that the changes in scholarly publishing/communication occurred in recent years. The effect is not so obvious at the moment. It may have longer effect on the organisational structure of libraries in higher education institutions in the near future. The reason of 'constructing a new building' was also reported by nearly one third of surveyed libraries. This suggests that new library buildings were constructed during the last five years (1996-2001) and it really provided the opportunity for libraries to design/redesign their organisational structure. Other reasons, such as 'joined library consortia/cooperative programme', was not emphasized by any library.

Table 5.11 The Reasons for Library Organisational Change

| Reasons for change                            | 1985-1997 |         | 1996-2001 |         |
|-----------------------------------------------|-----------|---------|-----------|---------|
|                                               | N         | Percent | N         | Percent |
| <b>Services</b>                               |           |         |           |         |
| To improve services/ Provided new services    | 27        | 73      | 11        | 55      |
| <b>Management</b>                             |           |         |           |         |
| To increase efficiency                        | 29        | 78      | *         | *       |
| To facilitate management functions            | 26        | 70      | 11        | 55      |
| Administrative changes in parent institution  | *         | *       | 5         | 25      |
| Change in administration                      | 14        | 38      | *         | *       |
| Constructed a new building                    | *         | *       | 6         | 30      |
| Change of personnel                           | *         | *       | 5         | 25      |
| <b>Economic</b>                               |           |         |           |         |
| Change of economic conditions                 | 7         | 19      | 0         | 0       |
| <b>Socio-cultural</b>                         |           |         |           |         |
| Change in human expectations                  | 10        | 27      | 8         | 40      |
| Changes in higher education                   | *         | *       | 8         | 40      |
| Change of demographics                        | *         | *       | 6         | 30      |
| Changes in scholarly publishing/communication | *         | *       | 2         | 10      |
| <b>Technology</b>                             |           |         |           |         |
| Developed digitized collection, digital       | *         | *       | 9         | 45      |

| Reasons for change                                   | 1985-1997 |         | 1996-2001 |         |
|------------------------------------------------------|-----------|---------|-----------|---------|
|                                                      | N         | Percent | N         | Percent |
| library                                              |           |         |           |         |
| Technological—the introduction of library automation | 25        | 68      | *         | *       |
| Technological—the introduction of other IT           | 17        | 46      | *         | *       |
| Technological—the introduction of online catalogue   | 11        | 30      | *         | *       |
| Introduced new technologies                          | *         | *       | 5         | 25      |
| <b>Other</b>                                         | 1         | 3       | 1         | 5       |

\*: Means this item was not listed in the questionnaire

#### 5.1.4 Aspects Considered before Library Reorganisation

Which aspects did library managers consider before change? A total of 29 (78%) libraries in the initial survey had considered the climate of the library, and 65% had considered the extent of managerial support. 'Staff strengths and weaknesses' was taken into account by nearly half of the respondents. About one third of the respondents indicated that 'parent institutional climate' and 'staff attitude' were also important aspects (Table 5.12). The survey result was also supported by Dworaczyk (1998) who suggested that the key element for success is strong support from top administrative level. The support should include adequate resources, time, and a degree of freedom to perform necessary tasks. Support from staff involved in the change effort as well as those affected by the change are also important. Dworaczyk mentioned that this support can be much stronger by communicating the reason for the change effort among staff.

Fourteen respondents in the follow-up survey indicated a wider range aspects as follows.

- Services issue: created a new service pattern (customer-oriented service policy); the services which teachers and students find mostly necessary; the qualification and interest of staff; the services and functions of library.
- Library's functions.
- Staffing issue: the education level of staff; the qualification and interest of staff; staff's working habit; staff's abilities.
- Confirmation of library's mission.
- Organisation strategy

- Organisation size.
- Organisation culture.
- Downsizing.
- Organisation type and departmentation.
- Parent institutional climate.
- Considered the vision of parent institution.
- Changes of parent institutional status. (Parent institution was elevated to the level of university. It was a college before. The library's status was also elevated to the first level of administration.)
- Developing digital resources, digital collection, responding to the trend of digital age.

Some of the aspects considered to be important were similar on both surveys. Both surveys indicated the importance of the climate (mission, strategy, size, culture) of library, changes of the parent institutional climate (vision, status). But aspects considered seemed more complicated in the follow-up survey. Service and function issues were considered important by some libraries, i.e. the development of digital resources, digital collection.

Table 5.12 The Aspects Which Library Considered before Reorganisation, 1985-1997

| Aspect considered                         | N  | Percent |
|-------------------------------------------|----|---------|
| The climate of the library                | 29 | 78      |
| The extent of managerial support          | 24 | 65      |
| Staff strengths and weaknesses            | 18 | 49      |
| How interested staff members are          | 14 | 38      |
| The parent institutional climate          | 13 | 35      |
| How resistant staff members are to change | 10 | 27      |
| Other                                     | 1  | 3       |
| 18 missing cases; 37 valid cases          |    |         |

### 5.1.5 Goals of Library Reorganisation

What were the goals of reorganisation? Both surveys showed the importance of information technologies, and many respondents had the intention to improve organisational structure. But the initial survey had a higher percentage of technological goals than that of the follow-up survey. More than half of the respondents in the initial survey wanted to increase staff job satisfaction, enhance staff communication and cooperation, and pursue greater flexibility in their institutions. Surprisingly, 'to reduce costs' was not considered to be an important goal in both surveys. Finally, library services became more customer-oriented and library operation faced the challenge of staff shortage during the last several years. To provide new services and efficiently utilize human resources' became two important goals in the follow-up survey. (Table 5.13)

Table 5.13 The Goals of Library Reorganisation

| Goal of reorganisation                           | 1985-1997 |         | 1996-2001 |         |
|--------------------------------------------------|-----------|---------|-----------|---------|
|                                                  | N         | Percent | N         | Percent |
| Provided new services                            | *         | *       | 16        | 80      |
| Better utilization of human resources            | *         | *       | 15        | 75      |
| Took full advantage of library automation and IT | 29        | 78      | 11        | 55      |
| Improved organisational structure                | 27        | 73      | 14        | 70      |
| Increased job satisfaction                       | 23        | 62      | 11        | 55      |
| Increased staff communication and cooperation    | 21        | 57      | 11        | 65      |
| Greater flexibility                              | 19        | 51      | *         | *       |
| Increased production                             | 15        | 41      | 9         | 45      |
| Decreased costs                                  | 4         | 11      | 4         | 20      |
| Other                                            | 1         | 3       | 1         | 5       |

\*: Means this item was not listed in the questionnaire

### 5.1.6 Methods of Single-Organisational Reorganisation

A total of 38 libraries had undergone organisational structure change in the initial survey and 31 libraries were single-organisational reorganisation. In the follow-up survey, 20 libraries had undergone organisational structure change and 15 libraries were single-organisational reorganisation. Two most common methods used by libraries in both surveys were 'creating new functions/departments/units' and 'combination of functions'. More



respondents in the follow-up survey used the method of ‘renaming departments’ than the initial survey. It indicated that this method was more often used in the follow-up survey. One of the reasons may be that the new name can more precisely reflect the actual operation or function of departments. About one third of the respondents tried to adopt the method of ‘re-engineering’ in the follow-up survey. But the application of ‘downsizing’ was not common with only one library applying this method. (Table 5.14)

Table 5.14 The Methods of Single-organisational Reorganisation

| Methods of reorganisation                             | 1985-1997 |         | 1996-2001 |         |
|-------------------------------------------------------|-----------|---------|-----------|---------|
|                                                       | N         | Percent | N         | Percent |
| New functions or departments (units) created          | 25        | 66      | 12        | 86      |
| Combination of functions                              | 15        | 40      | 9         | 64      |
| Integration of public services and technical services | 13        | 34      | 5         | 36      |
| Departments (units) renamed                           | 7         | 18      | 6         | 43      |
| Other                                                 | 4         | 13      | 4         | 33      |
| Functions or departments (units) eliminated           | 3         | 8       | 1         | 7       |
| Reengineering                                         | *         | *       | 5         | 36      |
| Downsizing                                            | *         | *       | 1         | 7       |
| Dispersion of functions                               | 2         | 5       | *         | *       |

\*: Means this item was not listed in the questionnaire

Both surveys showed that ‘creating new functions or departments’ was the most popular way to achieve the organisational change. Newly created functions/departments/units shared some common characteristics. Firstly, many were related to the development of information technology. Libraries created ‘Computer Room’, ‘System Department’, ‘Information System Department’, ‘System Information Department’, ‘WWW Development Team’, ‘Information (Services) Department’, and ‘Audio-Visual Department’. The introduction of electronic/digital resources to the library or the development of digital library occurred in some libraries, i.e. ‘Digital Information Department’, ‘Information Value-added Department’. Secondly, other new functions mainly focused on enhancing user services. Libraries had created ‘Extension Services Department’, ‘Reference Department’, ‘Inquiry Department’, ‘Reference Information Department’. Finally, as serials resources became more important for teaching and research, six libraries had created “Serials Department” to process them separately from monograph.

Forty percent of the respondents in the initial survey and 64% in the follow-up survey had combined functions or departments because of reorganisation. The most common way was to recombine several departments to form a larger department or division. Libraries combined Acquisitions Department with Cataloguing Department to form 'Acquisitions/Cataloguing Department' or 'Technical Services Department'. Several libraries had combined Preservation Department with either 'Readers Services Department' or 'Circulation Department' to form 'Preservation/Readers Services Department' or 'Preservation/Circulation Department'. The function and concept of 'Preservation' is in some way changing. One reason was due to libraries becoming customer-oriented, the concept of 'access' of collection replacing the concept of 'ownership'; the other reason was the diversified format of materials collected by the libraries. The methods and techniques of preservation are revolutionised. Libraries must not only consider the most appropriate way to preserve their collection but also consider the convenience of access of users. Both reasons can explain why libraries in Taiwan were likely to combine 'Preservation Department' with 'Reader Service' or 'Circulation' department.

Name changes occurred in a few libraries, examples of this included renaming 'Readers Services Department' to different names: 'User Service Department', 'Circulation Department', 'Reference (Services) Department', 'Preservation/Readers Services Department'; renaming 'Information System Department' to 'System Department'; renaming 'Readers Services Department' to 'Reference Services Department'.

#### **5.1.7 The Advantages and Disadvantages of Library Reorganisation**

The positive results of organisational change in both surveys were shown in Table 5.15. Both surveys indicated that library services were improved and new service items were provided after reorganisation. The 'communication & cooperation' in the library were improved, and the organisational structure became more flexible. The difference between the two surveys was that the follow-up survey result indicated a higher percentage on 'increased productivity and efficiency' than in the initial survey.

The negative results of organisational change in both surveys were shown in Table 5.16. Both surveys results showed that reorganisation had produced staff stress and some staff showed resistance to change. Respondents in the initial survey (30%) indicated that the reorganisation has caused 'maintenance problems on computers or other equipment' and this issue was not investigated in the follow-up survey. In the follow-up survey, 82% of respondents reported that the main disadvantage of reorganisation was that it caused 'boundary disputes between services', and

nearly 40% libraries reported that it also brought 'negotiation/communication/cooperation issues'. Compared to the initial survey, the percentage of convergence in the follow-up survey period was higher. Because each different service has its individual ethos (culture), structure etc, that will undoubtedly make the process of organisational change complicated, and it will require more negotiation/communication/cooperation between the converged services.

Table 5.15 The Advantages of Library Reorganisation

| Advantages of reorganisation              | 1985-1997 |         | 1996-2001 |         |
|-------------------------------------------|-----------|---------|-----------|---------|
|                                           | N         | Percent | N         | Percent |
| Shifting responsibilities                 | 29        | 78      | *         | *       |
| Improved services/ Provided new services  | 28        | 76      | 15        | 79      |
| Effective use of human resources          | *         | *       | 15        | 79      |
| Effective use of equipment and facilities | *         | *       | 10        | 53      |
| Improved communication and cooperation    | 22        | 60      | 9         | 47      |
| More flexible organisational structure    | 18        | 49      | 10        | 53      |
| Increased productivity/efficiency         | 17        | 46      | 14        | 74      |
| Increased staff satisfaction              | 14        | 38      | 8         | 42      |
| Cost reduction                            | 6         | 16      | 3         | 16      |
| Promotion of staff to a higher level post | *         | *       | 5         | 26      |

\*: Means this item was not listed in the questionnaire

Table 5.16 The Disadvantages of Library Reorganisation

| Disadvantages of reorganisation                            | 1985-1997 |         | 1996-2001 |         |
|------------------------------------------------------------|-----------|---------|-----------|---------|
|                                                            | N         | Percent | N         | Percent |
| Maintenance problems on computers or 11<br>other equipment |           | 30      | *         | *       |
| Produces staff stress                                      | 9         | 24      | *         | *       |
| Inadequate equipment to meet job 6<br>demands              |           | 16      | *         | *       |
| Inappropriate furniture                                    | 4         | 11      | *         | *       |
| Staff resistance                                           | 3         | 8       | 5         | 29      |
| Complex subordinate/supervisor<br>reporting structures     | 1         | 3       | *         | *       |
| Boundary disputes between services                         | *         | *       | 14        | 82      |

| Disadvantages of reorganisation              | 1985-1997 |         | 1996-2001 |         |
|----------------------------------------------|-----------|---------|-----------|---------|
|                                              | N         | Percent | N         | Percent |
| Different ethos (culture) of organisation    | *         | *       | 3         | 18      |
| Geographic (location) issues                 | *         | *       | 3         | 18      |
| Negotiation/communication/cooperation issues | *         | *       | 7         | 41      |
| The status (post level) of staff             | *         | *       | 4         | 24      |
| Staff training and development               | *         | *       | 4         | 24      |
| Different mission/strategies                 | *         | *       | 4         | 24      |
| Different organisational structure           | *         | *       | 3         | 18      |

\*: Means this item was not listed in the questionnaire

### 5.1.8 Staff Attitudes towards Change

Staff's attitude (78%) towards change was mostly positive with 3 respondents expressing mixed attitudes. (Table 5.17)

Table 5.17 Staff Attitudes towards Reorganisation, 1985-1997

| Staff attitudes | N   | Percent |
|-----------------|-----|---------|
| Acceptance      | 28* | 78      |
| Objection       | 4*  | 11      |
| Unknown         | 8   | 22      |

19 missing cases; 36 valid cases

\*: This question is a multiple choice question. 3 respondents indicated a 'mixed' attitude by ticking both 'acceptance' and 'objection' item at the same time.

Who proposed the reorganisation programme? A total of 27 (73%) libraries in the initial survey reported that it was the library itself. A few (16%) plans were suggested by parent institutional policy, but only one reorganisation programme followed the government's policy. In the follow-up survey, 60% of the reorganisation programme was still suggested by the library, but 45% was suggested by parent institution policy. Two cases were subject to the government's policy. This showed that the influence of parent institution and the government was increased in the follow-up survey. (Table 5.18)

Table 5.18 Who Suggested the Reorganisation Programme

| Institutions       | 1985-1997 |         | 1996-2001 |         |
|--------------------|-----------|---------|-----------|---------|
|                    | N         | Percent | N         | Percent |
| Library            | 27        | 73      | 12        | 60      |
| Parent institution | 6         | 16      | 9         | 45      |
| Other              | 4         | 11      | 2         | 10      |
| Government         | 1         | 3       | 2         | 10      |

In the initial survey, 49% of reorganised libraries did not have a reorganisation programme and 41% did have (Table 5.19). Among the 12 elements of reorganisation programme, most respondents emphasized those elements that were relevant to task issues. For example, both surveys suggested that 'inspection of individual task/job analysis' and 'revise work flowchart/job description' were very important elements. In the follow-up survey, with the dramatic development in information technologies, libraries had included the IT and information strategies in the reorganisation programme. Several staffing elements such as providing 'staff communication opportunities/tools)' and preparing for 'transfers of staff', 'implementation schedule', and 'recruitment of key personnel' were included. (Table 5.20)

Table 5.19 Libraries Had a Reorganisation Programme, 1985-1997

| Person in charge | N  | Percent |
|------------------|----|---------|
| Yes              | 15 | 41      |
| No               | 18 | 49      |
| Do not know      | 4  | 11      |
| Total            | 37 | 100     |

Table 5.20 The Elements Included in Reorganisation Programme

| Elements of reorganisation programme             | 1985-1997 |         | 1996-2001 |         |
|--------------------------------------------------|-----------|---------|-----------|---------|
|                                                  | N         | Percent | N         | Percent |
| Inspection of individual task/job analysis       | 11        | 73      | 11        | 58      |
| Converge operations as overlaps are identified * | *         | *       | 13        | 68      |
| Staff communication opportunities/tools          | 9         | 60      | 7         | 37      |

| Elements of reorganisation programme  | 1985-1997 |         | 1996-2001 |         |
|---------------------------------------|-----------|---------|-----------|---------|
|                                       | N         | Percent | N         | Percent |
| Transfers of staff                    | 9         | 60      | 7         | 37      |
| Implementation schedule               | 8         | 53      | 6         | 32      |
| Recruitment of key personnel          | 8         | 53      | *         | *       |
| Identification of key post holders    | *         | *       | 6         | 32      |
| Revise work flowchart/job description | 6         | 40      | 12        | 63      |
| Education/retraining of staff         | 6         | 40      | 5         | 26      |
| Set up a Task Force                   | 5         | 33      | 8         | 42      |
| Apply additional funding              | 3         | 20      | 4         | 21      |
| Construction of a new building        | 1         | 7       | 4         | 21      |
| IT and information strategies         | *         | *       | 8         | 42      |
| Other                                 | 1         | 7       | 5         | 26      |

\*: Means this item was not listed in the questionnaire

## 5.2 Issues of Convergence

In the initial survey, seven convergence cases were reported which referred to 18% of reorganisation cases. Five convergence cases were reported in the follow-up survey which referred to 25% of reorganisation cases. The extent of convergence was somewhat increased with time.

The time for convergence in the initial survey was between 1995 and 1997 (see Appendix 7) which occurred on the last three years of survey period (1985-1997). But the convergence time was between 1999 and 2001 in the follow-up survey which also occurred on the last three years of survey period (1996-2001) (see Appendix 7).

The reasons for convergence differed between libraries. Many respondents in the initial survey reported that the convergence aimed to cooperate in supporting teaching, research, and learning (86%) and to have a more economical administration (72%). Forty three percent of the respondents claimed that convergence resulted in a more effective administration. In the follow-up survey, the reasons were somewhat different. The percentage of 'cooperation in supporting teaching, research, and learning (86%)' was reduced to zero. It meant that none of the respondents underwent convergence for these reasons. Sixty percent of the convergence cases were due to 'overlapping missions and strategies', and 'integration of (technical) staff'. Forty percent of the convergence cases wanted to create a digital learning environment, increase the effectiveness of the organisation, and share equipment and facilities. (Table 5.21)

The changes of emphasis in convergence cases reflected the trend in library community. For example, dramatic development in the Web-based learning environment (or distance education) in the campus enhance the integration of teaching and learning support resources. Therefore, the missions and strategies of different supporting services in campus became overlapping. Especially technical service staff have to be integrated to provide a better technical support for customers. Equipment and facilities can also be shared through convergence to reduce cost. Besides, digital learning environment will push the libraries to launch new services through cooperation between services.

Table 5.21 The Reasons for the Convergence

| Reasons for convergence                                                   | 1985-1997 |         | 1996-2001 |         |
|---------------------------------------------------------------------------|-----------|---------|-----------|---------|
|                                                                           | N         | Percent | N         | Percent |
| Cooperation in supporting teaching, research, and learning                | 6         | 86      | 0         | 0       |
| More economic administration                                              | 5         | 71      | *         | *       |
| More effective administration/ Increased the organisation's effectiveness | 3         | 43      | 2         | 40      |
| Exchanges of specialization between organisations                         | 2         | 29      | *         | *       |
| Sharing of equipment and facilities                                       | 2         | 29      | 2         | 40      |
| Sharing of staff/ Integration of (technical) staff                        | 2         | 29      | 3         | 60      |
| Centralized training of staff                                             | 1         | 14      | *         | *       |
| Overlapping missions and strategies                                       | *         | *       | 3         | 60      |
| Creation of digital learning environment                                  | *         | *       | 2         | 40      |
| Other                                                                     | 1         | 14      | *         | *       |

\*: Means this item was not listed in the questionnaire

In the initial survey, we can find that 'Computer/Computing service' and 'Media/Audio-Visual service' ranked the top two popular services which libraries had converged/cooperated with.

Compared to the initial survey, the follow-up survey found that most libraries (80%) still had converged with computing service, but fewer libraries underwent convergence with Media/Audio-Visual service. One convergence case involved the 'Language center'. The result reflected the trend that higher education institutions in Taiwan put more emphasis on the

enhancement of students' foreign language study. University libraries can play a more active role in supporting parent institution's language teaching and learning. (Table 5.22)

Table 5.22 The Services/Departments Which Converged with the Library

| Services/departments       | 1985-1997 |         | 1996-2001 |         |
|----------------------------|-----------|---------|-----------|---------|
|                            | N         | Percent | N         | Percent |
| Computing service          | 5         | 71      | 4         | 80      |
| Media/Audio-Visual service | 5         | 71      | 2         | 40      |
| Information services       | 1         | 14      | *         | *       |
| Language centre            | 0         | 0       | 1         | 20      |
| Learning resources service | 0         | 0       | *         | *       |
| Teaching/Learning support  | 0         | 0       | *         | *       |
| Other                      | 1         | 14      | **        | **      |

\*: Means this item was not listed in the questionnaire

The condition of convergence may affect the success of the convergence or had an impact on the management method of the new organisation. Four convergence cases (67%) in the initial survey adopted/will adopt complete convergence. Only one answered "completely converged but retain a certain degree of autonomy. Libraries converged with Computing Services and directed by the same leader but both services remained with independent administration. One merged service was managed by the 'new director committee'. (Table 5.23)

Table 5.23 The Condition of Convergence, 1985-1997

| Condition of convergence                                     | N | Percent |
|--------------------------------------------------------------|---|---------|
| Completely converged                                         | 4 | 66      |
| Completely converged but retain a certain degree of autonomy | 1 | 17      |
| Other                                                        | 1 | 17      |
| Total                                                        | 6 | 100     |

Methods of convergence were varied. The initial survey showed that most (72%) convergence preferred 'combination in one building', because it was easier to centralize management of services/functions, staff, and facilities etc. Forty three percent convergence



only involved 'software transfer' with each other. Nearly one third (29%) only embarked on resources integration (Table 5.24). In the follow-up survey, the method of convergence switched to 'strategic convergence' (50%) which may only involve centralised strategic planning, provision of new services etc. One third was adopting 'organisational/managerial convergence' which meant two converged services were effectively merged into one new structure. (Table 5.25). The different method of convergence in the follow-up survey suggested that libraries sought more close cooperative relationship with other services in campus, and 'strategic convergence' was the best way during the survey period.

Table 5.24 The Convergence of Services, 1985-1997

| Methods of convergence      | N | Percent |
|-----------------------------|---|---------|
| Combination in one building | 5 | 71      |
| Software transfer           | 3 | 43      |
| Networked organisation      | 2 | 29      |
| Staff transfer              | 2 | 29      |
| Function/Service transfer   | 2 | 29      |
| Facility transfer           | 2 | 29      |
| Other                       | 1 | 14      |

0 missing cases; 7 valid cases

Table 5.25 The Convergence of Services, 1996-2001

| Methods of convergence                | N | Percent |
|---------------------------------------|---|---------|
| Organisational/Managerial convergence | 2 | 33      |
| Strategic convergence                 | 3 | 50      |
| Technical convergence                 | 1 | 17      |
| Total                                 | 6 | 100     |

To the question 'which level in staff have participated in the convergence process?' 72% of the respondents replied 'top managers' (Table 5.26). Only one respondent (14%) suggested that they let staff at all levels have such opportunity.

Table 5.26 Level of Staff Participated in the Convergence Process, 1985-1997

| Level of staff      | N | Percent |
|---------------------|---|---------|
| Top managers        | 5 | 71      |
| Senior managers     | 2 | 29      |
| Middle managers     | 2 | 29      |
| Staff at all levels | 1 | 14      |

0 missing cases; 7 valid cases

Who was responsible for managing the convergence process? In the initial survey, 71% convergence cases were charged by 'library director'. This was demonstrated by Pugh's research (1997c) which found that libraries were more often involved in decision-making than computer centres. In the follow-up survey, 67% of the convergence process was charged by parent institutional administrator. The result implied that in the follow-up survey, parent institution was playing a more decisive role in the change process. (Table 5.27)

After the convergence, it was often the 'library director' taking the leadership in the new organisation (83%). The follow-up survey result strongly showed this fact. (Table 5.28)

Table 5.27 Person in Charge of Convergence Process

| Person in charge                   | 1985-1997 |         | 1996-2001 |         |
|------------------------------------|-----------|---------|-----------|---------|
|                                    | N         | Percent | N         | Percent |
| Library director                   | 5         | 71      | 2         | 33      |
| Computer service director          | 2         | 29      | 0         | 0       |
| New external appointee             | 2         | 29      | 0         | 0       |
| Parent institutional administrator | 1         | 14      | 4         | 67      |
| Other                              | 1         | 14      | 0         | 0       |

Table 5.28 Leader of the New organisation

| Leader of the new organisation | 1985-1997 |         | 1996-2001 |         |
|--------------------------------|-----------|---------|-----------|---------|
|                                | N         | Percent | N         | Percent |
| Library director               | 4         | 57      | 4         | 83      |
| Computer service director      | 2         | 29      | 0         | 0       |

| Leader of the new organisation     | 1985-1997 |         | 1996-2001 |         |
|------------------------------------|-----------|---------|-----------|---------|
|                                    | N         | Percent | N         | Percent |
| New external appointee             | 2         | 29      | 0         | 0       |
| Parent institutional administrator | 0         | 0       | 1         | 17      |
| Other                              | 0         | 0       | 0         | 0       |

The positive effects which convergence had brought about were shown in Table 5.29. When comparing the two surveys, the initial survey had higher percentage of 'improved services', 'effective use of equipment and facilities', and 'more flexible structure' than the follow-up survey. But the 'human resources' seemed to be more effectively utilized in the follow up survey than in the initial survey. The result showed a trend for the convergence, that is putting more emphasis on utilisation of library staff, which was actually coincident with the goals of convergence indicated earlier in this chapter.

More negative results of convergence were indicated in the initial survey than that of in the follow-up survey (Table 5.30). The problem of 'communication and cooperation' became more serious than that of in the follow-up survey. More libraries in the follow-up survey had experienced 'boundary disputes between services' problem. The result showed that it is vital for the converged services to clearly define the content of functions before conducting the change process.

Table 5.29 The Advantages of Convergence

| Advantages of convergence                                              | 1985-1997 |         | 1996-2001 |         |
|------------------------------------------------------------------------|-----------|---------|-----------|---------|
|                                                                        | N         | Percent | N         | Percent |
| Improve services/Provided new services                                 | 6         | 86      | 3         | 60      |
| Effective use of equipment and facilities                              | 5         | 71      | 3         | 60      |
| Effective use of human resources                                       | 4         | 57      | 4         | 80      |
| Efficiency on administration/<br>Increased productivity and efficiency | 4         | 57      | 3         | 60      |
| More flexible structure                                                | 4         | 57      | 2         | 40      |
| Improve cooperation and communication                                  | 3         | 43      | 1         | 20      |
| Save money on administration/cost reduction                            | 3         | 43      | 1         | 20      |
| Promotion of staff to a higher level post                              | 1         | 14      | 0         | 0       |
| Increased staff satisfaction                                           | *         | *       | 0         | 0       |

\*: Means this item was not listed in the questionnaire

Table 5.30 The Disadvantages of Convergence

| Disadvantages of convergence              | 1985-1997 |         | 1996-2001 |         |
|-------------------------------------------|-----------|---------|-----------|---------|
|                                           | N         | Percent | N         | Percent |
| Resistance to change                      | *         | *       | 0         | 0       |
| Different ethos of organisation           | 3         | 60      | 2         | 40      |
| Boundary disputes between services        | *         | *       | 4         | 80      |
| Geographic issues                         | 1         | 20      | 2         | 40      |
| The anxieties and sensitivity of staff    | 1         | 20      | *         | *       |
| Staff training and development            | 1         | 20      | 0         | 0       |
| Different structure                       | 2         | 40      | 0         | 0       |
| The low morale of staff                   | 0         | 0       | *         | *       |
| Negotiation/Communication/<br>cooperation | 4         | 80      | 2         | 40      |
| Different mission                         | 3         | 60      | 1         | 20      |
| The status (post level) of staff          | 0         | 0       | 1         | 20      |
| Financial condition                       | 0         | 0       | 0         | 0       |
| The extent of independence                | 1         | 20      | *         | *       |
| Technology issues                         | 1         | 20      | 0         | 0       |
| Construction of a new building            | 1         | 20      | *         | *       |

\*: Means this item was not listed in the questionnaire

### 5.3 Summary

This research had mainly investigated the organisational structure change of university libraries in Taiwan between two study periods 1985-1997, and 1996-2001 respectively.

In the initial survey, 11 libraries had provided charts 'before' and 'after' reorganization. In the follow-up survey, six libraries had. Therefore, a total of 17 libraries formed the basis for discussion. The description of characteristics for organisational structure change has involved a lot of charts, therefore, it was not reported in this chapter. A detailed discussion and presentation will be found in another chapter (see Chapter 7).

# Chapter 6 Comparison of Organisational Structure Change between UK and Taiwan

In this chapter, the researcher compares issues in both countries related to the main purpose of this research.

The response rate of both countries was very similar, as shown in Table 6.1. It indicated that this survey obtained similar interest and attention in both countries, and it also provided similar background for analyzing and examining most of the survey results.

Table 6.1 The Usable Response Rate, by Country

| Country           | UK                              |                                     |                     | Taiwan                          |                                     |                     |
|-------------------|---------------------------------|-------------------------------------|---------------------|---------------------------------|-------------------------------------|---------------------|
|                   | Initial Survey<br>(first stage) | Initial Survey<br>(second<br>stage) | Follow-up<br>Survey | Initial Survey<br>(first stage) | Initial Survey<br>(second<br>stage) | Follow-up<br>Survey |
| Sent              | 98                              | 10                                  | 58                  | 88                              | 12                                  | 55                  |
| Received          | 58*                             | 7                                   | 31                  | 55                              | 7**                                 | 31                  |
| Response Rate (%) | 59                              | 70                                  | 53                  | 63                              | 58                                  | 56                  |

\* Sixty-one responses but only fifty-eight responses were useful

\*\* Nine responses but only seven responses were useful

As suggested in chapter one, thirteen individual derivative hypotheses will be tested here for the first time center on the issues concerning organisational structure changes in both the UK and Taiwan. In the data analysis for this study, the reactions to these hypotheses in the library environment will be cited as either supporting or not supporting these hypotheses. These judgments are based upon statistical analysis presented in this chapter.

## A. Extent of library reorganisation

H1: There was no significant difference in extent of library reorganisation between UK and Taiwan universities.

## B: Selected background factors of libraries

H2: There was no significant difference in collection size of library between UK and Taiwan universities.

H3: There was no significant difference in management style of library between UK and Taiwan universities.

H4: There was no significant difference in organisational structure of library between UK and Taiwan universities.

H5: There was no significant difference in installation of library automated system between UK and Taiwan universities.

H6: There was no significant difference in provision of information technologies of library between UK and Taiwan universities.

H7: There was no significant difference in the impact of library automation and information technologies on the staffing pattern and working pattern between UK and Taiwan universities.

C. Environmental factors of library reorganisation

H8: There was no significant difference in the environmental factors driving organisational structure change in libraries within UK and Taiwan universities.

D. Methods of library reorganisation

H9: There was no significant difference in methods of library reorganisation between UK and Taiwan universities.

E. Aspects Considered before library reorganisation

H10: There was no significant difference in aspects considered before library reorganisation between UK and Taiwan universities.

F. Goals of library reorganisation

H11: There was no significant difference in goals of library reorganisation between UK and Taiwan universities.

G. Results of library reorganisation

H12: There was no significant difference in results of library reorganisation between UK and Taiwan universities.

H. Staff attitudes towards library reorganisation

H13: There was no significant difference in staff attitudes towards library reorganisation between UK and Taiwan universities.

For comparison, the researcher has to estimate the differences between sources of scores (from UK and Taiwan), and so she adopted the unrelated t-test to test the hypothesis that the two population variances are equal.

### 6.1 Findings: Extent of Library Reorganisation

The first research problem was to investigate the difference in extent of library reorganisation between UK and Taiwan universities.

Hypothesis 1: There was no significant difference in extent of library reorganisation between UK and Taiwan universities.

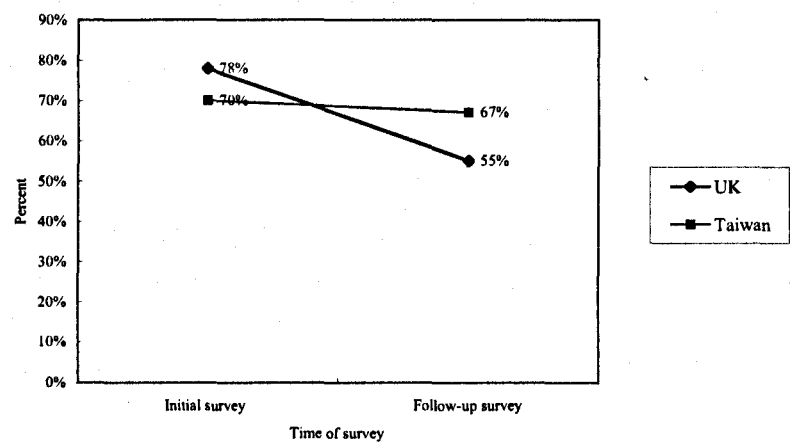
In both the UK and Taiwan, survey results indicated that most university libraries had undergone reorganisation between 1985 and 2001 (Table 6.2). Although the percentage of reorganisation in both surveys remained very high, the extent of reorganisation decreased in the follow-up survey for both countries, particularly in the UK. One reason for the lower extent of change in both countries in the follow-up survey may be attributed to the shorter survey period (1996-2001) compared to the initial period (1985-1995 in the UK and 1985-1997 in Taiwan, respectively). Another reason may be that most of the respondents' libraries had undergone organisational change in the initial survey; some of them had even changed more than once (or twice). If the organisational structures after change in the initial survey can meet libraries' needs, they may not need to be changed again in such a short time.

When two countries were compared in the extent of reorganisation. The researcher found that UK had a higher percentage (78%) of reorganisation than Taiwan (70%) in the initial survey but had a lower percentage (55%) than Taiwan (67%) in the follow-up survey. Figure 6.1 presented the changes of percentage of library reorganisation in the two countries over 15 years.

Table 6.2 Extent of Library Reorganisation, by Country

|                  | UK  | Taiwan |
|------------------|-----|--------|
|                  | (%) | (%)    |
| Initial survey   | 78  | 70     |
| Follow-up survey | 55  | 67     |

Figure 6.1 Extent of Library Reorganisation, by Country





The extent of library reorganisation reduced more in the UK than that of Taiwan in the follow-up survey time. This suggested that reorganisation occurred slightly later in Taiwan than in the UK. Nevertheless, unrelated t-test showed that any such differences were not statistically significant (two-tailed  $p > .05$ ), shown as Tables 6.3 and 6.4. It indicated that the extent of library reorganisation for both countries were very similar; therefore, hypothesis 1, "There was significant difference in extent of library reorganisation between UK and Taiwan universities" was supported.

Table 6.3 The Difference in Extent of Library Reorganisation between UK University Libraries and Taiwan University Libraries from the Initial Survey

| Country | <u>N</u> | <u>M</u> | <u>SD</u> | <u>t</u> | <u>p</u> |
|---------|----------|----------|-----------|----------|----------|
| UK      | 58       | 1.22     | .42       | -1.025   | .308     |
| Taiwan  | 54       | 1.31     | .51       |          |          |

N: Number of Respondents

M: Mean

SD: Standard Deviation

t: t value

p: Significance (two-tailed)

Table 6.4 The Difference in Extent of Library Reorganisation between UK University Libraries and Taiwan University Libraries from the Follow-up Survey

| Country | <u>N</u> | <u>M</u> | <u>SD</u> | <u>t</u> | <u>p</u> |
|---------|----------|----------|-----------|----------|----------|
| UK      | 31       | 1.4516   | .5059     | .937     | .353     |
| Taiwan  | 30       | 1.3333   | .4795     |          |          |

Several possible reasons may explain why UK had a higher percentage of reorganisation than Taiwan during the initial survey period. First, resource constraint faced the older universities in the UK. In the early 1980s, UK government reduced university budgets. The massive expansion of student numbers occurred at a time when institutions were being expected to work with reduced annual revenue budgets. Later in the 1980s, external quality assurance was introduced into the university sector through subject reviews of teaching and through the first of a series of Research Assessment Exercises (RAE) which were resulting in greater selectivity of funding. Departments were assessed to determine the quality of their research, and those receiving the highest gradings received a greater share of available resources. As a result, institutions found the concentration of

their research shifting between subjects, and library support needed to be equally flexible. The need to protect RAE ratings was putting impossible demands on underfunded libraries. In 1992 the four higher education funding councils set up a major review of university library provision under the chairmanship of Sir Brian Follett. In 1993 the committee made a series of extremely significant recommendations in the Follett Report which were rapidly accepted by the funding councils. Some of the recommendations (i.e. information strategies, library expenditure, performance indicators, staffing and staff management, library cooperation in support of teaching, information technology etc.) dominated the development of academic libraries in the 1990s. It may result in the rethinking of the old organisational structure. For example, 'academic integration' between the library, academic departments and other institutional services in a wide range of liaison activities which respond to the information needs of the academic community, was of particular significance among academic librarians. This will bring changes in the design of organisational structure of libraries. (Brophy 2000)

Second, changes in higher education's direction with the announcement of Education Reform Act in the UK. Between 1968 and 1973 a new approach (the creation of the 'binary' system) to the expansion of higher education was implemented. 'Polytechnics' were created, mainly based on amalgamations of significantly sized technical colleges. The new institutions were to be vocationally oriented and were to be predominantly teaching rather than research institutions. They remained under local authority control. The announcement of 1988 Education Reform Act resulted in the removal of the polytechnics from local authority control. The Further and Higher Education Act of that year provided the legislation to enable the polytechnics to use the 'university' title as they wished. The Act created a single higher education sector in the UK. Expansion of student numbers was accelerated, and the colleges of further education were given autonomy from local authority control: the Further Education Funding Council (FEFC) was set up to channel government grants to them. Because academic libraries are entirely dependent upon their parent institution, they need to support the policies and practices of their institutions, any changes will have impacts on them. The changes in the status of 'polytechnics' and student numbers forced the libraries to adjust their services and human resources to reflect the new challenges. Therefore, it also provided an opportunity for the libraries to undergo organisational structure change. (Brophy 2000)

The high extent of library reorganisation in Taiwan in recent years also suggests that library directors or the administrators of their parent institutions became more actively in pursuing a more efficient and responsive organisational structure. There were three possible main reasons behind this situation. First, the new 'University Law' in Taiwan was ratified in 1994 and that established the principles of university autonomy and academic freedom in higher education. Second, the

institutional autonomy in organisation, personnel and budget was recently increased. It is a common goal of the universities as well as the Ministry of Education in Taiwan to move higher education institutions toward self-governance. The third reason was that socio-economic structures have changed and transformed in recent years. In order to develop a knowledge-based economy, restructuring of university education in Taiwan was necessary. For effectively utilising resources and improving teaching quality, small-sized higher education institutions were encouraged to merge (MOE 2001). When the universities have more autonomy in organisation, personnel and budget, the structure was no longer restricted to traditional divisions. University libraries were allowed to have a more flexible organisational structure to meet their individual needs.

## **6.2 Findings: Selected Background Factors of Libraries**

The second research problem was to determine differences in selected background factors of libraries in the UK and Taiwan universities. The backgrounds of libraries investigated in the initial survey were different from those in the follow-up survey. Some of them (i.e. collection size, management style, library automated system, the impact of library automation and information technologies on staffing pattern and working pattern) were only investigated in the initial survey. Others (i.e. organisational structure, use of information technologies) were investigated in both surveys.

Hypothesis 2: There was no significant difference in collection size of library between UK and Taiwan universities.

The difference of collection size between UK and Taiwan university libraries was shown in Fig. 6.2. Most university libraries in the UK ranged from medium to extra large-sized, but most university libraries in Taiwan were small to medium. The collection size of university libraries in the UK was larger than that in Taiwan. The difference in collection size in both countries was statistically significant because unrelated t-test (Table 6.5) showed that 'the mean score of collection size of libraries from UK universities was significantly higher than that of libraries in Taiwan universities; therefore, hypothesis 2 cannot be supported.

Although the difference of collection size in the two countries existed, the Pearson Chi-square significance value revealed no significant relationship between extent of library reorganisation and the collection size. This suggested that collection size did not play an important role in library reorganisation.

Figure 6.2 Collection Size from the Initial Survey, by Country

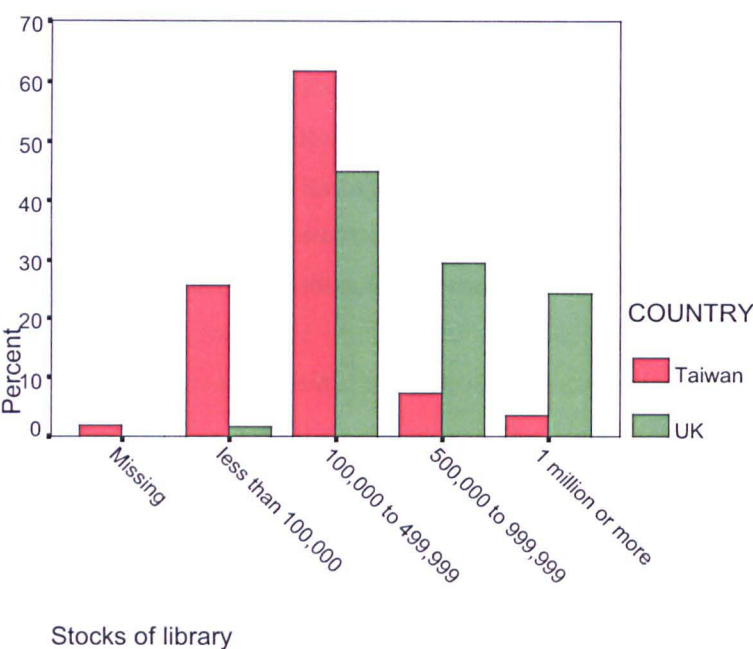


Table 6.5 The Difference in Selected Background Factors of Library by Individual Items between UK University Libraries and Taiwan University Libraries

| (Individual Item)<br>Country                | N  | M      | SD    | t      | p     |
|---------------------------------------------|----|--------|-------|--------|-------|
| Collection Size                             |    |        |       |        |       |
| UK                                          | 58 | 2.76   | .84   | 5.982  | .000* |
| Taiwan                                      | 54 | 1.89   | .69   |        |       |
| Management Style                            |    |        |       |        |       |
| UK                                          | 57 | 1.56   | .50   | 3.450  | .001* |
| Taiwan                                      | 55 | 1.25   | .44   |        |       |
| Organisational Structure (Initial Survey)   |    |        |       |        |       |
| UK                                          | 58 | 2.67   | .69   | 16.404 | .000* |
| Taiwan                                      | 55 | 1.05   | .30   |        |       |
| Organisational Structure (Follow-up Survey) |    |        |       |        |       |
| UK                                          | 31 | 1.4333 | .8584 | -3.891 | .000* |
| Taiwan                                      | 30 | 2.3548 | .9848 |        |       |
| Library Automated System                    |    |        |       |        |       |
| UK                                          | 58 | 1.26   | .44   | .982   | .328  |
| Taiwan                                      | 55 | 1.18   | .39   |        |       |

\*: Significant at the 0.01 level.

Hypothesis 3: There was no significant difference in management style of library between UK and Taiwan universities.

The difference of management style between UK and Taiwan university libraries was shown in Fig. 6.3. Most university libraries in Taiwan had centralised management style, but more than half university libraries in the UK had decentralised management style (consisted of decentralised departmental or branch libraries). The difference in management style in both countries was statistically significant because unrelated t-test (Table 6.5) revealed that there was a significant difference in management style between UK and Taiwan university libraries; therefore, hypothesis 3 cannot be supported.

Different collection size may explain why more UK university libraries than that of Taiwan had decentralised management style. There was a positive linear relationship between collection size and management style ( $r=.398$ ,  $p<0.001$ ); the correlation was significant at the 0.01 level. The result of the Pearson Correlation Coefficient was shown in Table 6.6. Small libraries tended to have a centralised management style while larger libraries tended to be composed of department or branch libraries. As the average collection size in UK university libraries was larger than that of

Taiwan's, it can easily explain why more libraries in UK universities were composed of department or branch libraries compared to Taiwan, but more libraries in Taiwan had centralised management than UK.

Figure 6.3 Management Style from the Initial Survey, by Country

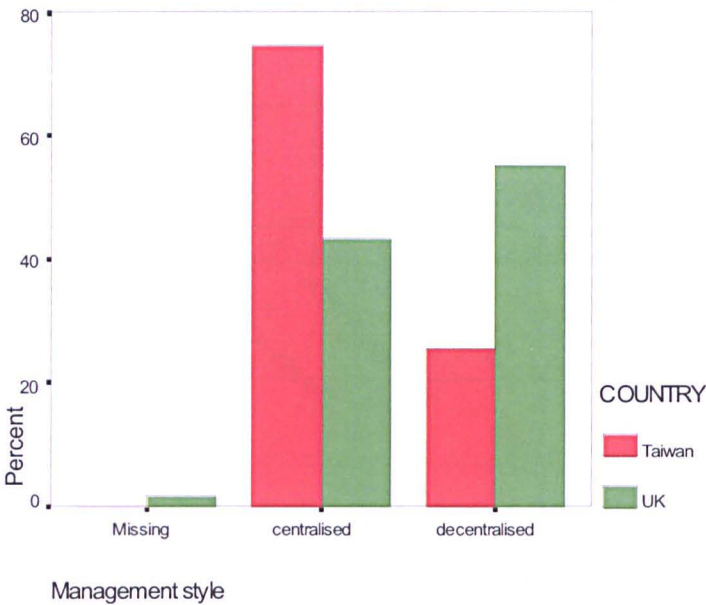


Table 6.6 Correlational Analysis between the Management Style and Collection Size

| Coefficient ( <i>r</i> ) | Management Style | Collection Size |
|--------------------------|------------------|-----------------|
| Between Variables        |                  |                 |
| Management Style         | 1.000            | .398**          |
| Collection Size          | .398**           | 1.000           |

\*\* Correlation is significant at the 0.01 level (2-tailed)

The history and culture of higher education libraries, accompanied by other sources behind the management style, were not actually investigated in this research, the reasons contributing to the difference in management style between UK and Taiwan could not be precisely identified. It demands a further in-depth study to reveal them. Collection size of libraries was just one explanation.

Although there was a significant difference in management style between UK and Taiwan university libraries, the Pearson Chi-square significance value revealed no significant relationship between extent of library reorganisation and the management style for UK and Taiwan.

Hypothesis 4: There was no significant difference in organisational structure of library between UK and Taiwan universities.

Was there any significant difference in preference for organisational structure between UK and Taiwan universities? Was there any significant relationship between the organisational structure and the extent of library reorganisation?

Unrelated t-test (Table 6.5) revealed significant difference in the UK and Taiwan university libraries with respect to organisational structure in both surveys; therefore, the hypothesis 4 cannot be supported.

Table 6.7 is the result of the Pearson Correlation Coefficient. There was a positive linear relationship between collection size and organisational structure ( $r=.420$ ,  $p<0.001$ ). Correlation was significant at the 0.01 level. Smaller libraries tended to organise around functions and larger libraries tended to choose combined functional/subject patterns. As the collection size in UK university libraries were larger than that of Taiwan's, it can also explain why in the initial survey, a majority (79%) of libraries in the UK preferred mixed pattern (combined functional/subject-based) organisational structure and almost all (96%) libraries in Taiwan were functionally-organised (Fig. 6.4). Even so, the preference for organisational structure changed in the two countries in the follow-up survey. Fifty two percent of the respondents in the UK adopted matrix organisation and nearly one third of libraries switched to function-based structure. However, 22% of the respondent in Taiwan changed from a traditional function-based structure to other structures. (Fig. 6.5)

Although the preferred organisational structure did change with time in the two countries, the Pearson Chi-square significance value revealed no significant relationship between the extent of library reorganisation and the organisational structure in the UK and Taiwan. It indicated that organisational change had nothing to do with the form of the original structure.

Figure 6.4 Organisational Structure from the Initial Survey, by Country

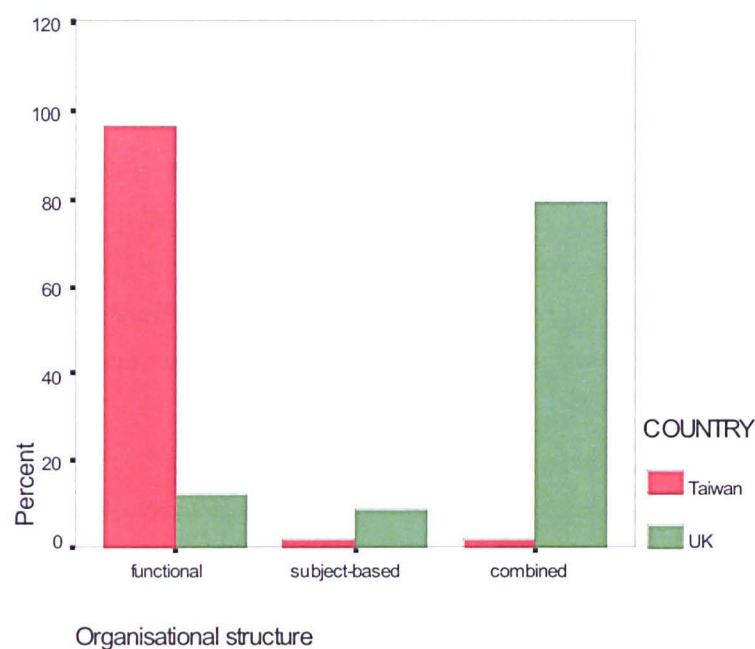


Figure 6.5 Organisational Structure from the Follow-up Survey, by Country

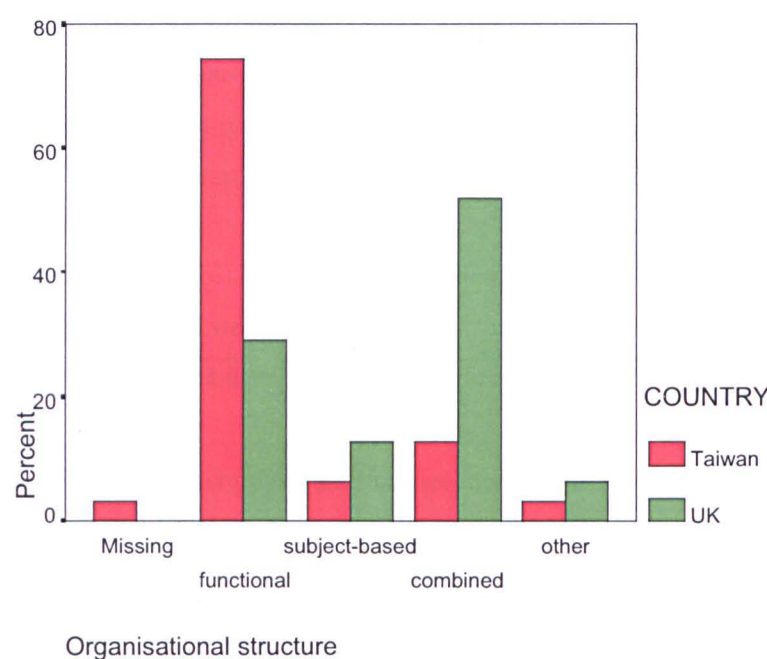




Table 6.7 Correlational Analysis between the Organisational Structure and Collection Size

| Coefficient (r)          | Organisational Structure | Collection Size |
|--------------------------|--------------------------|-----------------|
| Between Variables        |                          |                 |
| Organisational Structure | 1.000                    | .420**          |
| Collection Size          | .420**                   | 1.000           |

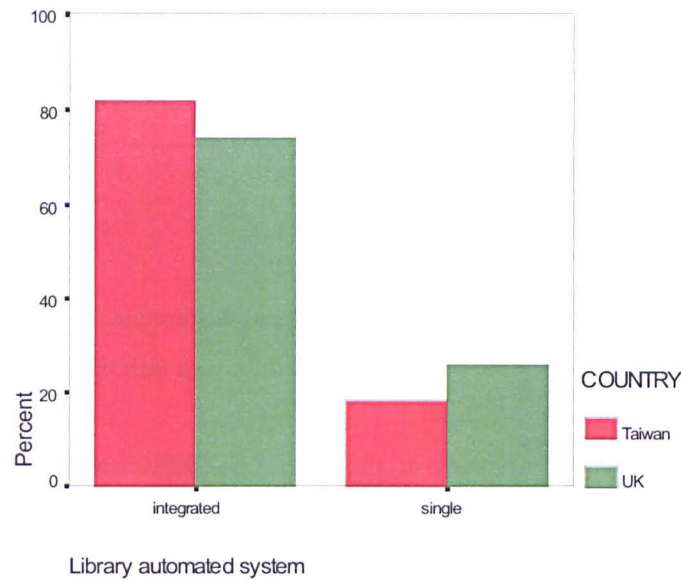
\*\* Correlation is significant at the 0.01 level (2-tailed)

Hypothesis 5: There was no significant difference in installation of library automated system between UK and Taiwan universities.

Most university libraries in the two countries adopted an integrated library automated system (Fig. 6.6). Unrelated t-test (Table 6.5) revealed no significant difference between UK and Taiwan university libraries; therefore, the hypothesis 5 was supported. Both in the UK and Taiwan, the Pearson Chi-square significance value revealed that there was no significant relationship between extent of library reorganisation and the kind of library automated system. It suggests that library automation providing an opportunity to undergo organisational structure change whether libraries install an integrated system or a single system.

Having inspected the automation history of libraries in the UK and Taiwan, the researcher found a very similar development history in the two countries. In the UK, library automation had begun at the beginning of the 1970s. At that time, many libraries installed a single-function system for creating a catalogue record. By the 1980s, semi-integrated systems had developed. By the early 1990s, most of the systems had been expanded to be an integrated automated system that included most library functions. By the mid-1990s, the 'integrated' second-generation systems had shifted to relational database models that could handle all operations. In Taiwan, the automation history of libraries began in early 1970s (1972). In early 1980s, libraries began to develop electronic systems. With the support of the MOE, library automation in the college and university libraries has developed more successfully. In 1990, most university and college libraries had installed integrated automation systems. During the last ten years (the 1990s), most large libraries changed their old automation systems to the Internet and an online database and started to develop an electronic library. The initial survey year (1996 in the UK and 1998 in Taiwan) was a time when most libraries had implemented integrated automated systems. As expected, the survey result showed this fact.

Figure 6.6 Library Automated System from the Initial Survey, by Country



H6: There was no significant difference in provision of information technologies of library between UK and Taiwan universities.

Different kinds of information technologies and related services were provided in both the UK and Taiwan universities. In the initial survey, Unrelated t-test (Table 6.8) revealed a significant difference in the provision of ‘online catalogue’, and ‘online database’ services. The mean score of ‘online catalogue’ and ‘online database’ services of libraries from UK universities were significantly higher than that of libraries in Taiwan universities. Therefore, the hypothesis 6 cannot be supported. The higher percentage of providing those services in the UK was related to the different development pace with UK university had a more rapid development pace than that in Taiwan. Looking back on the history of ICTs development showed that university libraries in the UK began using computer-based systems to create catalogue record and started to use commercial database systems in the early 1970s. However, the process of Chinese characters was the obstacle for the widely launch of online catalogue. It was not until the early 1980s, that the difficulty was gradually resolved with the development of computer technology. The provision of the online database services in Taiwan was also slower than that in the UK, it was extensively used during the 1990s. However, the difference in the two services between UK and Taiwan was not significant in the follow-up survey period, because these two services had been greatly increased in the university libraries in Taiwan from just over half the libraries in the initial survey to almost all the libraries in

the follow-up survey period. The provision of other services, such as CD-ROMs, networks and email, showed no significant difference between the UK and Taiwan.

Unrelated t-test (Table 6.9) revealed a significant difference in the UK and Taiwan university libraries with respect to the provision of 'images/multimedia' services, and 'distance learning' services in the follow-up survey. The hypothesis cannot be supported. The mean score of 'distance learning' services in libraries from UK universities was significantly higher than that of libraries in Taiwan. The significant difference in 'distance learning' must be interpreted very cautiously for various reasons. First, 'distance learning' is an innovation in teaching and learning strategy. It becomes possible with the development of ICTs. In recent years, more institutions in the UK, particularly at postgraduate level, have been actively involved in distance education. The support of distance learners is a major issue for libraries (Brophy 2000). However, 'distance learning' has been launched in a few universities in Taiwan only very recently. The main reasons are to promote e-learning projects and to serve the versatile student component that may be part-time students with a full-time job. Second, 'distance learning' demands a lot of digital content for course resources. To effectively use the digital content, the internal, local area networks of the institution itself, and the regional, national and international infrastructure which enables remote sources to be accessed and services to be delivered to remote users, must be adequate (Brophy 2000). By the early 1990s, it was certainly possible for an academic library in the UK to install a server at a reasonable cost. Externally, the establishment of the Joint Academic Network (JANET) has provided high-speed network connections between all UK universities. In Taiwan, the access to electronic resources is becoming popular in campus. Therefore, the MOE implemented a 'Three-year Development Plan of the Campus Network' project in 1990. The main goal was to support main universities and colleges to set up their own campus network. Because not all universities were supported by this project, universities without government's support took a longer time to implement their own campus network. Under such circumstances, 'distance learning' services were significantly less common in Taiwan compared to UK at the time of the follow-up survey (late 1990s), although it is quite likely Taiwan universities will catch up soon.

The provision of 'images/multimedia services' in Taiwan universities' libraries was tremendously increased due to the development of ICTs technologies and launch of digital library projects in last several years. Popular newspapers in Taiwan have been reproduced and scanned and the images are stored in the databases. Precious documents and materials are also being photographed or scanned. All of them can be retrieved from local computers or from remote multimedia services. For these reasons, it may explain why Taiwan had a significantly higher percentage in providing 'images/multimedia services' than that of libraries in UK universities.

It can be seen (Tables 6.5, 6.8 and 6.9) that libraries in both countries were not similar in their collection size, management style, organisational structure, adoption of online catalogue and online database, provision of 'images/multimedia' service and 'distance learning' service. Nevertheless, libraries in both countries were similar in their adoption of library automated system, CD-ROMs, networks and email in the initial survey. Likewise they were very similar in their adoption of digitised collections, electronic journals, electronic document delivery, CD-ROMs and web sites in the follow-up survey.

Table 6.8 The Difference in Provision of Information Technologies by Individual Items between UK University Libraries and Taiwan University Libraries from the Initial Survey

| (Individual Item)<br>Country | N  | M    | SD   | t     | p      |
|------------------------------|----|------|------|-------|--------|
| Online Catalogue             |    |      |      |       |        |
| UK                           | 58 | .97  | .18  |       |        |
| Taiwan                       | 54 | .57  | .50  | 5.430 | .000** |
| CD-ROM                       |    |      |      |       |        |
| UK                           | 58 | .98  | .13  |       |        |
| Taiwan                       | 54 | .96  | .19  | .644  | .521   |
| Database                     |    |      |      |       |        |
| UK                           | 58 | .93  | .26  |       |        |
| Taiwan                       | 54 | .56  | .50  | 4.937 | .000** |
| Network                      |    |      |      |       |        |
| UK                           | 58 | 1.00 | .00* |       |        |
| Taiwan                       | 54 | 1.00 | .00* |       |        |
| e-mail                       |    |      |      |       |        |
| UK                           | 58 | .91  | .28  |       |        |
| Taiwan                       | 54 | .83  | .38  | 1.272 | .206   |

\*: t cannot be computed because the standard deviations of both groups are 0.

\*\* : Significant at the 0.01 level.

Table 6.9 The Difference in Provision of Information Technologies by Individual Items between UK University Libraries and Taiwan University Libraries from the Follow-up Survey

| (Individual Item)<br>Country                            | N  | M      | SD     | t      | p      |
|---------------------------------------------------------|----|--------|--------|--------|--------|
| Digitized Collection/Electronic Library/Digital Library |    |        |        |        |        |
| UK                                                      | 31 | .4839  | .5080  | 1.291  | .202   |
| Taiwan                                                  | 31 | .3226  | .4752  |        |        |
| Electronic Journals/Electronic Books                    |    |        |        |        |        |
| UK                                                      | 31 | 1.0000 | .0000  | 1.793  | .083   |
| Taiwan                                                  | 31 | .9032  | .3005  |        |        |
| Electronic Document Delivery                            |    |        |        |        |        |
| UK                                                      | 31 | .5484  | .5059  | -1.312 | .195   |
| Taiwan                                                  | 31 | .7097  | .4614  |        |        |
| Images Services/Multimedia                              |    |        |        |        |        |
| UK                                                      | 31 | .4194  | .5016  | -3.005 | .004*  |
| Taiwan                                                  | 31 | .7742  | .4250  |        |        |
| Distance Learning                                       |    |        |        |        |        |
| UK                                                      | 31 | .5161  | .5080  | 3.523  | .001*  |
| Taiwan                                                  | 31 | .1290  | .3408  |        |        |
| Online Catalogue                                        |    |        |        |        |        |
| UK                                                      | 31 | 1.0000 | .0000a |        |        |
| Taiwan                                                  | 31 | 1.0000 | .0000a |        |        |
| CD-ROM/Online Database                                  |    |        |        |        |        |
| UK                                                      | 31 | .9677  | .1796  | .000   | 1.0000 |
| Taiwan                                                  | 31 | .9677  | .1796  |        |        |
| Web Sites or Internet Sites                             |    |        |        |        |        |
| UK                                                      | 31 | 1.3226 | 1.7961 | 1.095  | .282   |
| Taiwan                                                  | 31 | .9677  | .1796  |        |        |
| Other                                                   |    |        |        |        |        |
| UK                                                      | 31 | .0000  | .0000a |        |        |
| Taiwan                                                  | 31 | .0000  | .0000a |        |        |

a: t cannot be computed because the standard deviations of both groups are 0.

\*: Significant at the 0.01 level.

H7: There was no significant difference in the impact of library automation and information technologies on the staffing pattern and working pattern between UK and Taiwan universities.

'Library staff are responsible for delivering services to users and are the most important asset of the library' (Brophy 2000). 'The traditional staffing structure of academic libraries has been hierarchical. It includes: The University Librarian, a Deputy Librarian (sometimes more than one), section heads, unit heads, subject librarians, assistant librarians, senior library assistants, library assistant, specialist staff, IT specialists, manual staff' (Brophy 2000). Staff in academic libraries have been composed of three types of employees: professional staff (who are qualified in librarianship), support staff, and student workers. The support staff in libraries usually has a wide range of education, background, skills, and assignments. (Johnson 1996)

Indeed, recent library literature provides evidence of the impacts of the development of ICTs on academic libraries. Type of tasks and the level of responsibility assigned are affected by automation of library processes. The professional and support work needs to be assessed and consequently organisational structures are also altered to make optimal use of skilled staff in delivering new and old services (Johnson 1996). Larsen's (1991) survey indicated that most libraries had become more integrated because library automation had provided an opportunity to shift staff responsibilities and change staff roles both in technical and public services. Another survey conducted by Johnson (1991) also confirmed that automation had a profound effect on libraries and their personnel. Few of these changes were, as yet, being reflected in formal organisational charts. Bush (1985) indicated that member libraries of the Association of Research Libraries (ARL) reported that the introduction of automation was the primary force contributing to organisational change, even none indicated complete integration of technical and public service.

To evaluate changes in staffing pattern, the researcher asked questions such as: Is the demand for professional and support staff increased or decreased? Are the roles of professional and support staff being changed? Are staff responsibilities being reassigned?

Unrelated t-test (Table 6.10) revealed the demand for professional staff in the two countries was not similar. Libraries in Taiwan universities indicated an increase in the demand for professional staff while the need for 'professional staff' in the UK remained almost balanced. The difference was statistically significant. Therefore, the hypothesis 7 cannot be supported. The findings suggested that the number of professional staff was not meeting the actual needs of academic libraries in Taiwan, but the number of professional staff in the UK was adequate. One reason behind this difference was the majority of funding for UK higher education comes from the

government, but the universities themselves are autonomous bodies operating under royal charters. Under this circumstance, it was more possible to have money for adequate staffing (Brophy 2000). However, the staffing of academic libraries in Taiwan used to be restricted by the regulation of the University Law. It was rather difficult to increase the number of library staff without the permission of the parent institutions.

Unrelated t-test (Table 6.10) revealed that both countries indicated an increasing demand for support staff rather than decrease them (more than one third of libraries increased 'support staff', see Tables 4.9 and 5.9). This result was quite contrary to what was reported in other literature (Johnson 1991). Johnson's survey suggested that 'nearly half (48.2%) of the respondents reported a decrease in the number of clerical position as a result of automation, fewer people are needed at the lowest levels in these libraries, many libraries are finding that library automation is reducing the number of routine tasks and the number of personnel needed to perform them.'

Besides, there was a significant difference in UK and Taiwan university libraries with respect to 'staff reassignment', and 'changes in professional/support staff roles' (Table 6.10). More libraries in Taiwan had reassigned staff responsibilities than that of libraries in the UK. For example, professional librarians are more actively engaged in policy-making and planning and they spend more time at conferences, many tasks previously done by professional librarians have been transferred to members of the support staff (Johnson 1996). More libraries (89%) in the UK reported that they had changed 'professional/support staff roles'. For example, the new roles of professional librarian would emphasize teaching, marketing the library and its services, staff training, and liaison activities. (Johnson 1996)

Table 6.10 The Difference in Impact of Library Automation and Information Technologies on Library Staffing Pattern by Individual Items between UK University Libraries and Taiwan University Libraries from the Initial Survey

| (Individual Item)<br>Country | N  | M        | SD  | t      | p      |
|------------------------------|----|----------|-----|--------|--------|
| More Professional Staff      |    |          |     |        |        |
| UK                           | 54 | .13      | .34 | -7.769 | .000** |
| Taiwan                       | 52 | .73      | .45 |        |        |
| Fewer Professional Staff     |    |          |     |        |        |
| UK                           | 54 | .11      | .32 | 1.944  | .056   |
| Taiwan                       | 52 | 1.92E-02 | .14 |        |        |
| More Support Staff           |    |          |     |        |        |
| UK                           | 54 | .37      | .49 | .258   | .797   |
| Taiwan                       | 52 | .35      | .48 |        |        |
| Fewer Support Staff          |    |          |     |        |        |

| (Individual Item)                           | <u>N</u> | <u>M</u> | <u>SD</u> | <u>t</u> | <u>p</u> |
|---------------------------------------------|----------|----------|-----------|----------|----------|
| Country                                     |          |          |           |          |          |
| UK                                          | 54       | 9.26E-02 | .29       | .675     | .501     |
| Taiwan                                      | 52       | 5.77E-02 | .24       |          |          |
| Staff reassignments                         |          |          |           |          |          |
| UK                                          | 54       | .39      | .49       | -2.371   | .020*    |
| Taiwan                                      | 52       | .62      | .49       |          |          |
| Changes in Professional/Support Staff roles |          |          |           |          |          |
| UK                                          | 54       | 0.89     | .32       | 5.978    | .000**   |
| Taiwan                                      | 52       | 0.40     | .50       |          |          |
| Other                                       |          |          |           |          |          |
| UK                                          | 54       | 7.41E-02 | .26       | .793     | .430     |
| Taiwan                                      | 52       | 3.85E-02 | .19       |          |          |

\*: Significant at the 0.05 level.

\*\*: Significant at the 0.01 level.

As to the impacts on the working pattern, the researcher asked questions such as: Are staff working place and working time becoming more flexible? Are positions being reclassified? Are positions being produced or eliminated? Are staff jobs and duties being redesigned? Is workflow and job description being revised because changes of the job content?

It can be seen from Table 6.11 that libraries in both countries were similar in the impacts of 'more flexible working time', 'producing new positions', 'revising workflow and job description', and 'redesigning staff jobs and duties'. As shown in Tables 4.10 and 5.10, a lot of libraries had redesigned staff jobs and duties, had revised workflow and job description, and had produced new positions. The introduction and use of the automated system had changed the job content and streamlined the operations. Requirements are modified because automation requires new procedures to handle new processes. New tasks will vary according to the situation and demand through the provision of information technology-related services. Very few libraries in both countries indicated that they provide a 'more flexible working time' for their staff even after library automation.

Unrelated t-test (Table 6.11) also revealed the difference of impacts on the working pattern in the two countries. A higher percentage of libraries from UK universities indicated a 'more flexible working place' than that of libraries in Taiwan universities. The finding suggested that more academic libraries in the UK provided a flexible working location for library staff through automation compared to Taiwan. Likewise libraries in UK universities had a significantly higher percentage in 'eliminating some positions' than that in Taiwan universities. Nevertheless, libraries in Taiwan universities had a significantly higher percentage in 'position reclassification' than that of libraries in UK universities. Since academic libraries in Taiwan expressed an increase in the



demand for both the professional and support staff. It can explain that why it was difficult for them to eliminate positions in libraries after library automation. Under this situation, 'to reclassify positions' was another alternative approach responding to the customer's need if the nature of tasks has been changed by automation and other new IT related services appeared. Lower level jobs that have become more complex or varied after automation can be upgraded through reclassification to reflect their current status and responsibilities in the organisation.

Table 6.11 The Difference in Impact of Library Automation and Information Technologies on Library Working Pattern by Individual Items between UK University Libraries and Taiwan University Libraries from the Initial Survey

| (Individual Item)<br>Country          | N  | M        | SD  | t      | p      |
|---------------------------------------|----|----------|-----|--------|--------|
| More Flexible Working Time            |    |          |     |        |        |
| UK                                    | 54 | .22      | .42 | 1.261  | .210   |
| Taiwan                                | 54 | .13      | .34 |        |        |
| More Flexible Working Place           |    |          |     |        |        |
| UK                                    | 54 | .46      | .50 | 2.011  | .047*  |
| Taiwan                                | 54 | .28      | .45 |        |        |
| Position Reclassification             |    |          |     |        |        |
| UK                                    | 54 | .30      | .46 | -1.992 | .049*  |
| Taiwan                                | 54 | .48      | .50 |        |        |
| Producing New Positions               |    |          |     |        |        |
| UK                                    | 54 | .65      | .48 | .199   | .843   |
| Taiwan                                | 54 | .63      | .49 |        |        |
| Eliminating Some Positions            |    |          |     |        |        |
| UK                                    | 54 | .39      | .49 | 3.803  | .000** |
| Taiwan                                | 54 | 9.26E-02 | .29 |        |        |
| Revising Workflow and Job Description |    |          |     |        |        |
| UK                                    | 54 | .78      | .42 | .446   | .656   |
| Taiwan                                | 54 | .74      | .44 |        |        |
| Redesigning Staff Jobs and Duties     |    |          |     |        |        |
| UK                                    | 54 | .87      | .34 | 1.261  | .210   |
| Taiwan                                | 54 | .78      | .42 |        |        |
| Other                                 |    |          |     |        |        |
| UK                                    | 54 | 1.85E-02 | .14 | 1.000  | .322   |
| Taiwan                                | 54 | .00      | .00 |        |        |

\*: Significant at the 0.05 level.

\*\*: Significant at the 0.01 level.

### 6.3 Findings: Environmental Factors of Library Reorganisation

The third research problem was to determine the difference in the environmental factors driving organisational structure change in libraries within UK and Taiwan universities.

H8: There was no significant difference in the environmental factors driving organisational structure change in libraries within UK and Taiwan universities.

In the initial survey, Unrelated t-test (Table 6.12) revealed that there were similarities between two countries regarding the reasons for library reorganisation. For example, 'to improve services', 'to increase efficiency', and 'change in administration' etc. The difference between two countries with respect to the reasons 'to facilitate management functions', 'the introduction of library automation', and 'the introduction of online catalogue' were statistically significant different. Therefore, the hypothesis 8 cannot be supported. More libraries in Taiwan had indicated these three reasons for library reorganisation than that of libraries in the UK. It suggested that academic libraries in Taiwan wanted to pursue an effective management through change. Library automation and introduction of online catalogue were two major forces affecting libraries in Taiwan at this time. From the previous section, the researcher pointed out that the mean score of 'online catalogue' services of libraries from UK universities was significantly higher than that of libraries in Taiwan universities. It indicated that as most UK libraries had online catalogue service, which was not the most important reason for change in UK, but it was in Taiwan which needed to catch up.

In the follow-up survey, unrelated t-test (Table 6.13) showed that reasons for library reorganisation between two countries were mostly similar. There were two reasons, 'constructed a new building' and 'change of demographics', which were significantly different in the two countries. The mean scores of these two reasons in Taiwan universities were significantly higher than that of within UK universities. Therefore, the hypothesis 8 cannot be supported. The researcher concluded that 'construction of a new building' and 'change of demographics' provided an opportunity for the libraries in Taiwan to rethink/redesign their organisational structure. Why did UK respondents not emphasize these two reasons was another issue worthy of a further survey.

As to the reasons for the convergence, Unrelated t-test (Tables 6.14 and 6.15) revealed that reasons for the convergence were mostly similar in the two countries beside the reason of having a 'more effective administration'. The mean score of 'more effective administration' for libraries from UK universities was significantly higher than that of libraries in Taiwan universities. It

suggested that university libraries in the UK had a strong desire to pursue a more effective administration through convergence effort.

Table 6.12 The Difference in Reasons for Library Reorganisation by Individual Items between UK University Libraries and Taiwan University Libraries from the Initial Survey

| (Individual Item)<br>Country                                   | N  | M        | SD  | t      | p      |
|----------------------------------------------------------------|----|----------|-----|--------|--------|
| Change of Economic Condition                                   |    |          |     |        |        |
| UK                                                             | 45 | .36      | .48 | 1.710  | .091   |
| Taiwan                                                         | 37 | .19      | .40 |        |        |
| Change in Administration                                       |    |          |     |        |        |
| UK                                                             | 46 | .41      | .50 | .317   | .752   |
| Taiwan                                                         | 37 | .38      | .49 |        |        |
| Change in Human Expectations                                   |    |          |     |        |        |
| UK                                                             | 45 | .36      | .48 | .819   | .415   |
| Taiwan                                                         | 37 | .27      | .45 |        |        |
| Increase Efficiency                                            |    |          |     |        |        |
| UK                                                             | 45 | .69      | .47 | -.959  | .341   |
| Taiwan                                                         | 37 | .78      | .42 |        |        |
| Improve Services                                               |    |          |     |        |        |
| UK                                                             | 45 | .82      | .39 | .986   | .327   |
| Taiwan                                                         | 37 | .73      | .45 |        |        |
| Facilitate Management Functions                                |    |          |     |        |        |
| UK                                                             | 45 | .44      | .50 | -2.417 | .018*  |
| Taiwan                                                         | 37 | .70      | .46 |        |        |
| Technological—the Introduction of Library Automation           |    |          |     |        |        |
| UK                                                             | 45 | .29      | .46 | -3.742 | .000** |
| Taiwan                                                         | 37 | .68      | .47 |        |        |
| Technological—the Introduction of Online Catalogue             |    |          |     |        |        |
| UK                                                             | 45 | 8.89E-02 | .29 | -2.384 | .020*  |
| Taiwan                                                         | 37 | 0.30     | .46 |        |        |
| Technological—the Introduction of other Information Technology |    |          |     |        |        |
| UK                                                             | 45 | 0.29     | .46 | -1.586 | .117   |
| Taiwan                                                         | 37 | 0.46     | .51 |        |        |
| Other                                                          |    |          |     |        |        |
| UK                                                             | 45 | .20      | .40 | 2.618  | .011*  |
| Taiwan                                                         | 37 | 2.70E-02 | .16 |        |        |

\*: Significant at the 0.05 level. \*\*: Significant at the 0.01 level.

Table 6.13 The Difference in Reasons for Library Reorganisation by Individual Items between UK University Libraries and Taiwan University Libraries from the Follow-Up Survey

| (Individual Item)<br>Country                    | N  | M        | SD     | t      | p      |
|-------------------------------------------------|----|----------|--------|--------|--------|
| Change in Higher Education                      |    |          |        |        |        |
| UK                                              | 17 | .2353    | .4372  | -1.066 | .294   |
| Taiwan                                          | 20 | .4000    | .5026  |        |        |
| Administrative Changes in Parent Institution    |    |          |        |        |        |
| UK                                              | 17 | .4118    | .5073  | 1.034  | .308   |
| Taiwan                                          | 20 | .2500    | .4443  |        |        |
| Joined Library Consortia                        |    |          |        |        |        |
| UK                                              | 17 | .0000    | .0000a |        |        |
| Taiwan                                          | 20 | .0000    | .0000a |        |        |
| Developed Digitized Collection, Digital Library |    |          |        |        |        |
| UK                                              | 17 | .2941    | .4697  | -.960  | .344   |
| Taiwan                                          | 20 | .4500    | .5104  |        |        |
| Change of Demographics                          |    |          |        |        |        |
| UK                                              | 17 | .0000    | .0000  | -2.854 | .010** |
| Taiwan                                          | 20 | .3000    | .4702  |        |        |
| Change in Scholarly Publishing/Communication    |    |          |        |        |        |
| UK                                              | 17 | 5.88E-02 | .2425  | -.446  | .658   |
| Taiwan                                          | 20 | .1000    | .3078  |        |        |
| Change of Personnel                             |    |          |        |        |        |
| UK                                              | 17 | .5294    | .5145  | 1.752  | .089   |
| Taiwan                                          | 20 | .2500    | .4443  |        |        |
| Change in Human Expectations                    |    |          |        |        |        |
| UK                                              | 17 | .3529    | .4926  | -.286  | .776   |
| Taiwan                                          | 20 | .4000    | .5026  |        |        |
| Provided New Services                           |    |          |        |        |        |
| UK                                              | 17 | .4118    | .5073  | -.823  | .416   |
| Taiwan                                          | 20 | .5500    | .5104  |        |        |
| Facilitated Management Functions                |    |          |        |        |        |
| UK                                              | 17 | .5882    | .5073  | .228   | .821   |
| Taiwan                                          | 20 | .5500    | .5104  |        |        |
| Introduced New Technologies                     |    |          |        |        |        |
| UK                                              | 17 | 5.88E-02 | .2425  | -1.656 | .108   |
| Taiwan                                          | 20 | .2500    | .4443  |        |        |
| Constructed a New Building                      |    |          |        |        |        |
| UK                                              | 17 | .0000    | .0000  | -2.854 | .010** |

| (Individual Item)<br>Country  | N  | M        | SD     | t     | p    |
|-------------------------------|----|----------|--------|-------|------|
| Taiwan                        | 20 | .3000    | .4702  |       |      |
| Change of Economic Conditions |    |          |        |       |      |
| UK                            | 17 | 5.88E-02 | .2425  |       |      |
| Taiwan                        | 20 | .0000    | .0000  | 1.000 | .332 |
| Other                         |    |          |        |       |      |
| UK                            | 31 | 4.2581   | 4.3891 |       |      |
| Taiwan                        | 31 | 3.2258   | 4.3567 | .929  | .356 |

a. t cannot be computed because the standard deviations of both groups are 0.

\*\*: Significant at the 0.01 level.

Table 6.14 The Difference in Reasons for Convergence by Individual Items between UK University Libraries and Taiwan University Libraries from the Initial Survey

| (Individual Item)<br>Country                                   | N | M    | SD  | t     | p     |
|----------------------------------------------------------------|---|------|-----|-------|-------|
| More Economic Administration                                   |   |      |     |       |       |
| UK                                                             | 7 | .57  | .53 |       |       |
| Taiwan                                                         | 7 | .71  | .49 | -.522 | .611  |
| More Effective Administration                                  |   |      |     |       |       |
| UK                                                             | 7 | 1.00 | .00 |       |       |
| Taiwan                                                         | 7 | .43  | .53 | 2.828 | .030* |
| Co-operation in Supporting Teaching,<br>Research, and Learning |   |      |     |       |       |
| UK                                                             | 7 | 1.00 | .00 |       |       |
| Taiwan                                                         | 7 | .86  | .38 | 1.000 | .356  |
| Exchanges of Specialisation between<br>Organisation            |   |      |     |       |       |
| UK                                                             | 7 | .71  | .49 |       |       |
| Taiwan                                                         | 7 | .29  | .49 | 1.643 | .126  |
| Sharing of Equipment and Facilities                            |   |      |     |       |       |
| UK                                                             | 7 | .43  | .53 |       |       |
| Taiwan                                                         | 7 | .29  | .49 | .522  | .611  |
| Sharing of Staff                                               |   |      |     |       |       |
| UK                                                             | 7 | .43  | .53 |       |       |
| Taiwan                                                         | 7 | .29  | .49 | .522  | .611  |
| Centralised Training of Staff                                  |   |      |     |       |       |
| UK                                                             | 7 | .29  | .49 |       |       |
| Taiwan                                                         | 7 | .14  | .38 | .612  | .552  |
| Other                                                          |   |      |     |       |       |
| UK                                                             | 7 | .14  | .38 |       |       |
| Taiwan                                                         | 7 | .14  | .38 | .000  | 1.000 |

\*: Significant at the 0.05 level.

Table 6.15 The Difference in Reasons for Convergence by Individual Items between UK University Libraries and Taiwan University Libraries from the Follow-Up Survey

| (Individual Item)<br>Country               | <u>N</u> | <u>M</u> | <u>SD</u> | <u>t</u> | <u>p</u> |
|--------------------------------------------|----------|----------|-----------|----------|----------|
| Creation of Digital Learning Environment   |          |          |           |          |          |
| UK                                         | 5        | .4000    | .5477     | .000     | 1.000    |
| Taiwan                                     | 5        | .4000    | .5477     |          |          |
| Shared Vision                              |          |          |           |          |          |
| UK                                         | 5        | 1.0000   | .0000a    |          |          |
| Taiwan                                     | 5        | .0000    | .0000a    |          |          |
| Overlapping Missions and Strategies        |          |          |           |          |          |
| UK                                         | 5        | .8000    | .4472     | .632     | .545     |
| Taiwan                                     | 5        | .6000    | .5477     |          |          |
| Increased the Organisation's Effectiveness |          |          |           |          |          |
| UK                                         | 5        | .8000    | .4472     | 1.265    | .242     |
| Taiwan                                     | 5        | .4000    | .5477     |          |          |
| Integration of (Technical) Staff           |          |          |           |          |          |
| UK                                         | 5        | .4000    | .5477     | -.577    | .580     |
| Taiwan                                     | 5        | .6000    | .5477     |          |          |
| Sharing of Equipment and Facilities        |          |          |           |          |          |
| UK                                         | 5        | .6000    | .5477     | .577     | .580     |
| Taiwan                                     | 5        | .4000    | .5477     |          |          |
| External Forces                            |          |          |           |          |          |
| UK                                         | 5        | .0000    | .0000a    |          |          |
| Taiwan                                     | 5        | .0000    | .0000a    |          |          |
| Other                                      |          |          |           |          |          |
| UK                                         | 5        | .0000    | .0000a    |          |          |
| Taiwan                                     | 5        | .0000    | .0000a    |          |          |

a. t cannot be computed because the standard deviations of both groups are 0.

#### 6.4 Findings: Methods of Library Reorganisation

The fourth research problem was to determine the difference in the methods of library reorganisation within UK and Taiwan universities.

H9: There was no significant difference in methods of library reorganisation between UK and Taiwan universities.

The survey conducted by Harris and Marshall (1998) indicated that 'the change was usually achieved from strategic planning, reengineering, and/or the review of organisational priorities. Therefore, the methods of reorganisation undertaken by university libraries are diversified as reported in literature. Reorganisation involves the entire library system; reorganisation just adopts dual assignment (rather than complete transformation), for example, matrix management, quality circles and teams; library staff members have multiple interests and responsibilities; emphasizing specialisation, unity of functions, for example, merging divisions/departments; expanding the size and scope of divisions/departments; setting up new departments; eliminating redundancies; merging the library with other services, etc'. (Harris and Marshall 1998)

In the initial survey, the methods of reorganisation, such as 'integration of public services and technical services', 'combination of functions', 'new functions or departments created', 'dispersion of functions', showed no significant difference between the UK and Taiwan (Table 6.16). Among them, 'creating new functions/departments/units' and 'combination of functions' were ranked as the top two approaches to reorganisation. Newly created functions/departments in both countries were different in the two countries. Twenty new functions/departments were indicated by university libraries in Taiwan which emphasized on 'library automation', 'audio-visual services', 'collection development', 'reference services', 'serials services', and 'WWW development'. More than fifty new functions/departments were indicated by university libraries in the UK which emphasized on 'academic services', 'collection management', 'electronic information services', 'learning and research support', 'reader services', 'reference services', 'systems & network services', and 'information technology development'.

The way that most UK and Taiwan libraries combined departments was to form a larger department/division. However, there were some differences between UK and Taiwan. For example, several libraries in the UK tried to integrate library services with computing services and media services to form a larger academic information service. However, libraries in Taiwan tried to take advantages of library automation and moved to customer-oriented services. Therefore, the most

popular approach was to combine 'Acquisitions' with the 'Cataloguing' department to form a 'Acquisitions/Cataloguing' department and also to combine 'Preservation' with either 'Readers Services' department or 'Circulation' department to form a 'Preservation/Readers Services' department or 'Preservation/Circulation' department.

Unrelated t-test (Table 6.16) revealed that libraries in both countries were significantly different in some methods of reorganisation, such as 'functions or departments (units) eliminated', 'department (units) renamed', and 'other'. Therefore, the hypothesis 9 cannot be supported. The mean scores of 'functions or department (units) eliminated', 'department (units) renamed', and 'other' for libraries from UK universities were significantly higher than that of libraries in Taiwan universities. The survey suggested that the traditional names (especially 'Technical Services' department) in the UK were changed to more versatile names that were IT-oriented and corresponded to the current situation. For example, 'Cataloguing Department' was changed to 'Database Department', or 'Bibliographic Services Department'. 'Technical Services' department was changed to 'Resources/System', or 'Bibliographical Services', or 'Management Services'. 'Other' methods indicated by the UK included 'staff relocated', 'team structure', 'amendment of duties', 'rota working', 'departments redefined' etc.

Why had few libraries in Taiwan eliminated or renamed functions/departments (units)? The obvious reason could be the legal aspects. Most university libraries used to have four traditional departments (Acquisitions, Cataloguing, Preservation, and Reader Services) by the old regulation. Libraries in Taiwan began to have more autonomy and flexibility in redesigning or modifying their structure only after the announcement of the new 'University Law' in 1994.

In the follow-up survey, most of the reorganisation methods showed no significant difference between the UK and Taiwan (Table 6.17). Significant difference appeared only in the methods of 'new functions or departments (units) created', and 'other'. The mean score of 'new functions or departments (units) created' from Taiwan universities was significantly higher than that of libraries in UK universities. Therefore, the hypothesis 9 was supported. It showed that university libraries in Taiwan had redesigned or invented a more suitable and responsive organisational structure after the pass of new University Law. Newly created functions/departments/units in Taiwan reflected the effect of information and communication technologies on library work and services in this survey period, e.g. 'Network Information Team', 'Systems & Network Services Department', and 'WWW Development Team' etc. Second, functions/departments related to development of 'electronic information resources/services' and 'digital library' appeared in the new library organisational charts, e.g. 'Electronic Services' and 'Digital Information' etc. Third, serials/periodicals services became very important in supporting teaching and learning. The creation



of a separate serials unit was becoming quite common, but its position in each library varied. Nearly one third libraries had created a 'Serials Department'. The mean score of 'other' methods from UK universities was significantly higher than that of libraries in Taiwan universities. It showed that UK adopted more different reorganisational methods than that in Taiwan. They included: 'management structure created', 'recreation of an internal IT structure', 'introduction of new responsibilities', and 'rebalancing of staff profile'.

Table 6.16 The Difference in Methods of Reorganisation by Individual Items between UK University Libraries and Taiwan University Libraries from the Initial Survey

| (Individual Item)<br>Country                          | <u>N</u> | <u>M</u> | <u>SD</u> | <u>t</u> | <u>p</u> |
|-------------------------------------------------------|----------|----------|-----------|----------|----------|
| Integration of Public Services and Technical Services |          |          |           |          |          |
| UK                                                    | 45       | .18      | .39       | -1.694   | .095     |
| Taiwan                                                | 38       | .34      | .48       |          |          |
| Combination of Functions                              |          |          |           |          |          |
| UK                                                    | 45       | .42      | .50       | .251     | .803     |
| Taiwan                                                | 38       | .39      | .50       |          |          |
| New Functions or Departments Created                  |          |          |           |          |          |
| UK                                                    | 45       | .69      | .47       | .297     | .767     |
| Taiwan                                                | 38       | .66      | .48       |          |          |
| Dispersion of Functions                               |          |          |           |          |          |
| UK                                                    | 45       | .16      | .37       | 1.564    | .122     |
| Taiwan                                                | 38       | 5.26E-02 | .23       |          |          |
| Functions or Departments Eliminated                   |          |          |           |          |          |
| UK                                                    | 45       | .33      | .48       | 3.037    | .003**   |
| Taiwan                                                | 38       | 7.89E-02 | .27       |          |          |
| Departments Renamed                                   |          |          |           |          |          |
| UK                                                    | 45       | .42      | .50       | 2.428    | .017*    |
| Taiwan                                                | 38       | .18      | .39       |          |          |
| Other                                                 |          |          |           |          |          |
| UK                                                    | 45       | .33      | .48       | 2.617    | .011*    |
| Taiwan                                                | 38       | .11      | .31       |          |          |

\*: Significant at the 0.05 level.

\*\*: Significant at the 0.01 level.

Table 6.17 The Difference in Methods of Reorganisation by Individual Items between UK University Libraries and Taiwan University Libraries from the Follow-Up Survey

| (Individual Item)<br>Country                          | <u>N</u> | <u>M</u> | <u>SD</u> | <u>t</u> | <u>p</u> |
|-------------------------------------------------------|----------|----------|-----------|----------|----------|
| Integration of Public Services and Technical Services |          |          |           |          |          |
| UK                                                    | 12       | 8.33E-02 | .2887     |          |          |
| Taiwan                                                | 14       | .3571    | .4972     | -1.746   | .095     |
| Combination of Functions                              |          |          |           |          |          |
| UK                                                    | 12       | .4167    | .5149     |          |          |
| Taiwan                                                | 14       | .6429    | .4972     | -1.138   | .268     |
| New Functions or Departments Created                  |          |          |           |          |          |
| UK                                                    | 12       | .4167    | .5149     |          |          |
| Taiwan                                                | 14       | .8571    | .3631     | -2.481   | .022*    |
| Functions or Departments Eliminated                   |          |          |           |          |          |
| UK                                                    | 12       | .3333    | .4924     |          |          |
| Taiwan                                                | 14       | 7.14E-02 | .2673     | 1.646    | .119     |
| Departments Renamed                                   |          |          |           |          |          |
| UK                                                    | 12       | .1667    | .3892     |          |          |
| Taiwan                                                | 14       | .4286    | .5136     | -1.476   | .153     |
| Downsizing                                            |          |          |           |          |          |
| UK                                                    | 12       | .1667    | .3892     |          |          |
| Taiwan                                                | 14       | 7.14E-02 | .2673     | .736     | .469     |
| Reengineering                                         |          |          |           |          |          |
| UK                                                    | 12       | .3333    | .4924     |          |          |
| Taiwan                                                | 14       | .3571    | .4972     | -.122    | .904     |
| Other                                                 |          |          |           |          |          |
| UK                                                    | 12       | .3333    | .4924     |          |          |
| Taiwan                                                | 14       | .0000    | .0000     | 2.345    | .039*    |

\*: Significant at the 0.05 level.

## 6.5 Findings: Aspects Considered before Library Reorganisation

The fifth research problem was to explore aspects considered before library reorganisation within UK and Taiwan universities.

Hypothesis 10: There was no significant difference in aspects considered before library reorganisation between UK and Taiwan universities.

When libraries plan the issue of reorganisation, different aspects will be considered and assessed. These aspects should include: the parent institutional climate, the climate of library, strengths and weaknesses of staff, technological applications, managerial support (especially from top administrative support), staff attitudes, etc.

In the initial survey, unrelated t-test (Table 6.18) revealed that some aspects considered before reorganisation were similar in the two countries, e.g. 'the extent of managerial support', 'staff interest', and 'staff resistance'. Nevertheless, there were several aspects which were significantly different, e.g. 'the climate of the library', 'the parent institutional climate', and 'staff strengths and weaknesses'. Therefore, the hypothesis 10 cannot be supported. More libraries from UK universities will consider 'the parent institutional climate' and 'staff strengths and weaknesses' than that of libraries in Taiwan. Nevertheless, more libraries from Taiwan universities will consider 'the climate of the library' than that of libraries in the UK.

'The climate of parent institution' was the most important aspect to be considered in the UK could be explained by management factors. Universities in the UK are all (except one) state-funded and largely state controlled. Therefore, the changes of government policy will influence the development of universities. The pressure was also reflected in the demand for library and information services. To meet the increasing demand for excellent academic supporting services, the strengths and weaknesses of library staff were carefully assessed to ascertain that they serve the parent institution more effectively. However, this situation was not applicable in Taiwan's universities. Before the revision of Taiwan's 'University Law' in 1994, university libraries were under the regulation of old law and had no autonomy to conduct a comprehensive change in their organisational structures according to their demands. The only thing they can do is to embark on small-scale changes in the streamlining of library operation. Therefore, 'climate of the library' was the major aspect to be considered when change was made. The climate of the library usually included the mission, strategy, culture, and size of libraries.

In the follow-up survey, the aspects considered showed no significant difference in the two countries (Table 6.19). Therefore, the hypothesis 10 was supported. However, university libraries in Taiwan were much concerned about 'the climate of parent institutions', much more so than earlier. 'Parent institution' had more influence on reorganisational projects in the last five years. The reason was due to the changing status of their parent institutions. More and more colleges were upgraded to the 'university' level. The library's status was also elevated to the first level within university administration. Therefore, the organisation of libraries' services and functions will need to comply with the new vision of parent institutions. 'Other' aspects considered were more varied during this

survey period. Among them, 'Service' and 'IT' factors acquired major attention in the two countries.

Table 6.18 The Difference in Aspects Considered before Reorganisation by Individual Items between UK University Libraries and Taiwan University Libraries from the Initial Survey

| (Individual Item)<br>Country     | <u>N</u> | <u>M</u> | <u>SD</u> | <u>t</u> | <u>p</u> |
|----------------------------------|----------|----------|-----------|----------|----------|
| The Climate of the Library       |          |          |           |          |          |
| UK                               | 44       | .52      | .51       | -2.547   | .013*    |
| Taiwan                           | 37       | .78      | .42       |          |          |
| The Parent Institutional Climate |          |          |           |          |          |
| UK                               | 44       | .82      | .39       | 4.718    | .000**   |
| Taiwan                           | 37       | .35      | .48       |          |          |
| The Extent of Managerial Support |          |          |           |          |          |
| UK                               | 44       | .55      | .50       | -.935    | .353     |
| Taiwan                           | 37       | .65      | .48       |          |          |
| Staff Strengths and Weaknesses   |          |          |           |          |          |
| UK                               | 44       | .73      | .45       | 2.240    | .028*    |
| Taiwan                           | 37       | .49      | .51       |          |          |
| Staff Interest                   |          |          |           |          |          |
| UK                               | 44       | .45      | .50       | .685     | .495     |
| Taiwan                           | 37       | .38      | .49       |          |          |
| Staff Resistant                  |          |          |           |          |          |
| UK                               | 44       | .41      | .50       | 1.318    | .191     |
| Taiwan                           | 37       | .27      | .45       |          |          |
| Other                            |          |          |           |          |          |
| UK                               | 44       | .18      | .39       | 2.391    | .020*    |
| Taiwan                           | 37       | 2.70E-02 | .16       |          |          |

\*: Significant at the 0.05 level.

\*\*: Significant at the 0.01 level.

Table 6.19 The Difference in Aspects Considered before Reorganisation by Individual Items between UK University Libraries and Taiwan University Libraries from the Follow-up Survey

| (Individual Item)<br>Country     | N  | M          | SD     | t     | p    |
|----------------------------------|----|------------|--------|-------|------|
| The Climate of the Library       |    |            |        |       |      |
| UK                               | 13 | .3077      | .4804  | .997  | .328 |
| Taiwan                           | 14 | .5000      | .5189  |       |      |
| The Parent Institutional Climate |    |            |        |       |      |
| UK                               | 13 | .4615      | .5189  | -.534 | .598 |
| Taiwan                           | 14 | .3571      | .4972  |       |      |
| The Extent of Managerial Support |    |            |        |       |      |
| UK                               | 13 | .0000      | .0000a |       |      |
| Taiwan                           | 14 | .0000      | .0000a |       |      |
| Staff Strengths and Weaknesses   |    |            |        |       |      |
| UK                               | 13 | .2308      | .4385  | .261  | .574 |
| Taiwan                           | 14 | .1429      | .3631  |       |      |
| Staff Interest                   |    |            |        |       |      |
| UK                               | 13 | .7.692E-02 | .2774  | .917  | .959 |
| Taiwan                           | 14 | .7.143E-02 | .2673  |       |      |
| Staff Resistant                  |    |            |        |       |      |
| UK                               | 13 | .0000      | .0000a |       |      |
| Taiwan                           | 13 | .0000      | .0000a |       |      |
| Other                            |    |            |        |       |      |
| UK                               | 13 | .6154      | .5064  | .780  | .193 |
| Taiwan                           | 14 | .3571      | .4972  |       |      |

a. t cannot be computed because the standard deviations of both groups are 0

## 6.6 Findings: Goals of Library Reorganisation

The sixth research problem was to identify differences in goals of library reorganisation within UK and Taiwan universities.

Hypothesis 11: There was no significant difference in the goals of library reorganisation between UK and Taiwan universities.

In the initial survey, libraries in both countries were mostly similar in the goals of library reorganisation only the ranking was different. For example, some major goals were:

- to improve their organisational structure;
- to have greater flexibility;
- to increase staff communication and cooperation;
- to increase job satisfaction;
- to decrease costs;
- to increase production.

Unrelated t-test (Table 6.20) revealed that only the goal of 'taking full advantages of library automation and information technology', and 'other' were significantly different in the two countries. Therefore, the hypothesis 11 cannot be supported. The mean score for the goal of 'taking full advantages of library automation and information technology' of libraries from Taiwan universities was significantly higher than that of libraries in UK universities. It may due to the different pace of development of library automation and introduction of information technologies. One director's comment from UK respondents may explain the reason, she mentioned: 'Library automation was a long time ago, we are now moving to web-based services'. The effect of IT development on library organisation in Taiwan was more far-reaching under the joint effort of library and information scientists and the support of the governments later on. The other reason was the progress of computer and network communication technologies. Library managers in Taiwan believed that the advantages of IT application can be fully taken through reorganisation. However, the mean score for the goal of 'other' of libraries from UK universities was significantly higher than that of libraries in Taiwan universities. 'Other' goals indicated by UK respondents included: 'better services', 'merger of two structures', 'meet requirements of university restructuring', 'planning of a new Learning Resource Centre', 'take advantage of new building', 'improve effectiveness' etc.

Likewise they were very similar in the goals of library reorganisation in the follow-up survey. Unrelated t-test (Table 6.21) revealed that the goal of 'other' was significantly different in the two countries. Therefore, the hypothesis 11 cannot be supported. The mean score for this goal of libraries from UK universities significantly higher than that of libraries in Taiwan universities. 'Other' goals indicated by UK respondents included: 'putting together of centralized IT function', 'improving services', 'developing strategic approach', 'delegating responsibility'.

Table 6.20 The Difference in Goals of Library Reorganisation by Individual Items between UK University Libraries and Taiwan University Libraries from the Initial Survey

| (Individual Item)<br>Country                                         | N  | M        | SD  | t      | p      |
|----------------------------------------------------------------------|----|----------|-----|--------|--------|
| Decrease Costs                                                       |    |          |     |        |        |
| UK                                                                   | 45 | .24      | .43 | 1.644  | .104   |
| Taiwan                                                               | 37 | .11      | .31 |        |        |
| Increase Production                                                  |    |          |     |        |        |
| UK                                                                   | 45 | .31      | .47 | -.882  | .380   |
| Taiwan                                                               | 37 | .41      | .50 |        |        |
| Greater Flexibility                                                  |    |          |     |        |        |
| UK                                                                   | 45 | .71      | .46 | 1.834  | .071   |
| Taiwan                                                               | 37 | .51      | .51 |        |        |
| Improve Organisational Structure                                     |    |          |     |        |        |
| UK                                                                   | 45 | .78      | .42 | .499   | .619   |
| Taiwan                                                               | 37 | .73      | .45 |        |        |
| Increase Job Satisfaction                                            |    |          |     |        |        |
| UK                                                                   | 45 | .56      | .50 | -.598  | .551   |
| Taiwan                                                               | 37 | .62      | .49 |        |        |
| Increase Staff Communication and Cooperation                         |    |          |     |        |        |
| UK                                                                   | 45 | .60      | .50 | .293   | .770   |
| Taiwan                                                               | 37 | .57      | .50 |        |        |
| Take Full Advantage of Library Automation and Information Technology |    |          |     |        |        |
| UK                                                                   | 45 | .58      | .50 | -2.035 | .045*  |
| Taiwan                                                               | 37 | .78      | .42 |        |        |
| Other                                                                |    |          |     |        |        |
| UK                                                                   | 45 | .24      | .43 | 3.097  | .003** |
| Taiwan                                                               | 37 | 2.70E-02 | .16 |        |        |

\*: Significant at the 0.05 level.

\*\*: Significant at the 0.01 level.

Table 6.21 The Difference in Goals of Library Reorganisation by Individual Items between UK University Libraries and Taiwan University Libraries from the Follow-Up Survey

| (Individual Item)<br>Country                     | <u>N</u> | <u>M</u> | <u>SD</u> | <u>t</u> | <u>p</u> |
|--------------------------------------------------|----------|----------|-----------|----------|----------|
| Save Management Costs                            |          |          |           |          |          |
| UK                                               | 17       | .2941    | .4697     | .651     | .520     |
| Taiwan                                           | 20       | .2000    | .4104     |          |          |
| Provided New Services                            |          |          |           |          |          |
| UK                                               | 17       | .5882    | .5073     | -1.380   | .178     |
| Taiwan                                           | 20       | .8000    | .4104     |          |          |
| Better Utilization of Human Resources            |          |          |           |          |          |
| UK                                               | 17       | .8824    | .3321     | 1.035    | .308     |
| Taiwan                                           | 20       | .7500    | .4443     |          |          |
| Increased Production                             |          |          |           |          |          |
| UK                                               | 17       | .2353    | .4372     | -1.378   | .177     |
| Taiwan                                           | 20       | .4500    | .5104     |          |          |
| Pursued a More Flexible Organisational Structure |          |          |           |          |          |
| UK                                               | 17       | .7059    | .4697     | -.942    | .353     |
| Taiwan                                           | 20       | 1.2500   | 2.3368    |          |          |
| Increase Staff Job Satisfaction                  |          |          |           |          |          |
| UK                                               | 17       | .3529    | .4926     | -1.189   | .242     |
| Taiwan                                           | 20       | .5500    | .5104     |          |          |
| Increase Staff Communication and Cooperation     |          |          |           |          |          |
| UK                                               | 17       | .6471    | .4926     | -.018    | .986     |
| Taiwan                                           | 20       | .6500    | .4894     |          |          |
| Take Full Advantage of ICTs                      |          |          |           |          |          |
| UK                                               | 17       | .4706    | .5145     | -.470    | .641     |
| Taiwan                                           | 20       | .5500    | .5104     |          |          |
| Other                                            |          |          |           |          |          |
| UK                                               | 17       | .3529    | .4926     | 2.339    | .029*    |
| Taiwan                                           | 20       | 5.00E-02 | .2236     |          |          |

\*: Significant at the 0.05 level.



## 6.7 Findings: Results of Library Reorganisation

The seventh research problem was to determine the difference in results of library reorganisation within UK and Taiwan universities.

Hypothesis 12: There was no significant difference in the results of library reorganisation between UK and Taiwan universities.

The results of library reorganisation for this research referred to the benefits (advantages) and disadvantages for the libraries and the library staff after organisational change.

As far as the benefits of reorganisation concerned, unrelated t-test (Tables 6.22 and 6.23) revealed that there was no significant difference in the two countries. The largest advantage resulting from organisational change was that services had been improved or new services were provided through reorganisation. The other advantages included: the organisational structure became more flexible, the human resources/equipment/facilities had been effectively used, staff communication and cooperation was improved, and productivity/efficiency was increased.

As far as the disadvantages of reorganisation concerned, unrelated t-test (Tables 6.22 and 6.23) showed there was significant difference with respect to 'staff resistance', 'complex subordinate/supervisor reporting structures', 'maintenance problems on computers or other equipment', 'boundary disputes between services', and 'staff training and development' in the two countries. Therefore, the hypothesis 12 cannot be supported. The mean scores of 'staff resistance' and 'complex subordinate/supervisor reporting structures' of libraries from UK universities were significantly higher than those of libraries in Taiwan universities. The reason of higher percentage of 'staff resistance' in the UK respondents than that in Taiwan maybe related to the method of reorganisation (functions or departments/units eliminated) adopted by UK respondents. This kind of method unavoidably involved in displacement or reassignment of library staff. If this is the case, library staff will be anxious or nervous towards change. Some staff members may not want to be reassigned and are resistant to change. Such disadvantage was mentioned by less respondents in Taiwan universities. Most libraries in Taiwan universities did not adopt this kind method to undergo reorganisation. Pearson Correlation Coefficient in both countries revealed no positive linear relationship between organisational structure and the result of 'complex subordinate/supervisor reporting structures'. Therefore, the factors that resulted in the higher complex reporting structures need further study. The mean scores of 'maintenance problems on computers or other equipment', 'boundary disputes between services', and 'staff training and development' of libraries from

Taiwan universities were significantly higher than those of libraries in UK universities. Taiwan universities indicated a significant higher percentage in the goal of 'taking full advantages of library automation and information technology' than that of UK. They simultaneously encountered more problems on the maintenance of computer and other equipment.

Administrative convergence of libraries and computer centres has been a hot topic in Taiwan for a decade. The finding suggested that the percentage of convergence increased with time. It showed libraries and computer centres have greatly improved their cooperative relationship in supporting teaching and learning. Nevertheless, 'boundary disputes between two services' was still a difficult issue in the course of reorganisation. In one hand, it is because of different ethos and tradition (i.e. the administrative position of the library is much higher than that of the computer centre in the university campus). On the other hand, most of the library directors preferred a cooperative partnership between libraries and computer centres to their administrative convergence (Hu 1997).

'Staff training and development' was another important issue for library administrators in Taiwan universities. Less than half (40%) university libraries in Taiwan had such plan. A well-planned staff training and development project is necessary during the process of change.

Table 6.22 The Difference in Results of Library Reorganisation by Individual Items between UK University Libraries and Taiwan University Libraries from the Initial Survey

| (Individual Item)<br>Country         | N  | M   | SD  | t      | p    |
|--------------------------------------|----|-----|-----|--------|------|
| Shifting of Responsibilities         |    |     |     |        |      |
| UK                                   | 42 | .67 | .48 | -1.164 | .248 |
| Taiwan                               | 37 | .78 | .42 |        |      |
| Increase Productivity and Efficiency |    |     |     |        |      |
| UK                                   | 42 | .64 | .48 | 1.645  | .104 |
| Taiwan                               | 37 | .46 | .51 |        |      |
| Cost Reduction                       |    |     |     |        |      |
| UK                                   | 42 | .17 | .38 | .053   | .958 |
| Taiwan                               | 37 | .16 | .37 |        |      |
| Improve Services                     |    |     |     |        |      |
| UK                                   | 42 | .90 | .30 | 1.742  | .086 |
| Taiwan                               | 37 | .76 | .43 |        |      |
| Improve Communication                |    |     |     |        |      |
| UK                                   | 42 | .62 | .49 | .219   | .827 |
| Taiwan                               | 37 | .59 | .50 |        |      |

| (Individual Item)<br>Country                         | <u>N</u> | <u>M</u> | <u>SD</u> | <u>t</u> | <u>p</u> |
|------------------------------------------------------|----------|----------|-----------|----------|----------|
| Increase Staff Satisfaction                          |          |          |           |          |          |
| UK                                                   | 42       | .52      | .51       | 1.292    | .200     |
| Taiwan                                               | 37       | .38      | .49       |          |          |
| Increase Cooperation                                 |          |          |           |          |          |
| UK                                                   | 42       | .52      | .51       | .962     | .339     |
| Taiwan                                               | 0a       |          |           |          |          |
| More Flexible Organisational Structure               |          |          |           |          |          |
| UK                                                   | 42       | .60      | .50       | .962     | .339     |
| Taiwan                                               | 37       | .49      | .51       |          |          |
| Staff Resistance                                     |          |          |           |          |          |
| UK                                                   | 41       | .27      | .45       | 2.241    | .028*    |
| Taiwan                                               | 37       | 8.11E-02 | .28       |          |          |
| Produces Staff Stress                                |          |          |           |          |          |
| UK                                                   | 41       | .37      | .49       | 1.174    | .244     |
| Taiwan                                               | 37       | .24      | .43       |          |          |
| Complex Subordinate/Supervisor Reporting Structures  |          |          |           |          |          |
| UK                                                   | 41       | .37      | .49       | 4.193    | .000**   |
| Taiwan                                               | 37       | 2.70E-02 | .16       |          |          |
| Inappropriate Furniture                              |          |          |           |          |          |
| UK                                                   | 41       | .12      | .33       | .189     | .851     |
| Taiwan                                               | 37       | .11      | .31       |          |          |
| Inadequate Equipment to Meet Job Demands             |          |          |           |          |          |
| UK                                                   | 41       | .17      | .38       | .100     | .921     |
| Taiwan                                               | 37       | .16      | .37       |          |          |
| Maintenance Problems on Computers or other Equipment |          |          |           |          |          |
| UK                                                   | 41       | 9.76E-02 | .30       | -2.233   | .029*    |
| Taiwan                                               | 37       | .30      | .46       |          |          |
| Other                                                |          |          |           |          |          |
| UK                                                   | 41       | 7.32E-02 | .26       | .340     | .735     |
| Taiwan                                               | 37       | 5.41E-02 | .23       |          |          |

a. t cannot be computed because at least one of the groups is empty

\*: Significant at the 0.05 level.

\*\*: Significant at the 0.01 level.

Table 6.23 The Difference in Results of Library Reorganisation by Individual Items between UK University Libraries and Taiwan University Libraries from the Follow-Up Survey

| (Individual Item)<br>Country              | N  | M         | SD     | t      | p    |
|-------------------------------------------|----|-----------|--------|--------|------|
| Provided New Services/Improved Services   |    |           |        |        |      |
| UK                                        | 15 | .8000     | .4140  | .073   | .942 |
| Taiwan                                    | 19 | .7895     | .4189  |        |      |
| Cost Reduction                            |    |           |        |        |      |
| UK                                        | 15 | .4000     | .5071  | 1.546  | .135 |
| Taiwan                                    | 19 | .1579     | .3746  |        |      |
| Increase Productivity and Efficiency      |    |           |        |        |      |
| UK                                        | 15 | .5333     | .5164  | -1.224 | .230 |
| Taiwan                                    | 19 | .7368     | .4524  |        |      |
| More Flexible Organisational Structure    |    |           |        |        |      |
| UK                                        | 15 | .6667     | .4880  | .809   | .424 |
| Taiwan                                    | 19 | .5263     | .5130  |        |      |
| Effective Use of Human Resources          |    |           |        |        |      |
| UK                                        | 15 | .8000     | .4140  | .073   | .942 |
| Taiwan                                    | 19 | .7895     | .4189  |        |      |
| Effective Use of Equipment and Facilities |    |           |        |        |      |
| UK                                        | 15 | .6667     | .4880  | .809   | .424 |
| Taiwan                                    | 19 | .5263     | .5130  |        |      |
| Improve Communication and Cooperation     |    |           |        |        |      |
| UK                                        | 15 | 1.5333    | 2.6421 | 1.714  | .096 |
| Taiwan                                    | 19 | .4737     | .5130  |        |      |
| Increase Staff Satisfaction               |    |           |        |        |      |
| UK                                        | 15 | 1.0667    | 2.7894 | .992   | .329 |
| Taiwan                                    | 19 | .4211     | .5073  |        |      |
| Promotion of Staff to a higher Level Post |    |           |        |        |      |
| UK                                        | 15 | .2667     | .4577  | .022   | .982 |
| Taiwan                                    | 19 | .2632     | .4524  |        |      |
| Different Mission/Strategies              |    |           |        |        |      |
| UK                                        | 13 | .1538     | .3755  | -.537  | .596 |
| Taiwan                                    | 17 | .2353     | .4372  |        |      |
| Different Organisational Structure        |    |           |        |        |      |
| UK                                        | 13 | 7.692E-02 | .2774  | -.776  | .444 |
| Taiwan                                    | 17 | .1765     | .3930  |        |      |
| Different Ethos (culture) of Organisation |    |           |        |        |      |
| UK                                        | 13 | .3077     | .4804  | .823   | .417 |
| Taiwan                                    | 17 | .1765     | .3930  |        |      |
| Boundary Disputes between Services        |    |           |        |        |      |

| (Individual Item)                                                    | <u>N</u> | <u>M</u> | <u>SD</u> | <u>t</u> | <u>p</u> |
|----------------------------------------------------------------------|----------|----------|-----------|----------|----------|
| Country                                                              |          |          |           |          |          |
| UK                                                                   | 13       | .4615    | .5189     | -2.097   | .048*    |
| Taiwan                                                               | 17       | .8235    | .3930     |          |          |
| Negotiation/Communication/Cooperation<br>Issues between Organisation |          |          |           |          |          |
| UK                                                                   | 13       | .2308    | .4385     | -1.046   | .305     |
| Taiwan                                                               | 17       | .4118    | .5073     |          |          |
| Resistance to Change                                                 |          |          |           |          |          |
| UK                                                                   | 13       | .6923    | .4804     | 2.279    | .031*    |
| Taiwan                                                               | 17       | .2941    | .4697     |          |          |
| The Status (Post Level) of Staff                                     |          |          |           |          |          |
| UK                                                                   | 13       | .2308    | .4385     | -.028    | .978     |
| Taiwan                                                               | 17       | .2353    | .4372     |          |          |
| Staff Training and Development                                       |          |          |           |          |          |
| UK                                                                   | 13       | .0000    | .0000     | -2.219   | .041*    |
| Taiwan                                                               | 17       | .2353    | .4372     |          |          |
| Financial Condition                                                  |          |          |           |          |          |
| UK                                                                   | 13       | .0000    | .0000a    |          |          |
| Taiwan                                                               | 17       | .0000    | .0000a    |          |          |
| Technology Issues                                                    |          |          |           |          |          |
| UK                                                                   | 13       | .0000    | .0000     | -1.461   | .163     |
| Taiwan                                                               | 17       | .1176    | .3321     |          |          |
| Geographic (Location) Issues                                         |          |          |           |          |          |
| UK                                                                   | 13       | .3077    | .4804     | .823     | .417     |
| Taiwan                                                               | 17       | .1765    | .3930     |          |          |
| Other                                                                |          |          |           |          |          |
| UK                                                                   | 13       | .1538    | .3755     | 1.477    | .165     |
| Taiwan                                                               | 17       | .0000    | .0000     |          |          |

a. t cannot be computed because the standard deviations of both groups are 0.

\*: Significant at the 0.05 level.

## 6.8 Findings: Staff Attitudes towards Library Reorganisation

The eighth research problem was to determine the difference in staff attitudes towards library reorganisation within UK and Taiwan universities.

Hypothesis 13: There was no significant difference in staff attitudes towards library reorganisation between UK and Taiwan universities.

This research problem was investigated only in the initial survey. Unrelated t-test (Table 6.24) revealed that there was a statistically significant difference in UK and Taiwan university libraries with respect to staff attitudes towards reorganisation. Therefore, the hypothesis 13 cannot be supported. The mean score of 'acceptance' attitude for libraries from UK universities was significantly higher than that of libraries in Taiwan universities and the mean score of 'unknown' attitude for libraries from Taiwan universities was significantly higher than that of libraries in UK universities. This indicated that staff attitudes towards change in UK university libraries was more positive than that in Taiwan's. Staff attitudes towards library reorganisation are the human side of the organisation. Several human factors may result in this significant difference, for example, the percentage of staff involvement in the change process, the programme of staff education and training programme when implementing organisational change, the feeling and sensitivities of reassigned staff, etc. The human factors of organisational change were not the focus of this study, therefore, it needs a further study to find out the reasons contributing the difference of staff attitudes towards change in the two countries.

Table 6.24 The Difference in Staff Attitudes towards Library Reorganisation by Individual Items between UK University Libraries and Taiwan University Libraries from the Initial Survey

| (Individual Item)<br>Country | N  | M        | SD  | t     | p     |
|------------------------------|----|----------|-----|-------|-------|
| Acceptance                   |    |          |     |       |       |
| UK                           | 45 | .96      | .21 | 2.314 | .025* |
| Taiwan                       | 36 | .78      | .42 |       |       |
| Objection                    |    |          |     |       |       |
| UK                           | 45 | .27      | .45 | 1.825 | .072  |
| Taiwan                       | 36 | .11      | .32 |       |       |
| Unknown                      |    |          |     |       |       |
| UK                           | 45 | 2.22E-02 | .15 |       |       |

| (Individual Item)<br>Country | <u>N</u> | <u>M</u> | <u>SD</u> | <u>t</u> | <u>p</u> |
|------------------------------|----------|----------|-----------|----------|----------|
| Taiwan                       | 36       | .22      | .42       | -2.714   | .010**   |

\*: Significant at the 0.05 level.

\*\*: Significant at the 0.01 level.

## 6.9 Summary

Results of testing the hypotheses are presented in this chapter. Of the thirteen hypotheses, some were supported in the library setting, nevertheless, others were not supported by the study. Some of the lessons learned in the course of reorganisation are also pointed out in this chapter. The findings lead to several interesting conclusions:

Library reorganisation occurred earlier in the UK than in Taiwan, but there was no significant difference between UK and Taiwan university libraries with respect to the extent of library reorganisation in both surveys. The extent of change decreased between the initial and follow-up surveys in the two countries, that is the decade around 1990 and the late 1990s. It suggested that most libraries had undergone organisational change in the earlier period, they did not make another change in such a short time.

The collection size in UK university libraries was larger than that of Taiwan's, most university libraries in Taiwan adopted centralised management style, libraries in Taiwan were almost all functionally-organised and libraries in the UK preferred combined functional/subject-based pattern. To test for a relationship between background of libraries and changes in organisational structure, although there was a significant difference in some background of libraries in the two countries, there was no clear positive correlation between them. It suggested that the extent of reorganisation will not be affected by the background factors of libraries.

The adoption of library automation and information technologies had similar or different impacts in the staffing patterns and working patterns in the two countries. For example, the survey suggested that the demand for professional staff in the two countries was significantly different. Libraries in Taiwan indicated an increased demand for professional staff. But the demand for support staff was similar, both countries indicated an increase in the demand for support staff. Because it was difficult for libraries in Taiwan to increase staff number, they tended to reassign staff responsibilities to effectively utilise the human resources. Most libraries in the UK had undergone role changes in professional and support staff. Many libraries in both countries had

produced new positions and revised workflow and job description, but few libraries indicated providing a more flexible working time after library automation.

Having inspected the reasons for change from different aspects (services, management, economic, socio-cultural, and technology aspects), the researcher found that 'services reasons' and 'management reasons' were ranked as the top two major reasons in the two countries in both surveys. In the UK, socio-cultural reasons and economic reasons had similar importance in the initial survey and both ranked third, technological reason ranked fourth. However, the importance of economic reasons decreased in the follow-up survey and ranked fifth. In Taiwan, technological reasons ranked third and socio-cultural reasons ranked fourth in the initial survey. Economic reasons ranked fifth. The importance of economic reasons also decreased with time.

Varied methods of reorganisation were reported in the survey. Among them, 'creating new functions/departments/units' and 'combination of functions' were ranked as the top two approaches in both the UK and Taiwan in both surveys. More libraries from UK universities adopted the methods of 'functions or departments (units) eliminated' and 'departments (units) renamed' than that in Taiwan in the initial survey. Nevertheless, more libraries from Taiwan universities adopted the method of 'creating new functions/departments/units' than that in the UK in the follow up survey period. Taiwan's new 'University Law' was announced in 1994, and it provided universities more autonomy to redesign their structures. Academic libraries in Taiwan have taken this opportunity to produce new departments responding to their real demands.

There were some similarities in the aspects considered before library reorganisation in the two countries. For example, respondent libraries in both countries reported considering 'the extent of managerial support', 'staff interest in the change', and 'staff resistance'. Universities in the UK tended to consider their 'parent institutional climate' and 'staff abilities', and this was significantly different from those of Taiwan. Respondent libraries in Taiwan reported that their major concern was 'the climate of the library', and this was also significantly different from that of UK. But they reported an increase in the influences of 'parent institution' later on.

The goals of library reorganisation in the two countries were mostly similar in both surveys. More respondent libraries in Taiwan from the initial survey reported a higher percentage in the goal of 'take full advantages of library automation and IT' than that of libraries in the UK, and this difference was statistically significant. Nevertheless, the importance for this goal decreased with time in both countries.

When the results of reorganisation were compared between two countries, UK universities had a significant higher percentage with respect to the result of 'complex subordinate/supervisor reporting structures' than that in Taiwan. As expected, the more complicated the organisational



structures are, the more complex the reporting structures are. The findings revealed that there was a significant difference in organisational structure between UK libraries and Taiwan libraries. Were the organisational structures of libraries in the UK generally more versatile and complex than those in Taiwan? This question will be discussed in chapter seven where the organisational structures in both countries are compared with each other.

Although staff attitudes towards change in UK university libraries were mostly positive and more positive than that in Taiwan, nevertheless, positive staff attitudes towards change cannot relieve staff anxiety and nervousness. The findings showed that UK libraries had a significantly higher percentage of 'staff resistance' during reorganisation than that in Taiwan in both surveys. It strongly suggested that staff issues in the process of reorganisation cannot be ignored and need to be carefully considered. To resolve the problem of 'staff resistance', university libraries in the UK had greatly increased the opportunities of staff involvement in the change process and provided more staff education and training programme.

## Chapter 7 Characteristics of Organisational Structure Change

This chapter presents the characteristics of organisational structure charts of libraries before and after reorganisation at some UK and Taiwan universities in both the initial survey period and the follow-up survey period.

For comparison, the researcher asked the respondents in both the UK and Taiwan to enclose one copy of their organisation chart before and after reorganisation if available. In the study of library organisation, the organisation chart is usually regarded as the essential element; it is helpful in elucidating relationships, responsibilities, lines of communication, etc. Its primary function is to show the relationship of one organisational unit to another through lines of authority. Every model is unique and keeping with the goals and objects of each library. It will develop a structure that is responsive to the unique circumstances of its parent institution. Organisational charts were presented with some modifications and consequently the institutions were not identified to respect confidentiality of individual library.

The limitations of interpreting the organisational structures need to be specified here since it is difficult to show the complexities and flexibilities of a service merely on the basis of its line management. The researcher cannot know the operational practicalities through the organisational charts. Information referenced to the organisational charts is assumed correct at the time it was supplied although these institutions will since have changed.

Three aspects were chosen by the researcher as the basis of discussion and comparison before and after reorganisation:

- Departmental structure
- Level of hierarchy (Number of Management Levels)
- Title of library managers, such as director, university librarian, head, etc.

Varied kinds of departmental structure can be found in library organisations, for example, functional structure (the departmentation of library is based on different functions: i. e. acquisitions, cataloguing, circulation, reference, etc.), academic subject/subject-based structure (library structure is organised by special subject: i.e. engineering library, business library, music library, etc.), and form of resources (the departments of library are divided by the format of materials which they are responsible for: i. e. maps, A-V material, microforms, electronic resources, etc.). Corral (2000) once indicated the importance of the design of an organisational structure, she said that 'the formal structure adopted can significantly affect an organisation's business and financial performance because of its impact on efficiency and effectiveness, in

particular on the quality of decision-making, ability to respond to changing circumstances, and the moral and motivation of individuals.'

The number of levels in the structure of the organisation is often referred to as the 'scalar chain' or 'chain of command' (Senior 1997). 'The level of hierarchy is counted as the level of command between the lowest (bottom) level of the structure, such as clerk at the Circulation desk, and the top level, such as director of libraries. There is a hierarchy of positions in libraries, i.e., the managerial structure of supervisors, departmental heads, division chiefs and directors or university librarian. The final authority of academic library is usually the director (university librarian)' (Tsay 1996). Therefore, hierarchical structure can be either tall or flat. In a *tall* structure, communication is slow; senior management control and influence is diluted; responsibilities at different levels are hard to clarify; ineffective co-operation, etc. *Flat* structure requires acceptance of individual responsibility and accountability. The shift from *tall* to *flat* structures and consequent reduction in management layers is one of the most widely-discussed changes in organisational design (Corrall 2000). Senior (1997) further emphasised that 'too many levels bring difficulties in understanding of objectives and communicating both up and down the hierarchy. The current desire in many organisations for flatter structures follows this principle.

## 7.1 UK Cases

In the initial survey, 15 UK respondents had enclosed a copy of present organisational chart (nine of them had provided charts both "before" and "after" reorganisation). In the follow-up survey, 11 UK respondents had enclosed a copy of present organisational chart (three of them had provided charts both 'before' and 'after' reorganisation). Since only two of respondents who provided organisational chart in the initial survey also provided an organisational chart in the follow-up survey, therefore, the researcher also selected those libraries which had chart either more representative or special for comparison. To preserve the universities' anonymity and for the convenient discussion, those libraries are identified as library A to library M.

### Library A

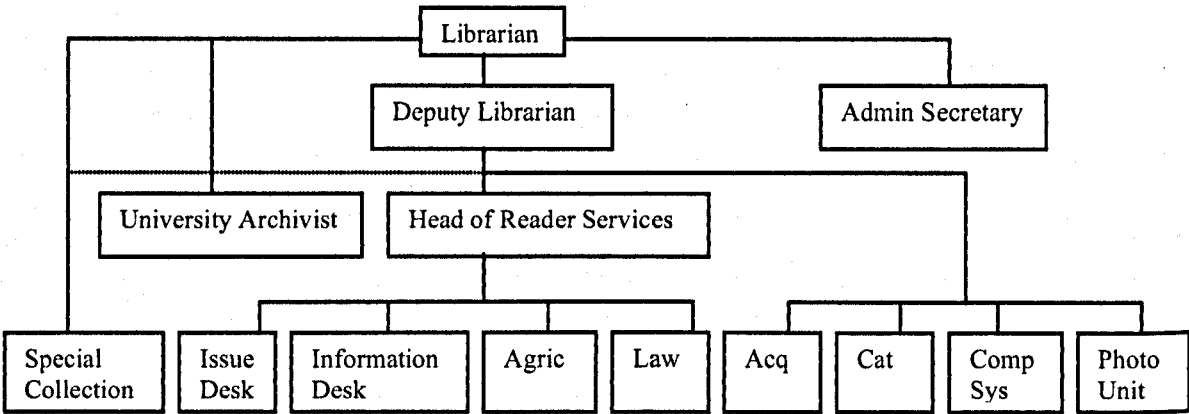
Library A had undergone reorganisation twice in the initial survey period (1985-1995). Before reorganisation (1987) (Fig. 7.1), library A had four management levels, the structure was hierarchical and basically organised on a combined functional/subject-based pattern. The names of departments were more traditional, for example, Special Collection, Reader Services.

After first reorganisation on 1992 (Fig. 7.2), the management level was reduced from four to three tiers, it flattened the structure. The structure of the library was close to team-based structure and more customer-oriented. There were three service teams (Academic & Community Information Services; Management Services; Business & Professional Information Services/Public Services) which included different functions and services. Some functions had been combined, for example, 'University Archivist' combined 'Special Collection' to become 'Special Collection & Archives' department. New departments were created, such as 'Learning Resources & Collection Management', and 'Database Development' departments. The position of 'Deputy Librarian' was eliminated and replaced by 'Associate Librarian' who was responsible for three service teams.

After second reorganisation on 1995 (Fig. 7.3), the management level was not changed, but the level of 'Management Services' was upgraded one tier (under University Librarian) to show the increased importance of the team. The structure was redesigned with two departments responsible for subject-based services (i.e. Humanities & Social Sciences; Science, Technology & Medicine) which were managed by Associate Librarian (one more Associate Librarian needed but was still vacant). New 'Management Services' was composed of more functions and services than the first reorganisation, for example, 'Academic Information Services', and 'Site Librarian' were included in this team.

Even organisational change had taken place, the title of 'Librarian' was only changed to 'University Librarian'.

Figure 7.1 Organisational Structure of Library A before Reorganisation at 1987



- \*Admin: Administration
- \*Acq: Acquisitions
- \*Cat: Cataloguing
- \*Agric: Agricultural

Figure 7.2 Organisational Structure of Library A after First Reorganisation at 1992

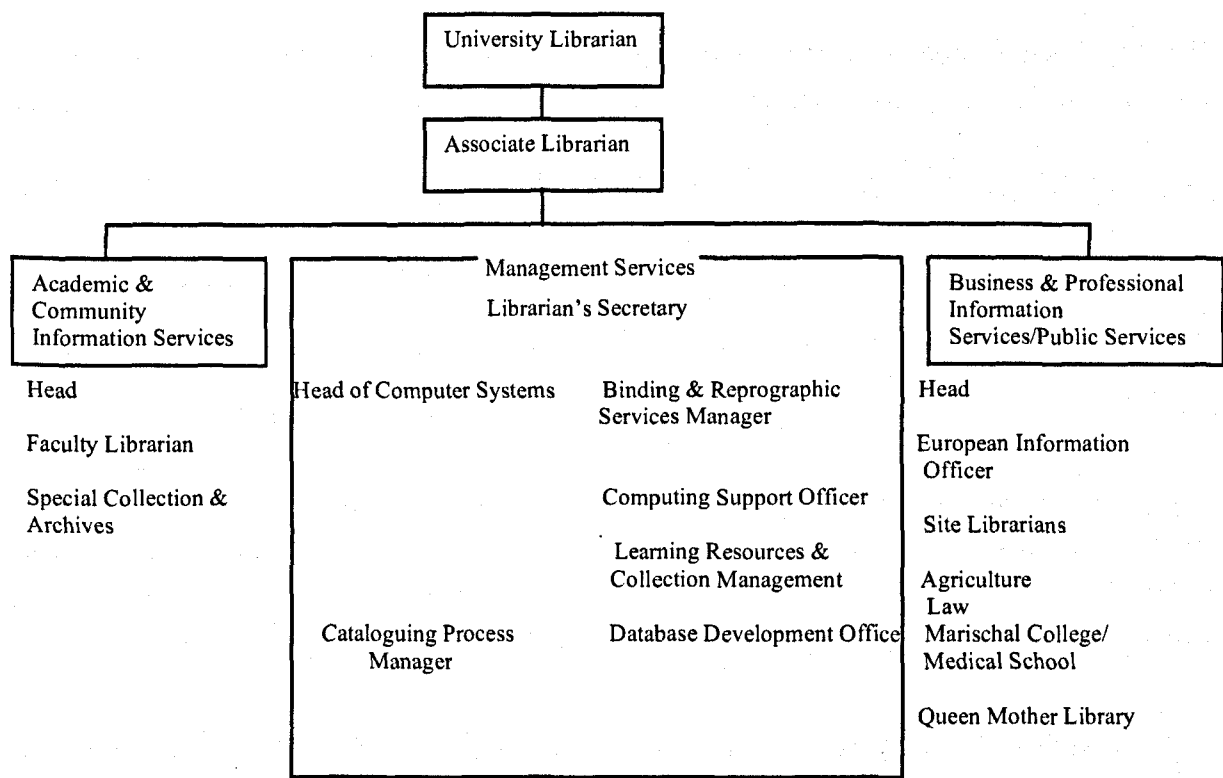
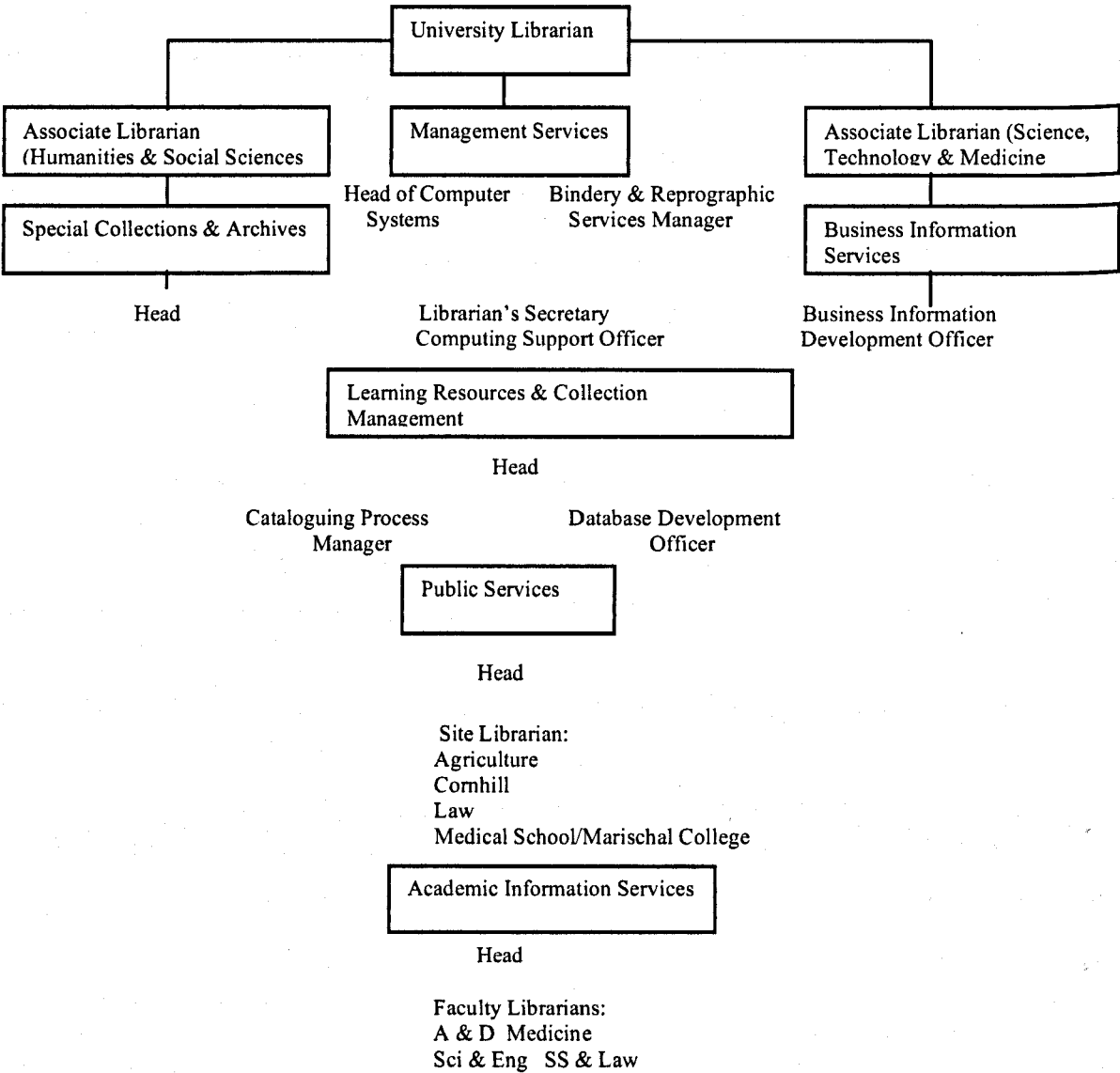


Figure 7.3 Organisational Structure of Library A after Second Reorganisation at 1995



## **Library B**

In the initial survey period, library B had four management levels before reorganisation (Fig. 7.4), and reduced one tier after reorganisation (Fig. 7.5). It indicated the structure became flatter. Four units were converged to create Information Services. The reorganisation involved change in managerial structure and operational convergence. Activities of the University Library, the Academic Computing Service, the Television and Film Services, and the Centre for Computer Based Learning were reallocated to five divisions of Learning and Research Support, Public Services, Collection Management, Information and Computing Support, and Planning and Administration. Perhaps the most significant element of this initiative is the aim to produce a consistent public service approach to customers across activities formally based in professionally or technically orientated groupings. After convergence, 'Special Collection' was moved from 'Research Libraries' department to the 'Collection Management' department. 'Public Services' existed pre-convergence, which underwent some reorganisation, with two new teams being created alongside the long established Lending Services team. The new teams were 'Enquiry Services' and 'Marketing & Publicity'. Three new divisions (Planning and Administration, Learning & Research Support; Information & Computing Support) were set up in response to particular demands being made on University.

The leader of the new organisation became dually titled as 'Librarian and Director of Information Services' after convergence.

Figure 7.4 Organisational Structure of Library B before Reorganisation

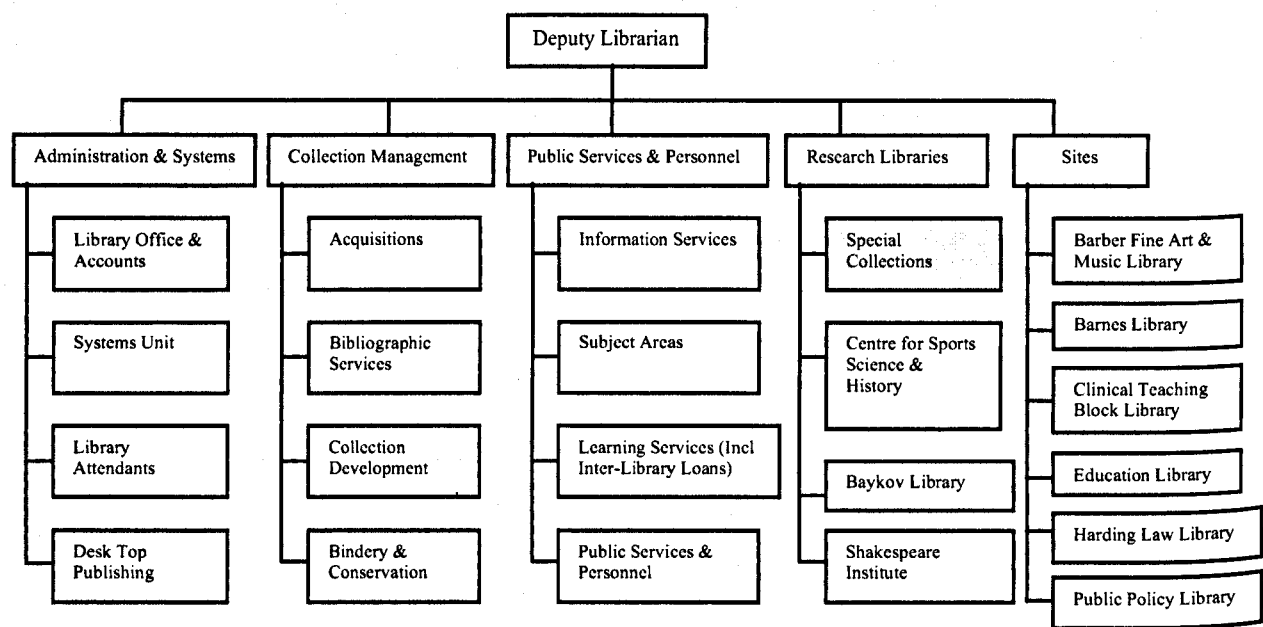
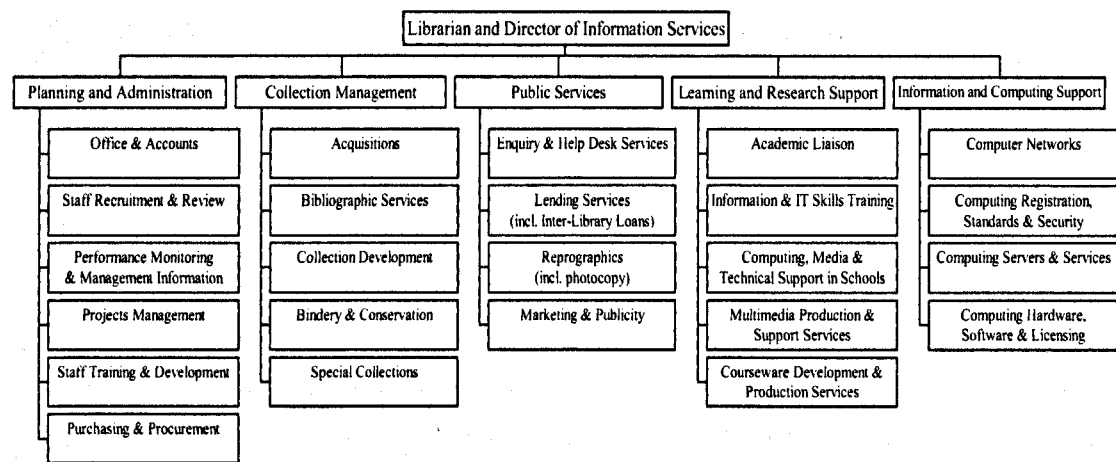


Figure 7.5 Organisational Structure of Library B after Reorganisation



Library C

In the follow-up survey period, library C had four management tiers before reorganisation (Fig. 7.6), and had three management tiers after merging completely with 'Computing Services' (Fig. 7.7). The tier which was reduced comprised two 'Deputy Librarians' (one was responsible for 'Academic support', the other was responsible for 'Technical Services'). The new structure became flatter with seven functional units. The 'Academic Support' division was divided into two



services units: ‘Public Services’, and ‘Client Services’. ‘Public Services’ were responsible for 13 libraries’ services and ‘Help desks’ were under this division. ‘Client Services’ were in charge of user training and liaison with academic departments. ‘Technical Services’ division was renamed ‘Information Management’ and composed of most of former departments (the ‘Systems’ department was exceptional, which was merged to new unit named ‘Information Systems & Computing’). ‘Planning & Administration’ department combined with ‘Staff Development’ department to become a new unit ‘Planning & Administration Support’. Additionally, the ‘Institute for Learning & Research Technology’ was a newly created unit in charge of learning technology support, Internet development, and Web based national services. The new organisation was the result of library converging with campus ‘Computing Services’. The key feature of the new staffing structure was better ‘customer focus’, better ‘user training’, better ‘liaison with academic departments’, and technological support.

The leader of the new organisation became dually titled as ‘Director of Information Services & University Librarian’ after the convergence.

Figure 7.6 Organisational Structure of Library C before Reorganisation (from January 1999)

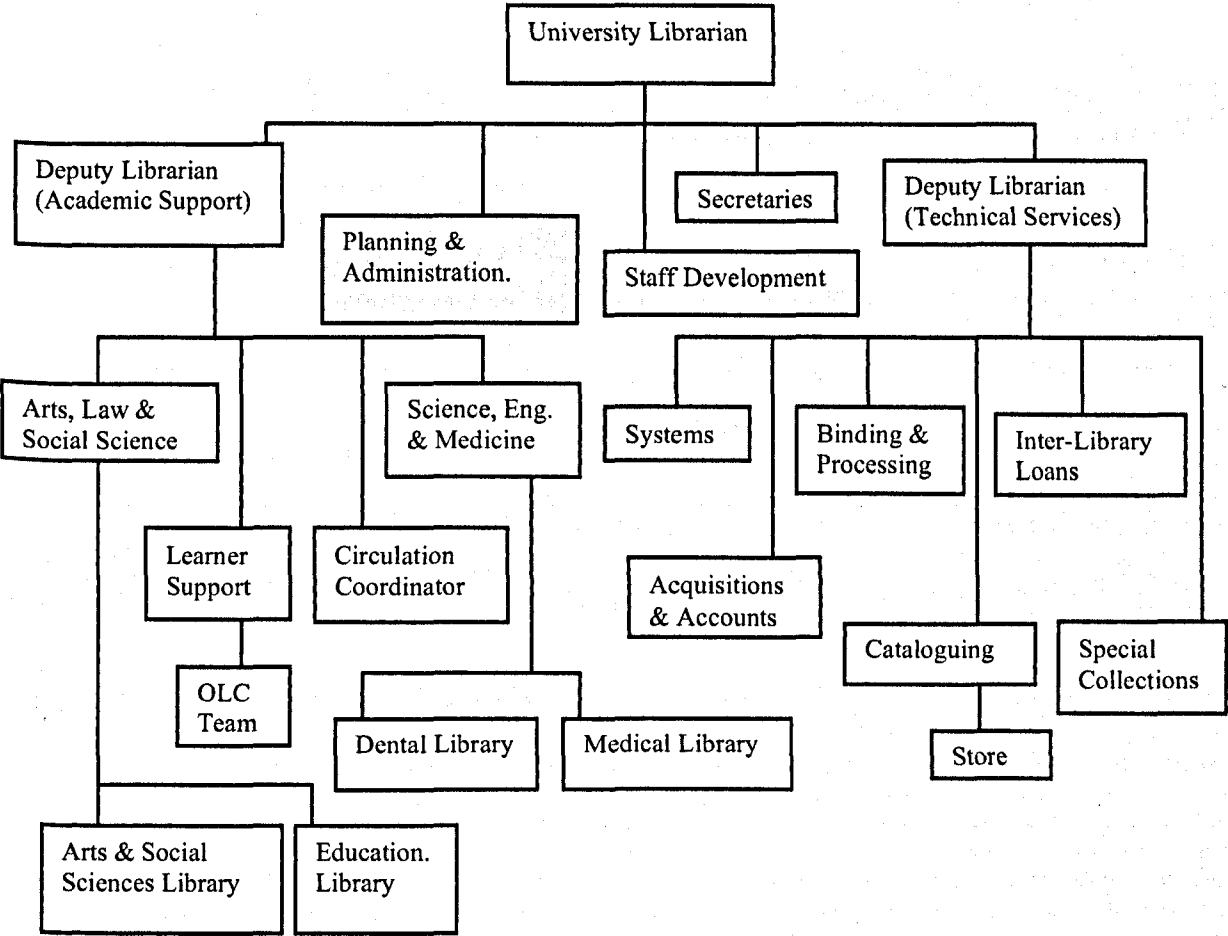
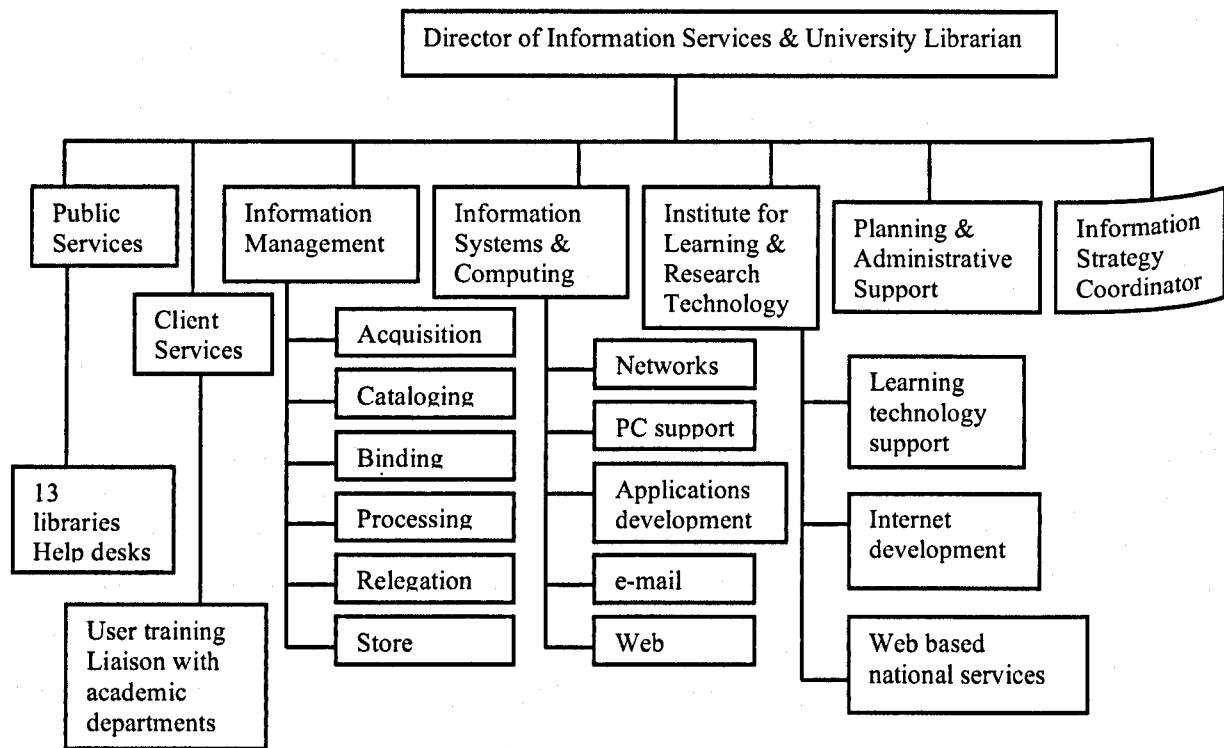


Figure 7.7 Organisational Structure of Library C after Reorganisation (from August 2000)



**Library D**

In the initial survey period, library D was a hierarchical structure and had four management tiers before reorganisation (Fig. 7.8), but became a ‘teamwork’ and ‘group’ structure after reorganisation (Fig. 7.9). The diagrammatic representation of the organisation was shown in Fig. 7.9, although the number of circles was not intended to match the actual number of groups and teams. The new structure was more user-oriented and composed of ‘Librarian’s Group’, ‘Planning Groups and other Working Parties’, ‘Library Teams’, and ‘Library Operations Committee’.

The title of ‘Librarian’ did not change after reorganisation.

Figure 7.8 Organisational Structure of Library D before Reorganisation (Structure from 1992 to May 1995)

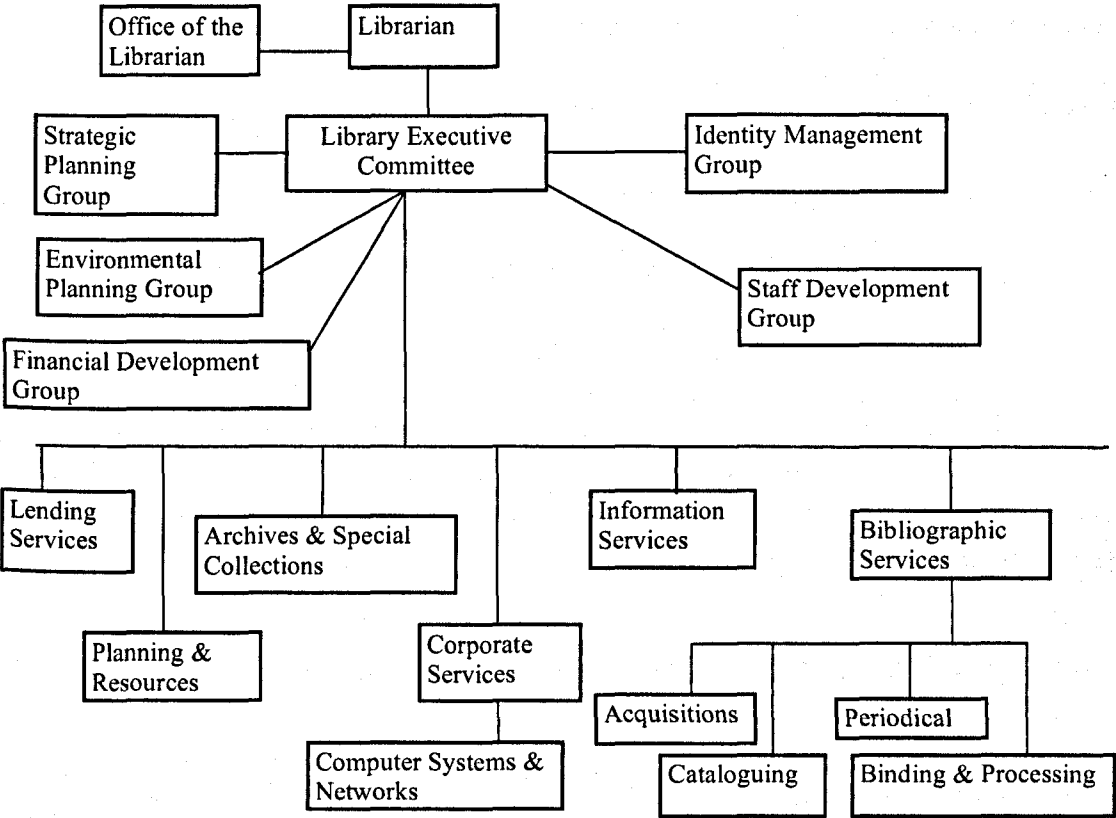
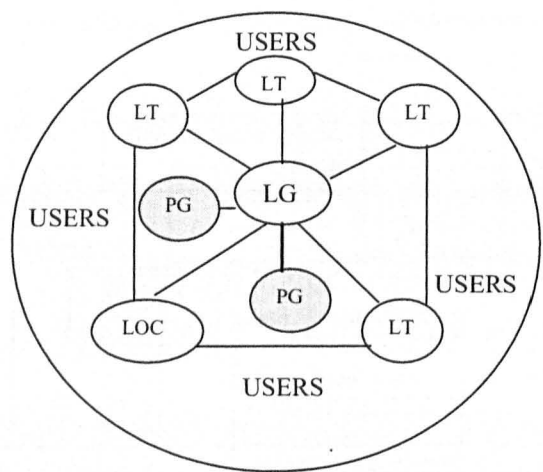


Figure 7.9 Organisational Structure of Library D after Reorganisation (from May 1995)—Created Teams and Groups



- LG Librarian's Group
- PG Planning Groups and other Working Parties
- LT Library Teams
- LOC Library Operations Committee

**Library E**

The management level of library E was increased one tier after the first reorganisation (Figs. 7.10 and 7.11), but reduced one tier after second reorganisation (Fig. 7.12). The first reorganisation created a new division of 'Learning Services' which brought together staff from the library with their 'user services' colleagues in the Division of Computer Services. Senior managers within computer services, library services already reported to the Provost. The form of the new structure remained hierarchical. Nevertheless, the structure had evolved significantly from traditional to innovative. The massive changes of structure were the result of uniting the Learning Resource Centre (LRC) in campus in the first reorganisation between 1990 and 1995. Both 'Learning Resource Centre' and 'Technical Services' were under the supervision of 'Head of Learning Services' after the first reorganisation. Several special features included 'Inter-Library Loans' was moved around to 'Technical Services'. 'Library' was under 'Learning Resource Centre'. Two units 'Operations' and 'Subject Teams' were then under 'Library'.

The second reorganisation was even more significant. The new structure had put more emphasis on the 'learning' and 'information' services, and therefore created several LRCs

(Learning Resource Centres). Each LRC was an integrated service centre and usually divided into several sub-units, for example, 'Operations', 'Subject Teams', 'Computing Support', and 'Audio Visual Support'. Operation team and a series of subject teams contained both computing and information specialists. The subject teams correspond to subject floors in the building. The new staff structure focused on the subject affiliation of the user, not the professional affiliation of the service provider. More traditional 'library' functions (i.e. Acquisitions, Cataloguing, Document Supply) were then under 'Technical Services Unit'.

The title of library manager was also changed after reorganisation, from 'Director of Library Services' to 'Head of Learning Services' (first reorganisation), to 'Director of Learning & Information Services' (second reorganisation). The new title reflected the vision and services of the new organisation.

Figure 7.10 Organisational Structure of Library E before Reorganisation at 1990

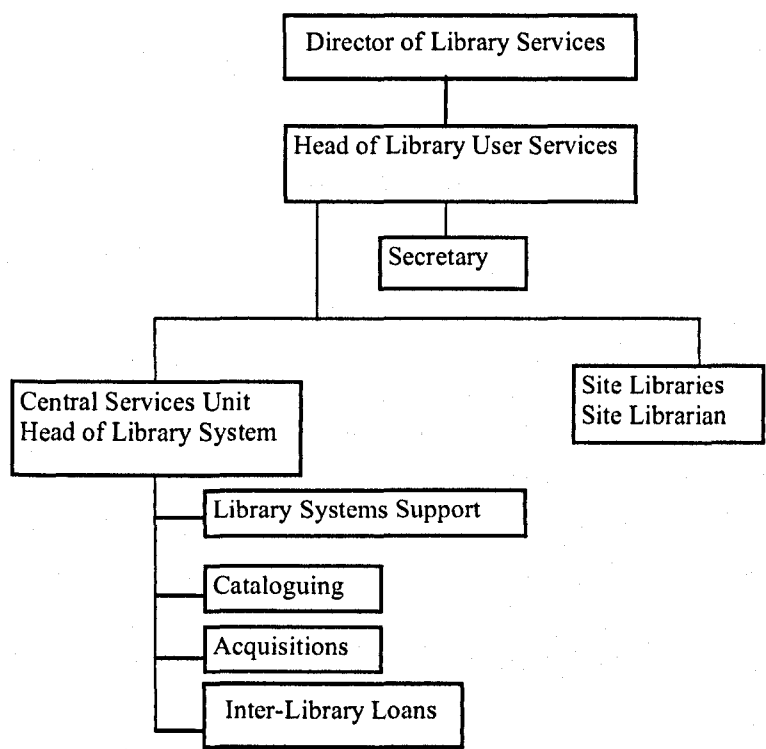


Figure 7.11 Organisational Structure of Library E after First Reorganisation at November 1995

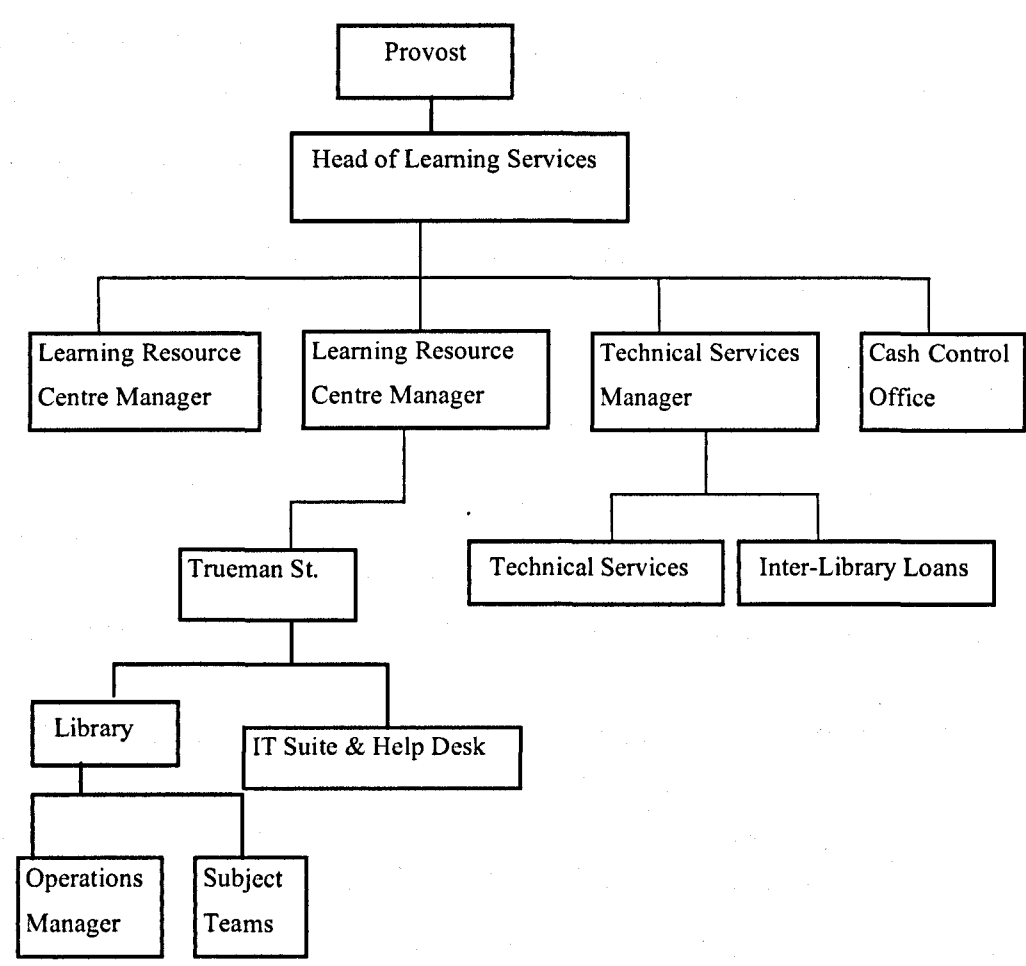
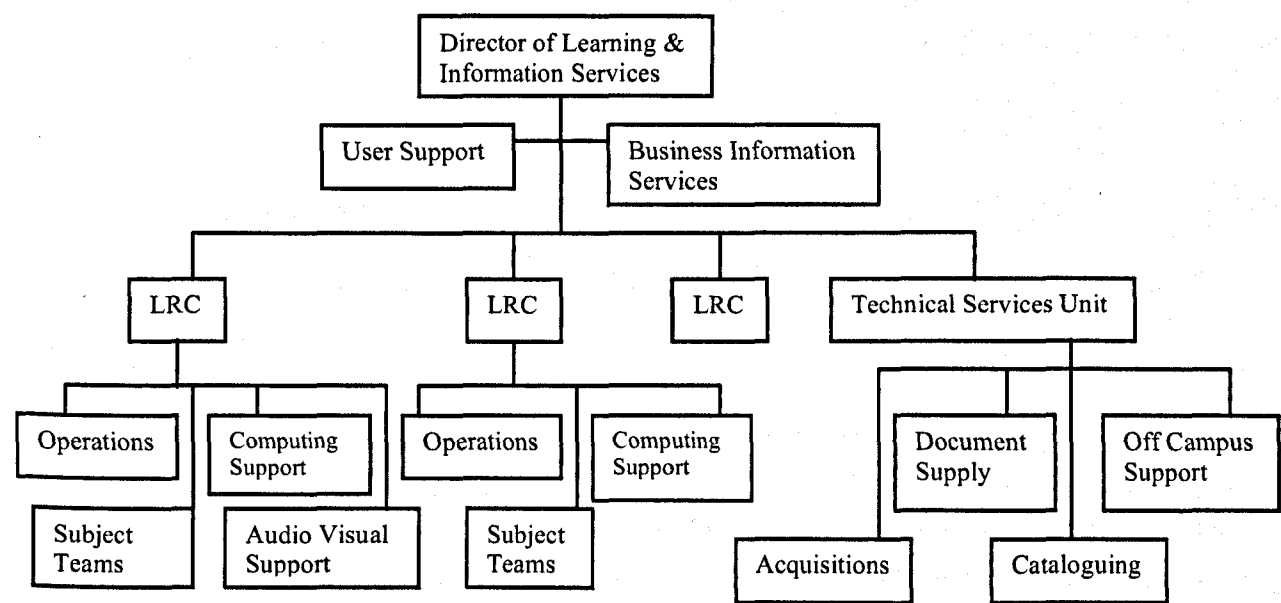


Figure 7.12 Organisational Structure of Library E after Second Reorganisation at 1996



**Library F**

In the initial survey, library F had five management levels (Fig. 7.13), but these were reduced one tier after reorganisation (the position of 'Deputy head of library service' was removed) (Fig. 7.14). The hierarchical structure did not change with time except for the adjustment of function and position. The old structure was divided into two traditional divisions: Technical Services, and Readers Services. The new structure had renamed the divisions and moved around functions. The departments of 'Acquisitions', and 'Cataloguing' which used to be under 'Technical Services' division, were now under 'Bibliographical Services' which was one of the departments in 'Systems and Site Services'. 'Site services' were also moved around to be under this division. 'Readers Services' division was renamed to be 'Academic and Information Services' and all subject librarians were in this division. It was evident that this division was mainly responsible for providing subject services. Before reorganisation, the post holder of 'Site Librarian' carried certain subject librarian's responsibilities in addition to their main area of activity. One of the reasons for undergoing organisational change was to separate the responsibility of 'Site Librarian' from that of 'Subject Librarian'.

The title of library manager (Head of Library Services) was not changed after reorganisation.

Figure 7.13 Organisational Structure of Library F before Reorganisation

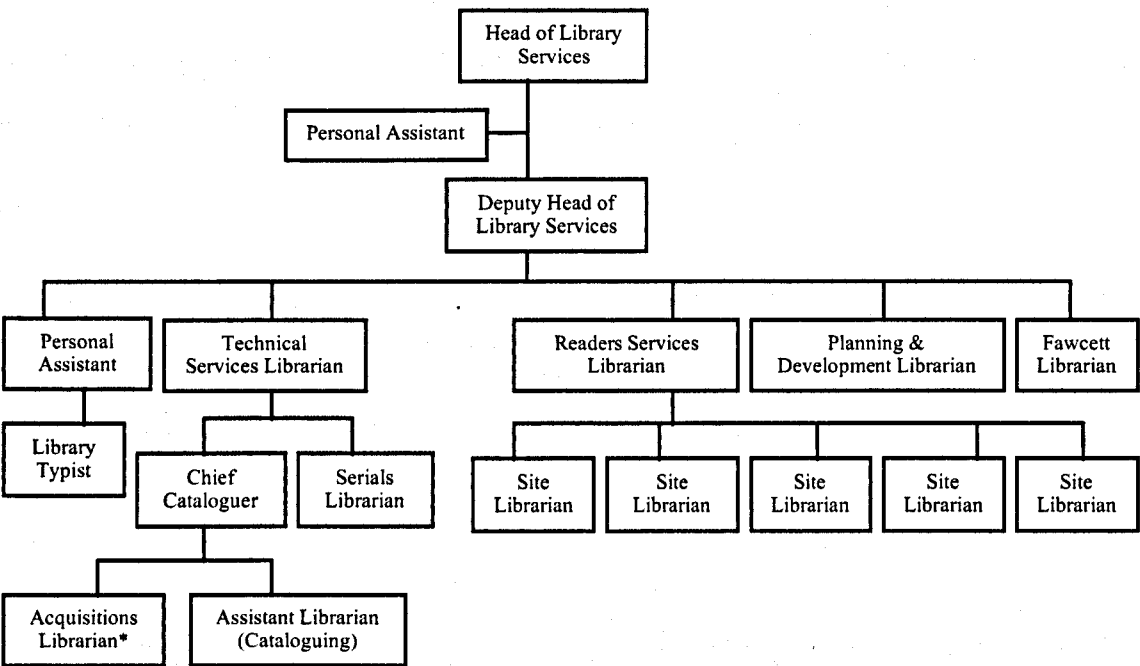
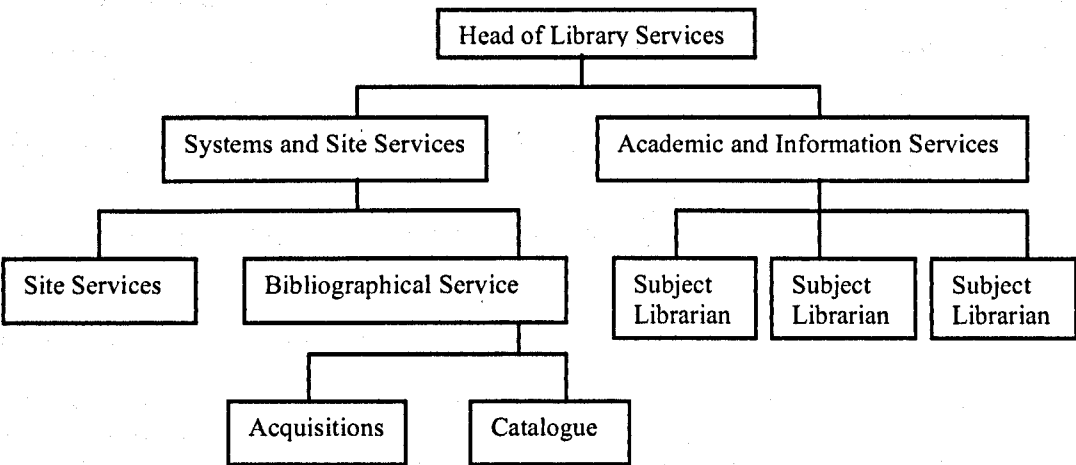


Figure 7.14 Organisational Structure of Library F after Reorganisation





**Library G**

Library G reduced one management level (positions of Sub-Librarian were deleted) after reorganisaiton. After reorganisation, library G had created ‘Support Services’, ‘Reference Services’, and ‘School Teams’, but combined ‘Acquisitions’, ‘Cataloguing’, and ‘Serials’ functions. ‘Reader Services’ and ‘Information’ were removed and therefore ‘Issue Desk’ and ‘Inter-Library Loans’ were upgraded one tier in the new structure. ‘Inter-Library Loans’ became an independent departments. All the above changes indicated that ‘teamwork’ was adopted in the new organisation and the library became even more customer-oriented. Traditional functions seemed to be absorbed into the new functions and became less important.

The title of ‘University Librarian’ was changed to ‘Librarian’ after change.

Figure 7.15 Organisational Structure of Library G before Reorganisation at 1991

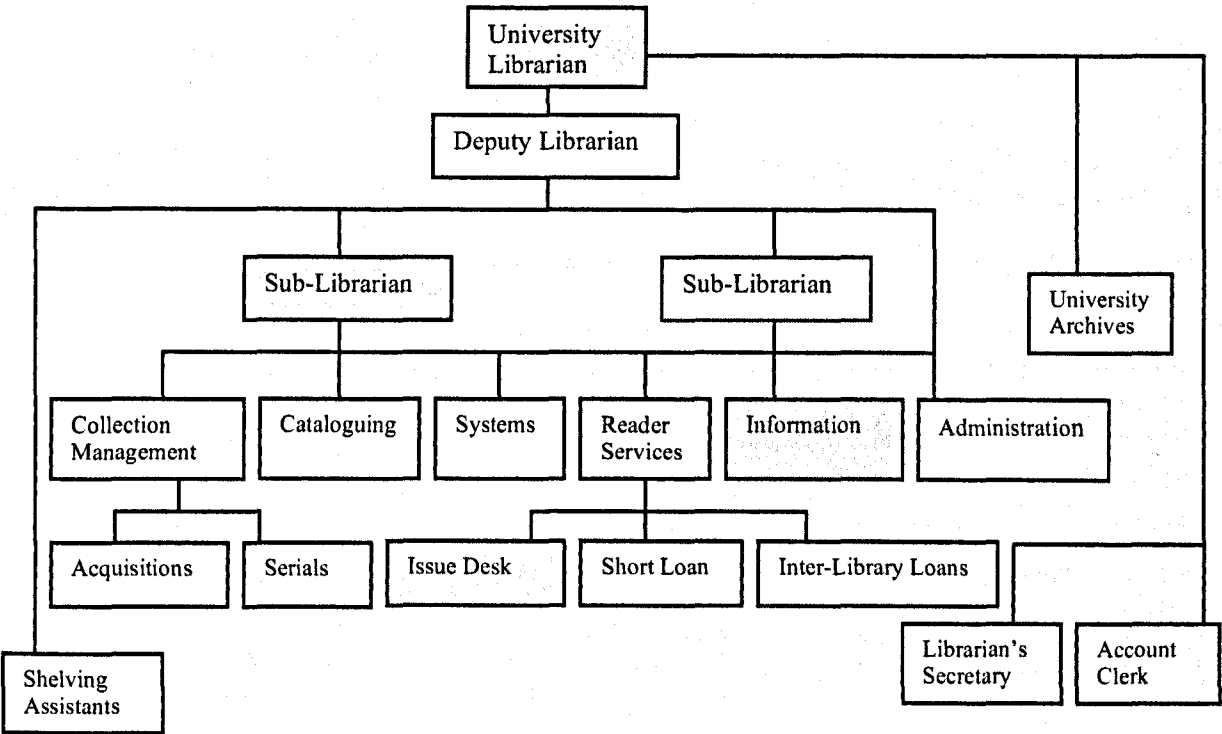
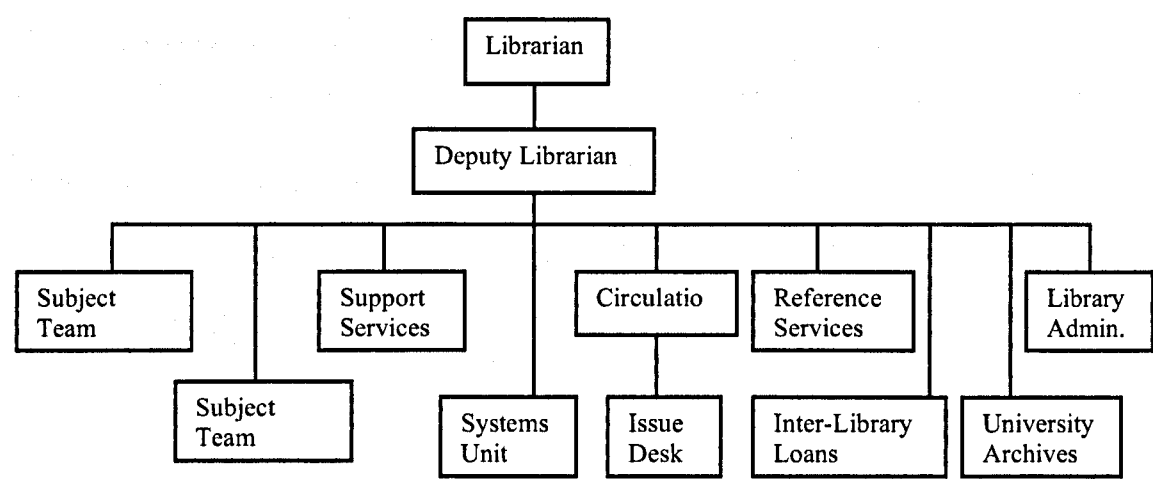


Figure 7.16 Organisational Structure of Library G after Reorganisation at 1995



Library H

In the initial survey, library H had undergone convergence with other services—integration of other Learning Resource Services (Computing Support, Language Centre, Media Services) because of ‘change in administration’. Therefore, the new structure had adopted a new name to reflect its new role; the new name was ‘Information & Learning Resource Services’ and composed of different departments and units (Fig. 7.17). The traditional library functions were under the department of ‘Learning Services’. In the follow-up survey, library H underwent another reorganisation in 1998 (Fig. 7.18). The second reorganisation had included another new Service unit—Learning Support, so the structure was adjusted again with some functions moved around. For example, ‘Systems’ used to be under ‘Learning Services’ in the first reorganisation and now was under ‘Academic Computing Support & A/V Services’. The new structure also focused on ‘teamwork’ with seven ‘Campus Teams’ to provide services in campus.

The title of library manager was changed to be ‘Head of Information & Learning Resource Services (ILRS) & University Librarian’ after the first reorganisation and remained after the second reorganisation.

Figure 7.17 Organisational Structure of Library H after first Reorganisation at 1995

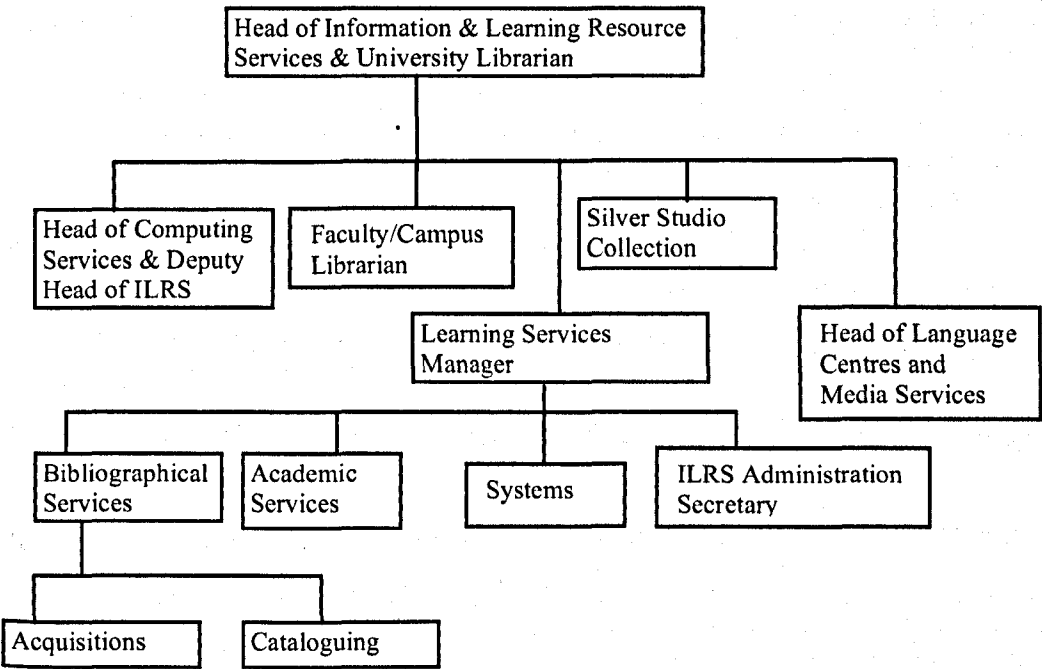
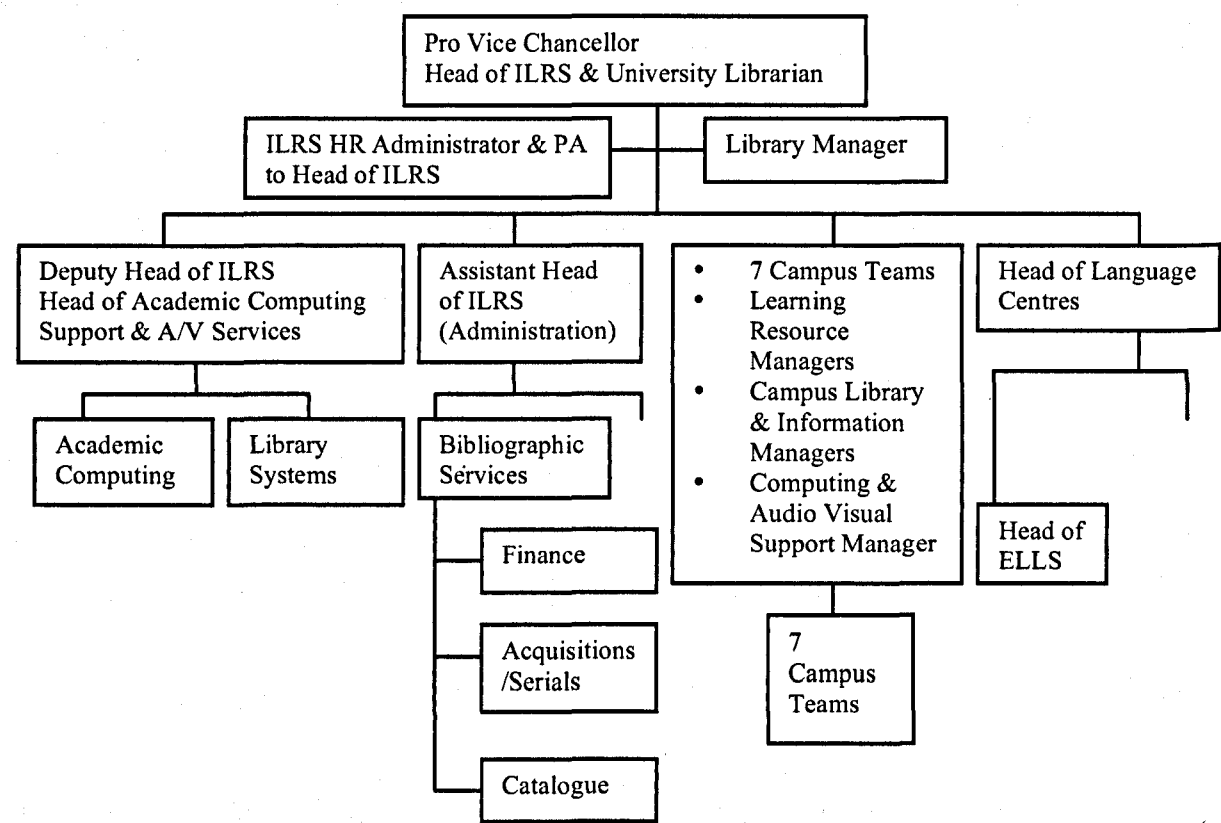


Figure 7.18 Organisational Structure of Library H after Second Reorganisation at 1998



## **Library I**

In responding to the change of the parent institution (recreated emphasis on customer focus, but also need for more efficient working, and the change was all in the context of library strategy), library I had conducted organisational change in 1999. Customer-oriented services had become the new paradigm of library services and reflected in the new organisation structure. The Library I had put the 'customers' on the top of the organisational chart to emphasize the importance of customer-based library services (Fig. 7.20). A characteristic was that Library I created 'Specialist' Information Assistants/Auxiliaries positions as interfaces between 'customers' and library units. That new position can enhance the communication between library customers and staff.

Library I had five management levels before reorganisation (Fig. 7.19), reduced one tier after reorganisation. The new structure has been flattened.

The title of library manager remained the same (Director of Learning Information Services) after reorganisation.

Figure 7.19 Organisational Structure of Library I before Reorganisation at 1999

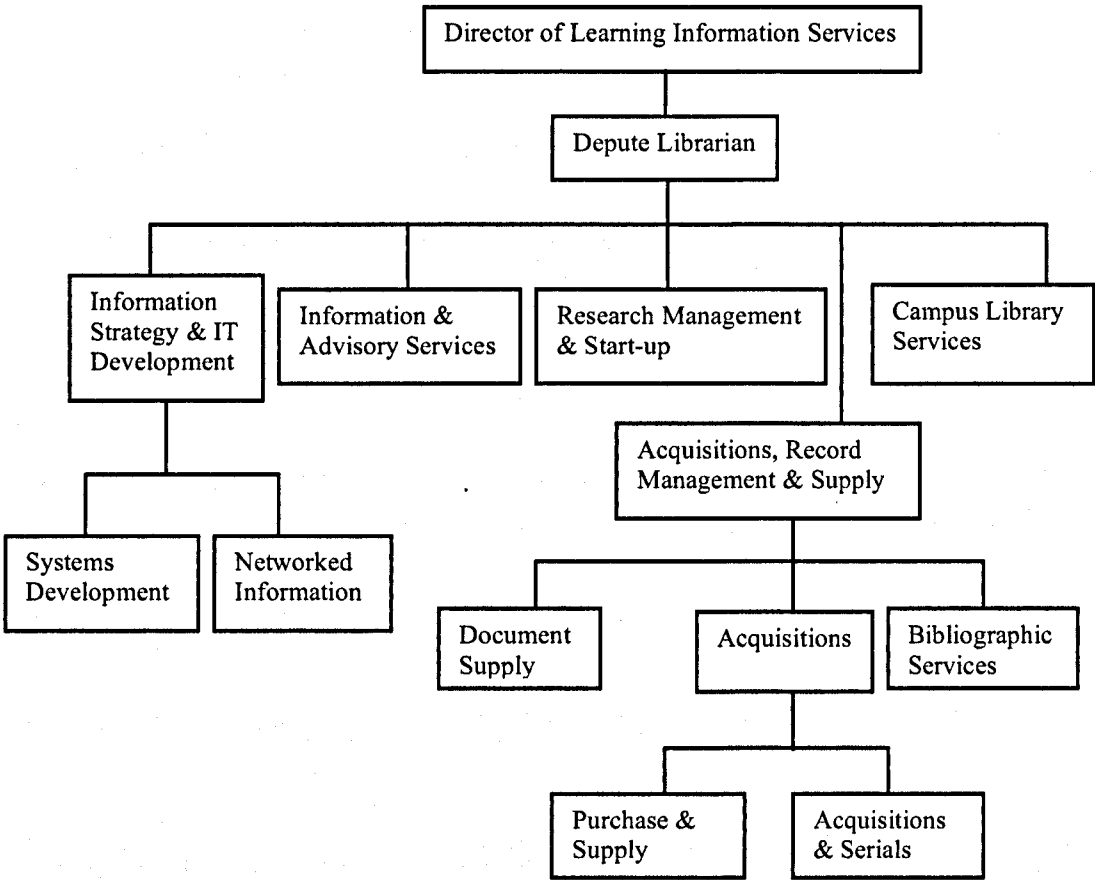
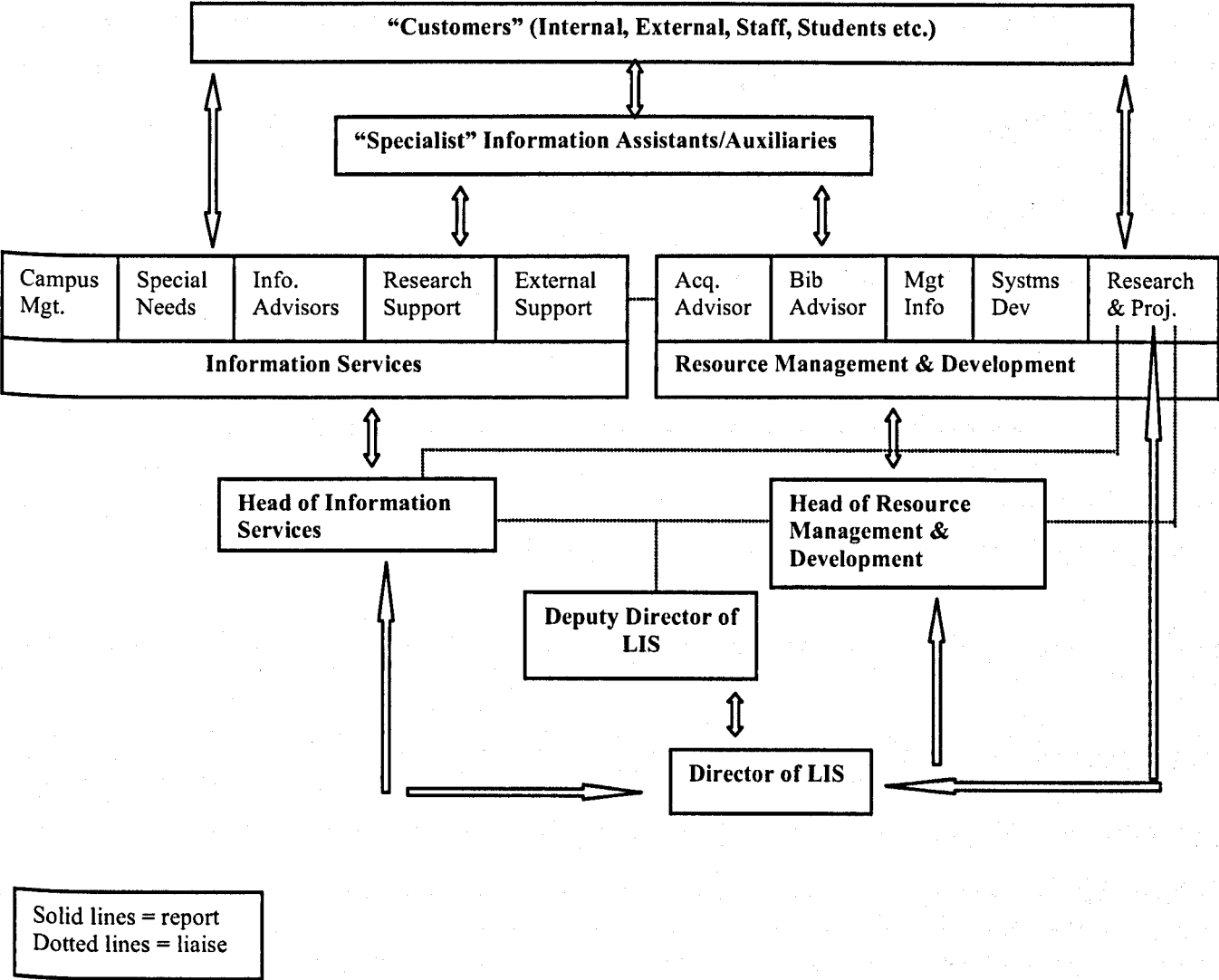


Figure 7.20 Organisational Structure of Library I after Reorganisation



**Library J**

Library J had two management levels before reorganisation (Fig. 7.21). It increased one management tier because of creating two ‘Associate Librarians’ to help supervise library operation and share the administration responsibilities of the University Librarian (Fig. 7.22). The old organisation was a combined functional/subject –based structure, but switched to be functional structure after reorganisation. Two divisions—Reader Services, and Technical Services were formed. Reorganisation involved combination of functions, i.e. ‘Acquisitions’, and ‘Cataloguing’ functions were combined and under the ‘Technical Services’. Four branch libraries were combined and under the ‘Reader Services’. The ‘Electronic Information Services’ was newly created. New organisation emphasized delegation of decision-making and responsibility and also the provision of new information related services’.

The name of library manager did not change after reorganisation.

Figure 7.21 Organisational Structure of Library J before Reorganisation

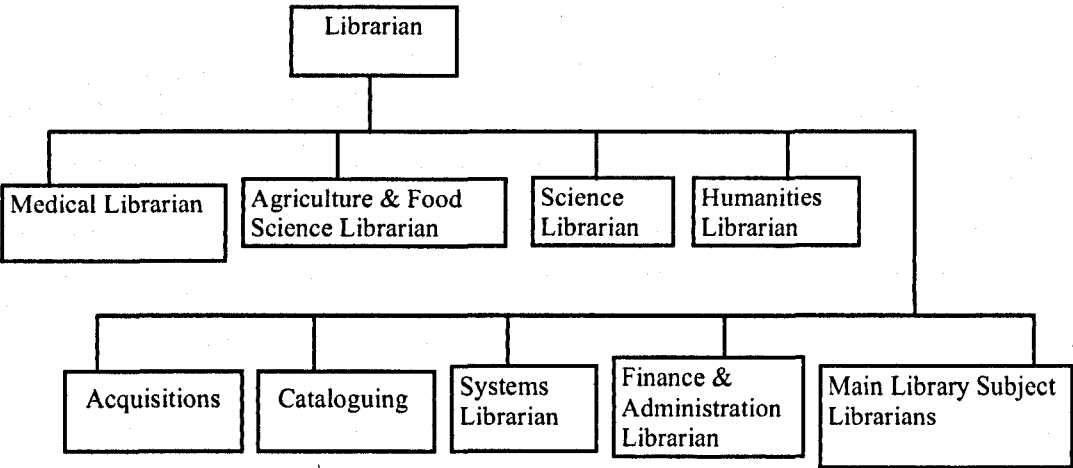
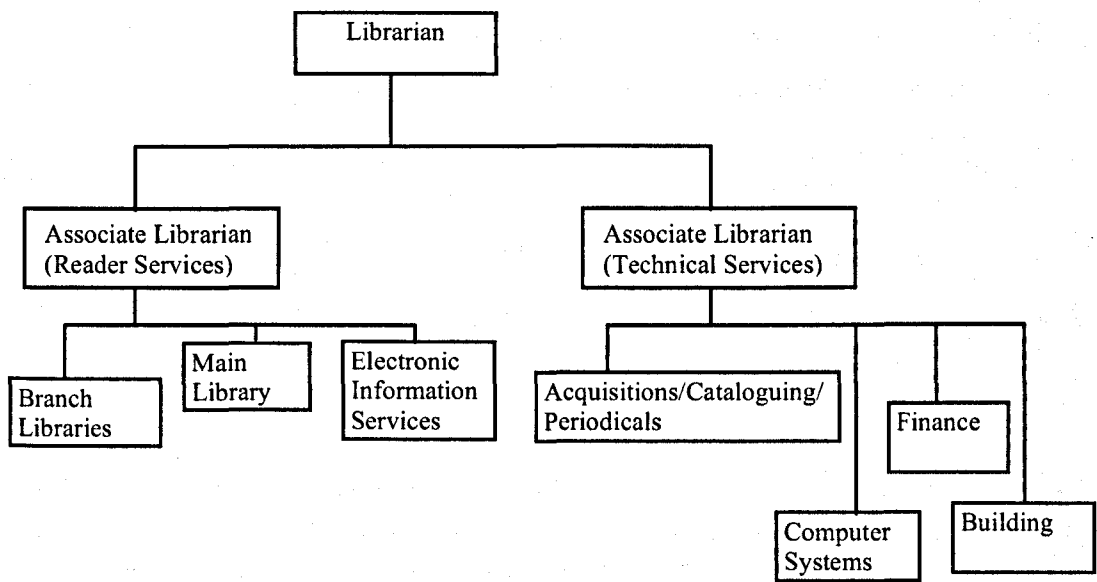




Figure 7.22 Organisational Structure of Library J after Reorganisation

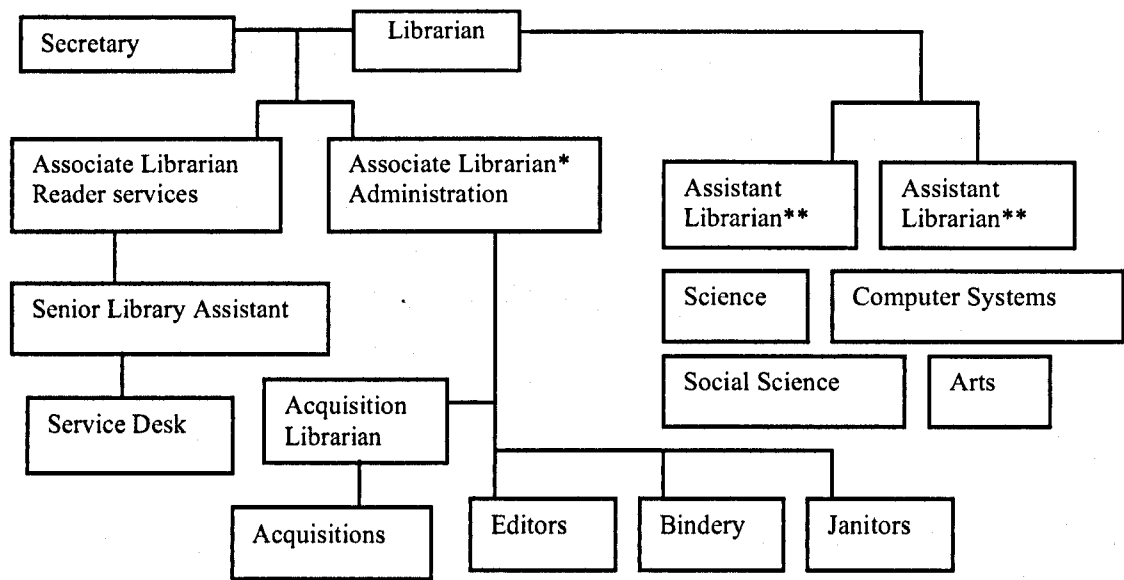


**Library K**

Library K retained the same management level (four tiers) and even converged with 'Computer and Media Service' to form 'Information Services'. The structure remained hierarchical after reorganisation. The old structure was basically divided into two departments: 'Reader Services', and 'Administration'. The 'Acquisition' function was under the 'Administration' department. Two 'Assistant Librarians' were responsible for liaison with academic departments for information work. After the library converged with 'Computer and Media Service'. 'Liaison Librarian' and 'Computing Advisors' posts were set up to help communication and cooperation issues between the converged units and they were also in charge of 'research support' for four subjects (Arts, Human Sciences, Natural Sciences, Management). The new structure emphasized IT related resource management and services. For example, a new department for 'Resource Management' was created, and new functions for 'Online Catalogue', 'Electronic Information' were then included in this department. Besides, 'Reader Services' was moved around to be under this department. 'Inter-Library Loans' was also a newly created function in new structure.

The title of library manager was changed from 'Librarian' to 'Director of Information Services' after reorganisation.

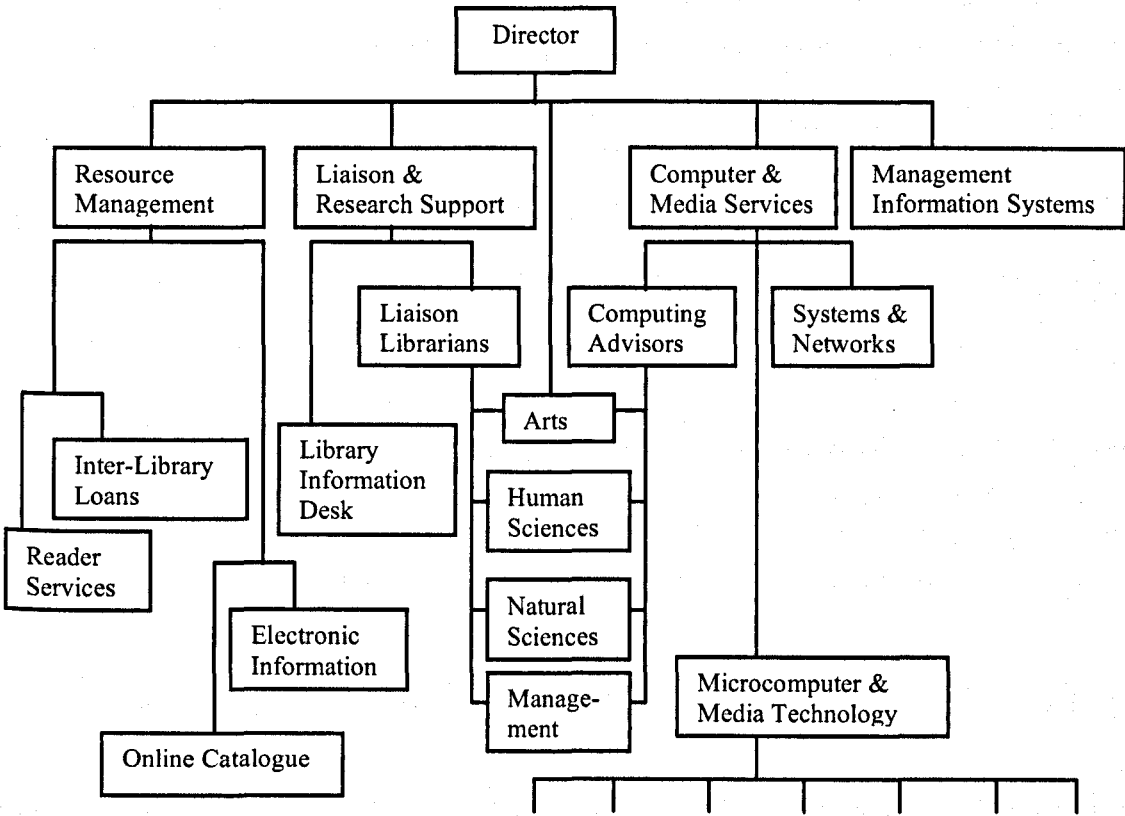
Figure 7.23 Organisational Structure of Library K before Reorganisation



\* also responsible for book buying and processing

\*\* also responsible for liaison with academic departments information work, specific administration tasks

Figure 7.24 Organisational Structure of Library K after Reorganisation at 1995



**Library L**

Library L had three management levels before the first reorganisation (Fig. 7.25) and remained the same after its first reorganisation (Fig. 7.26). But it increased one tier after its second reorganisation. The structure was still hierarchical after change. After the first reorganisation, two departments - 'Bibliographic Services', and 'Acquisitions/Serials' were merged into one department - 'Technical Services' and a new department - 'Subject Support' was also created. The second reorganisation took place in 1991, when the Library and Computing Services amalgamated to form 'Information Services' (Fig.7.27). The characteristic of the second reorganisation was the creation of the 'Faculty Support Teams' which contained both Librarians and Applications Support staff. Another 'Systems' department which was composed of five computing/networking related functions was also created.

The title of library manager remained the same title after the first reorganisation, but changed to 'Information Services Director' after the second reorganisation.

Figure 7.25 Organisational Structure of Library L before Reorganisation at 1986

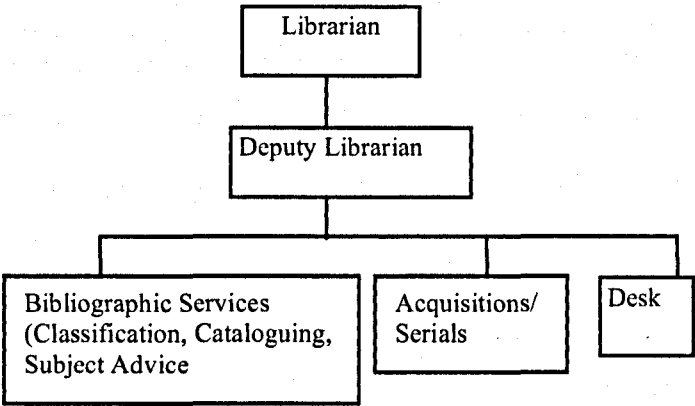


Figure 7.26 Organisational Structure of Library L after First Reorganisation at 1989

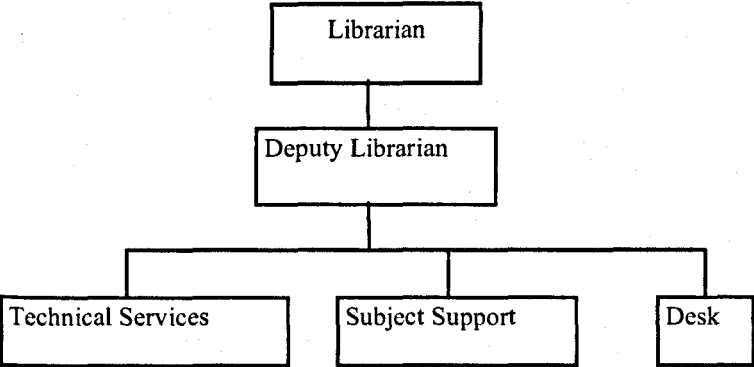
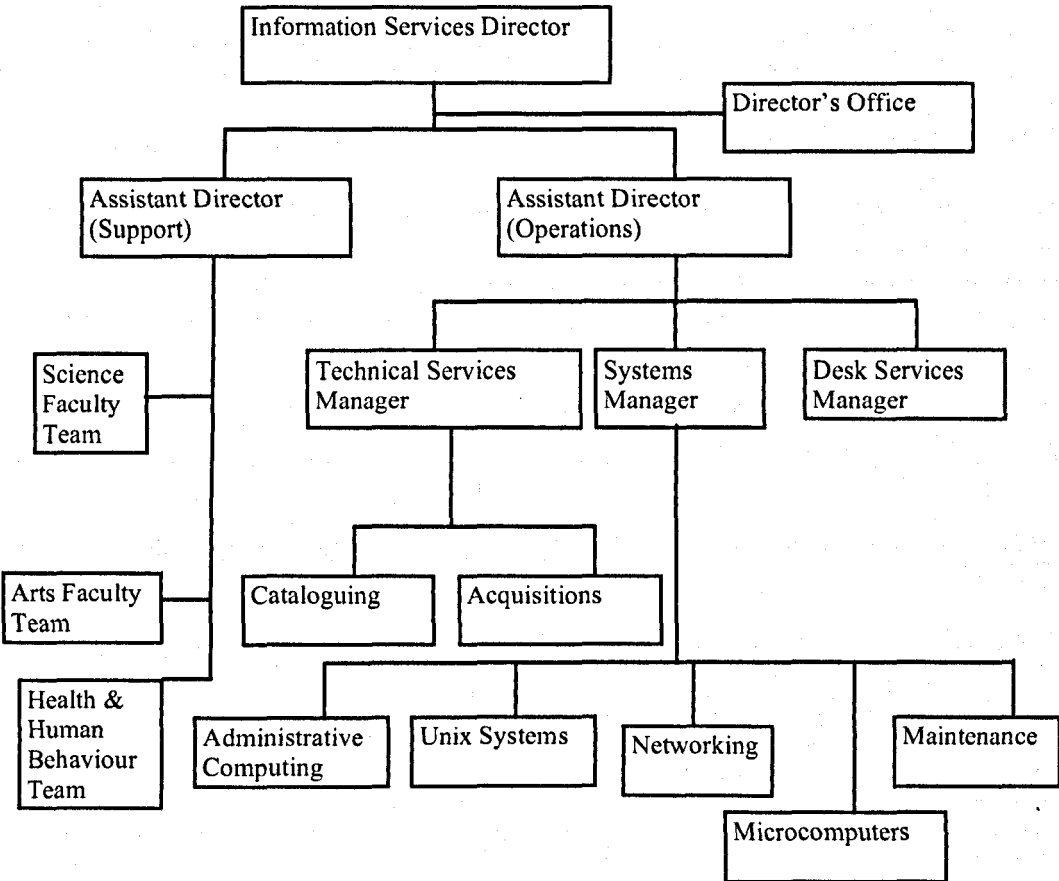


Figure 7.27 Organisational Structure of Library L after Second Reorganisation at 1991



## **Library M**

Library M had four management levels before and after reorganisation (Figs. 7.28 and 7.29). The new structure remained hierarchical but more complicated when compared to the old structure. The old structure had three departments: 'Cataloguing', 'Acquisitions', and 'Reader Services & Systems'. A 'Subject Librarian' was responsible for liaison between Acquisitions and Cataloguing departments. After reorganisation, the 'Reader Services & Systems' department was renamed into the 'User Services and Administration', two new departments ('Subject Services and Information Systems', 'User Services and Administration', and 'Collection Management') were created and some new functions were included. Several old functions were moved around. For example, the 'system' unit used to be under 'Reader Services & Systems' department, was moved to be under the department of 'Subject Services and Information Systems' in the new structure. Two new functions: 'Library Management Systems' and 'Electronic Services' were established under this unit. The functions of 'Acquisitions' and 'Cataloguing' were combined, and under the department of 'Collection Management'. The concept of 'team' was adopted in new structure, for example, 'Acquisitions Teams', 'Periodical Team', 'Processing Team', and 'Subject Support Team'.

The title of library manager (University Librarian) remained the same after reorganisation.

Figure 7.28 Organisationa Structure of Library M before Reorganisation (before 1998)

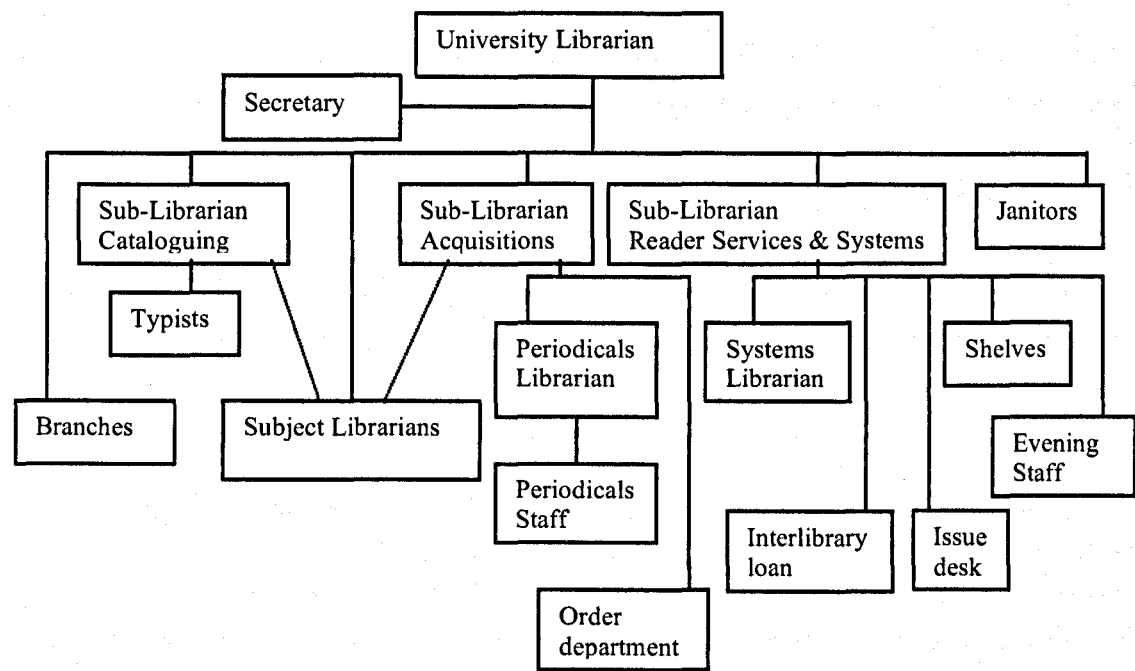
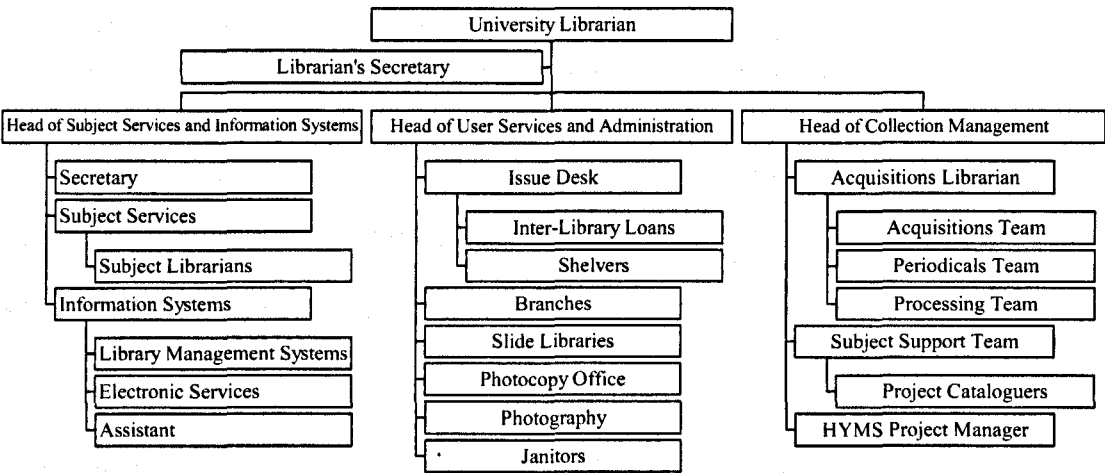


Figure 7.29 Organisationa Structure of Library M after Reorganisation at 2002





### 7.1.1 Departmental Structure

Having reviewed the organisational structure changes of 13 UK academic libraries, we will now consider some characteristics of those changes, focusing on:

- Departmental structure,
- Level of hierarchy, and
- Title of managers.

The characteristics of the departmental structures of libraries within UK universities can be divided into several categories:

- It is evident that 'hierarchical structure' was still the most popular structure adopted by the libraries of most respondents. From almost all the charts examined after reorganisation, it was basically a hierarchical structure. From the inspection of most organisational charts, irrespective of whether the library was functionally-organised or organised on a subject basis or combined both, the structure was composed of separate departments; each department was well defined its role in the total operation. The overall coordination was left on the senior members of staff, and they all report to the University Librarian/Director. The reporting relationship was upward, and the supervision relationship was downward.
- Some divisions/departments/units were moved around or renamed after reorganisation. For example, one library (Library F) moved its 'Acquisitions' and 'Cataloguing' departments from 'Technical Services' to 'Bibliographical Services'; another library (Library E) moved 'Interlibrary Loan' from 'Public Services' to 'Technical Services'.
- Some traditional names for library services were changed. For example, the traditional name for 'Cataloguing Department' in some libraries has been changed to 'Bibliographical Services Department', in this case, the size and scope of the department was expanded. 'Bibliographical Services Department' was usually comprised of several former separate departments, for example, 'Acquisitions Department', and 'Cataloguing Department'.
- The growing importance of IT-related services and functions were reflected in the new structures. New units or departments which were responsible for computing, network, system, information technology, database, MIS etc. were created by many libraries to support these services or functions. i.e. 'Online catalogue', 'IT Support', 'Information Support', 'Management Information System/Service', 'Database Management', 'Electronic Services', 'Electronic Information', and 'Networked

Learning Support Framework'. The development of the digital library had also become the focus of the new organisation. One library had created a separate department (Digital Library Focus) responsible for digital library development.

- The increasing demand of learning and research support has had a profound effect on library services. For example, 'Learning and Research Support Services', 'Subject Support', 'Faculty Support Team', 'Academic Liaison'.
- New structures resulted from service convergence usually involved the creation of new departments/services or reallocation of core activities. For examples, in Library B, the newly-created Information Services divided the four converged units into five divisions in response to the changing demands for the University and from users.
- Customer-oriented services became the new paradigm of library services and they were reflected in the new organisation structures, for example, in Library A, C, D, G, and I.
- Some new structures showed that new partnerships were developing with other institutions, with academic departments through the liaison service, with computing, MediaTech and Learning Support.
- The 'teamwork' concept was widely applied in new structures. For example, both subject and functional teams enable the new structure to deliver a wide range of services, for example, in Library B. Team working has more to offer than individuals in terms of both fluency of idea generation and in flexibility of solutions developed (Tidd, Bessant, and Pavitt 1997). An effective team can make use of the skills its members can bring to the table regardless their position in the hierarchy (Brophy 2000).
- 'Delegation of decision-making and responsibility' was emphasised in some of the new structures. Some libraries had created or increased the number of second level managers (deputy/associate librarian) to help supervise library operation and share the administration functions of the University Librarian (or Director). Therefore, the University Librarian can spend more time on improving external relations (i.e. communicating with the parent institution, or fund-raising etc.)
- The names for service convergence were varied. For examples, 'Information Services', 'Learning Services', 'Learning & Information Services', 'Learning Information Services (LIS)', 'Learning Resource Center (LRC)', or 'Information & Learning Resource Services (IRLS)'.

### 7.1.2 Level of Hierarchy (Number of Management Levels)

Hierarchical structure consists of many levels of management. What was the trend in the number of management levels in libraries within UK universities? The level of hierarchy of 13 library structures before and after reorganisation was shown in Table 7.1. Eight libraries (Library A, B, C, D, E, F, G, and I) reported a decrease after reorganisation. Among them, Library E increased one tier of management after the first reorganisation, but reduced one tier of supervision after the second reorganisation) meaning that the organisational structure became flatter again. From Table 7.1, these libraries had more than three management levels, and two of them, Library F and G, were medium-sized. They possessed five tiers of management levels before reorganisation. Too many hierarchical tiers will cause the communication between levels to be slow and thus make the organisation inefficient in decision-making. Therefore, they both reduced the management levels after organisational structure change. Three libraries (Library H, K, and M) did not change the management level. There were just two exceptions, Library J and L, which reported an increase by one management level after reorganisation. Library J was an extra-large library, but it had only two management tiers before reorganisation. It indicated that every administrator had a wider span of management responsibility. The management level of Library J was increased (from two tiers to three tiers) after reorganisation. One associate librarian was added to assist the Librarian. The management level of library L was also increased from three tiers to four after reorganisation. Its reorganisation involved converging with 'Computing Services'. Whether this was the main reason for increasing one tier was not indicated by the library.

The trend for the libraries to become flatter was reported as one of changes in organisational structure change in recent years (Fisher 2001, 414). The decrease of the hierarchical tiers implied that the library organisational structures became flatter. The survey findings from thirteen UK university libraries also suggested that the number of management levels was likely to have reduced (become flatter) during the last 15 years (1985-2001) and the management level adopted by most libraries was either three or four for all sizes of the library. Nevertheless, the researcher still can not generalise whether it was the trend for all situations within UK university libraries. One reason was that thirteen libraries only representing a small proportion of the reorganisational cases in the UK. The other reason was that the organisational charts which respondents provided may have been modified, therefore, can not reflect the real situation.

Table 7.1 Number of Management Levels at Some UK Universities, by Collection Size

| Library | Collection Size | Number of Management Level |       |           |       |
|---------|-----------------|----------------------------|-------|-----------|-------|
|         |                 | 1985-1995                  |       | 1996-2001 |       |
|         |                 | Before                     | After | Before    | After |
| A       | Extra-large     | 4                          | 3     | *         | *     |
| B       | Extra-large     | 4                          | 3     | *         | *     |
| C       | Extra-large     | *                          | *     | 4         | 3     |
| J       | Extra-large     | 2                          | 3     | *         | *     |
| D       | Large           | 4                          | 2     | *         | *     |
| E       | Large           | 4                          | 5     | 5         | 3     |
| H       | Large           | *                          | 4     | 4         | 4     |
| K       | Large           | 3                          | 3     | *         | *     |
| L       | Large           | 3                          | 4     | *         | *     |
| M       | Large           | *                          | *     | 4         | 4     |
| F       | Medium          | 5                          | 3     | *         | *     |
| G       | Medium          | 5                          | 4     | *         | *     |
| I       | Medium          | *                          | *     | 5         | 4     |

\*: Means the organisational chart was not provided by the respondents

### 7.1.3 Title of Library Managers

The change of title of library managers was shown in Table 7.2. The title of library managers was more traditional before reorganisation (Library I was exceptional), for example, 'Librarian', 'University Librarian', 'Director of Library Services', and 'Head of Library Services'. The title of managers was mostly more diversified after reorganisation, for example, 'Information Services Director', 'Head of Learning Services', 'Director of Learning Information Services', 'Librarian and Director of Information Services', and 'Head of Information & Learning Resource Services & University Librarian'. New titles precisely reflected and emphasized the current roles/functions/services of the new organisations.

Table 7.2 Titles of Library Managers at Some UK Universities

| Library | Before reorganisation                     | After reorganisation                                                       |
|---------|-------------------------------------------|----------------------------------------------------------------------------|
| A       | Librarian                                 | University Librarian                                                       |
| B       | Librarian                                 | Librarian and Director of Information Services                             |
| *C      | University Librarian                      | Director of Information Services & University Librarian                    |
| D       | Librarian                                 | Librarian                                                                  |
| E       | Director of Library Services              | Head of Learning Services<br>**Director of Learning & Information Services |
| F       | Head of Library Services                  | Head of Library Services                                                   |
| G       | University Librarian                      | Librarian                                                                  |
| H       | N/A                                       | Head of Information & Learning Resource Services & University Librarian    |
| *I      | Director of Learning Information Services | Director of Learning Information Services                                  |
| J       | Librarian                                 | Librarian                                                                  |
| K       | Librarian                                 | Director                                                                   |
| L       | Librarian                                 | Librarian<br>**Information Services Director                               |
| *M      | University Librarian                      | University Librarian                                                       |

N/A: Means the library did not provide organisational chart

\*: Data was from the follow-up survey respondents

\*\*: Title used after second reorganisation

7.2 Taiwan Cases

In the initial survey, a total of 17 Taiwan respondents enclosed a copy of their present organisational chart (only 11 of them had provided charts both ‘before’ and ‘after’ reorganisation). In the follow-up survey, nine respondents enclosed a copy of present organisational chart (eight of them had provided charts both ‘before’ and ‘after’ reorganisation). The researcher selected the libraries which had characteristics in organisational change for comparisons. Those selected libraries are identified as library A1 to library L1

Library A1

The management levels and hierarchical structure of library A1 was not changed after reorganisation but the structure of library was redesigned after reorganisation (Figs. 7.30 and 7.31). The ‘Acquisitions’ and ‘Cataloguing’ departments were combined to form an ‘Acquisitions/Cataloguing’ department. The ‘Preservation’ and ‘Readers Services’ departments were combined to form a ‘Preservation/Readers Services’ department. In the new organisation, the ‘Information’ department was newly created and the ‘AV Services’ department which was formerly a separated Audio-Visual Centre in the campus, was then converged with the library through reorganisation.

The title of library manager (University Librarian) was not changed after reorganisation.

Figure 7.30 Organisational Structure of Library A1 before Reorganisation

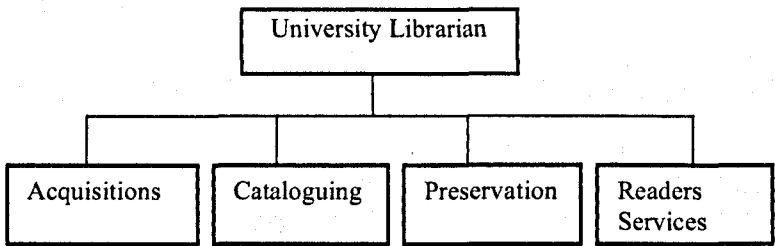
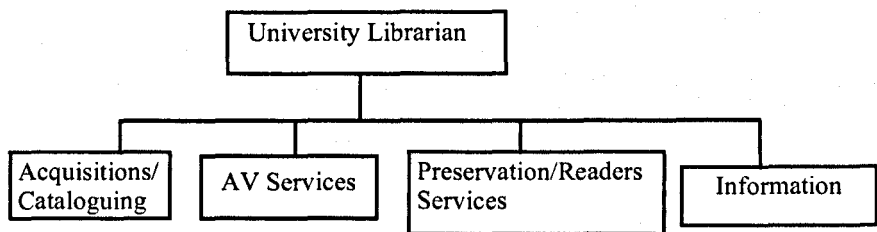


Figure 7.31 Organisational Structure of Library A1 after Reorganisation



**Library B1**

Library B1 had conducted its first reorganisation in the initial survey period (1985-1995) and its second reorganisation in 1998. Before the first reorganisation, library B1 had two management levels, the structure was hierarchical and was basically organised on a functional-based pattern. (Fig. 7.32)

The management levels and hierarchical structure did not change after first and second reorganisations. A new department, a 'System Information' department, was created after the first reorganisation (Fig. 7.33). The second reorganisation involved the combination of two formerly separate departments, 'Acquisitions' and 'Cataloguing' departments, to form the 'Acquisitions/Cataloguing' department. The periodical service was emphasized in the second reorganisation and new 'Periodicals' department was created. (Fig. 7.34)

The title of library manager (Director) was not changed after reorganisation.

Figure 7.32 Organisational Structure of Library B1 before Reorganisation

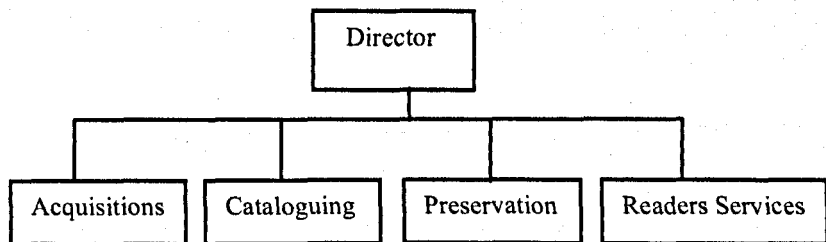


Figure 7.33 Organisational Structure of Library B1 after First Reorganisation

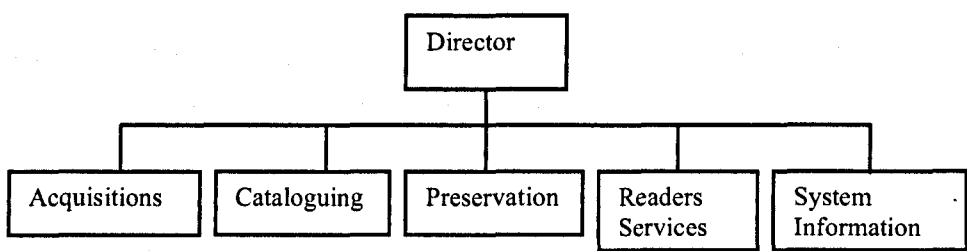
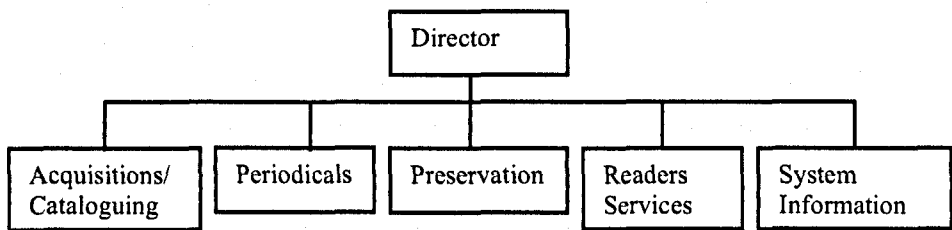


Figure 7.34 Organisational Structure of Library B1 after Second Reorganisation at 1998



**Library C1**

Library C1 conducted its first reorganisation in 1995 and its second reorganisation in 2000. It had two management levels and four functional departments—Acquisitions, Cataloguing, Preservation, and Readers Services (Fig. 7.35). The method of organisational change was very similar to that of Library B. For example, a new department, ‘Information’, was created after the first reorganisation (Fig. 7.36). The second reorganisation involved the combination of the ‘Acquisitions’ department with ‘Cataloguing’ department to form a ‘Acquisitions/Cataloguing’ department, ‘Readers Services’ department was eliminated, two new departments ‘Reference services’, and ‘Periodicals’ department were created (Fig. 7.37)

The title of library manager (Director) was not changed after reorganisation.



Figure 7.35 Organisational Structure of Library C1 before Reorganisation

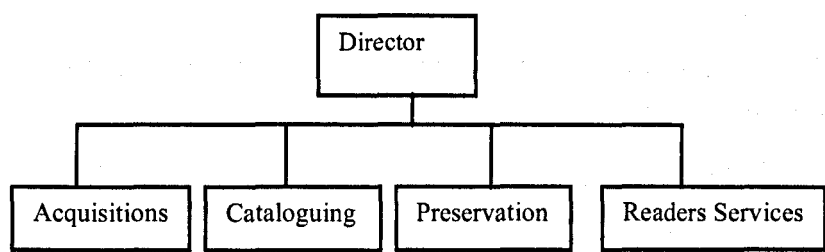


Figure 7.36 Organisational Structure of Library C1 after First Reorganisation at 1995

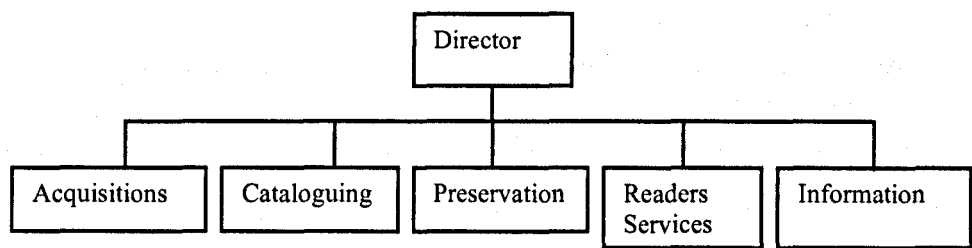
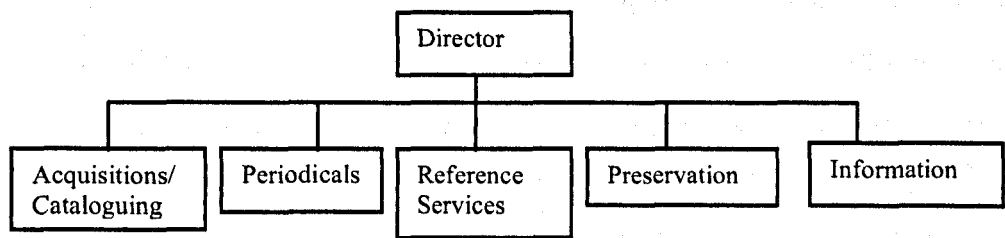


Figure 7.37 Organisational Structure of Library C1 after Second Reorganisation at 2000



**Library D1**

Library D1 had two tiers of management level before reorganisation (Fig. 7.38). The organisational pattern was hierarchical and had three functional departments ('Acquisitions', 'Cataloguing', and 'Readers Services'). After the revision of 'University Law' in Taiwan, Library D1 underwent reorganisation in 1996 (Fig. 7.39). The management level and hierarchical

structure remained the same after reorganisation. The method of structural change was to combine the 'Acquisitions' department and 'Cataloguing' department to form a 'Acquisitions/Cataloguing' department. They expanded 'Readers Services' department to become two separate departments: 'Circulation/Preservation' department, 'Reference Services' department. A new 'Information System' department was created. Three new departments represented their respective importance in library organisation.

The title of library manager (Director) was not changed after reorganisation.

Figure 7.38 Organisational Structure of Library D1 before Reorganisation

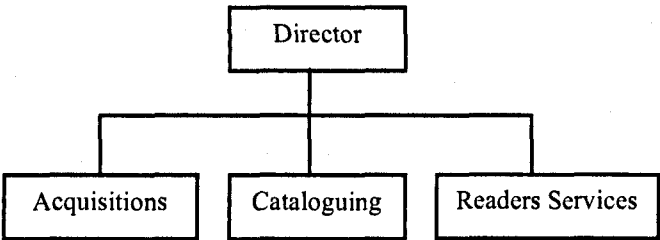
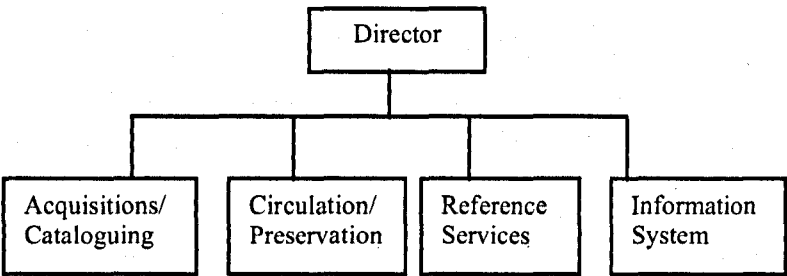


Figure 7.39 Organisational Structure of Library D1 after Reorganisation at 1996



**Library E1**

Library E had conducted its first reorganisation in the initial survey period (1985-1995) because of the status of its parent institution was raised from a junior college to a four-year polytechnic college. It had conducted its second reorganisation in 1997 because the status of polytechnic college was raised to that of university. Before the first reorganisation (Fig. 7.40), library E1 had three management levels, the structure was hierarchical and basically organised on a functional-based pattern.

The management levels and hierarchical structure did not change after first and second reorganisation. The structure of library was redesigned after reorganisation. A new department, 'Reference' department, was created after first reorganisation (Fig. 7.41). The new structure after the second reorganisation emphasized the 'Preservation' function, and therefore a new department, 'Preservation/Conservation department', was created (the 'Preservation' function used to be under the 'Readers Services Department'). Also the 'Circulation' function was moved from the 'Readers Services Department' to be under the 'Preservation/Conservation' department. The 'Reference Services' department was moved back to the department of 'Readers Services'. (Fig. 7.42)

The title of library manager was changed from 'library head' to 'library director' after the second reorganisation because the library was upgraded one level in the university administrative structure.

Figure 7.40 Organisational Structure of Library E1 before Reorganisation

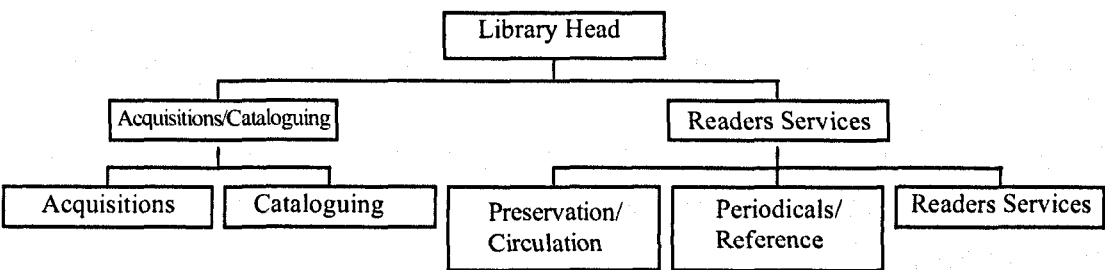


Figure 7.41 Organisational Structure of Library E1 after First Reorganisation

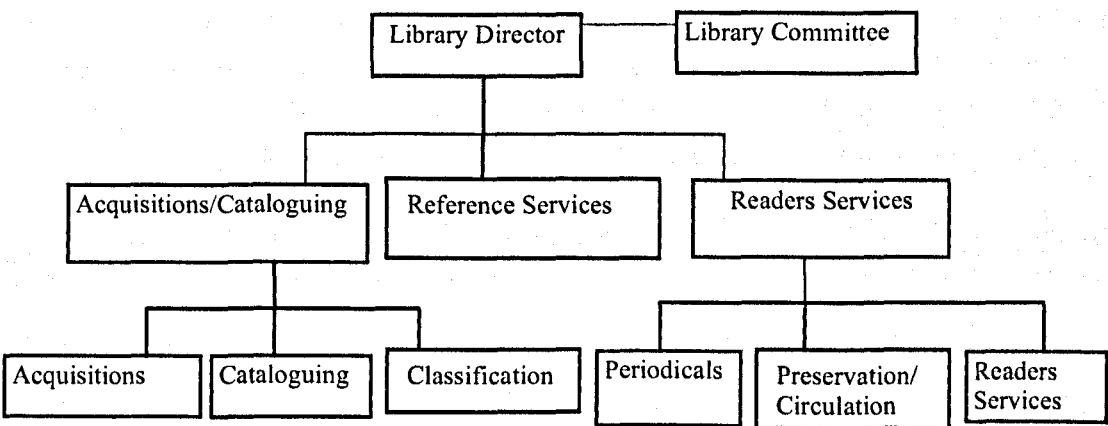
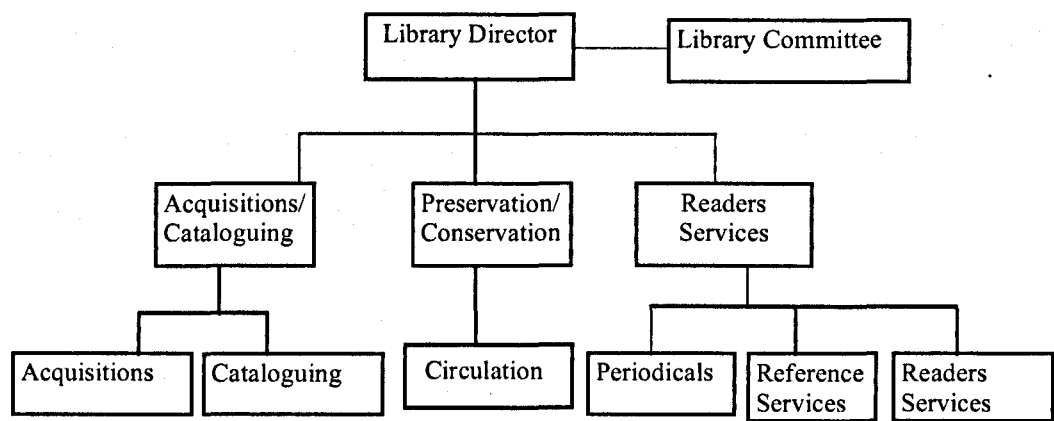


Figure 7.42 Organisational Structure of Library E1 after Second Reorganisation at 1997



**Library F1**

The structure of library F1 was a combined functional/subject-based pattern and was hierarchical with four tiers of management levels before reorganisation (Fig. 7.43).

The management level was reduced from four to three tiers after reorganisation in 1998. Two new departments, 'Reference & Extension Services' department and 'Multimedia Service' department, were created. 'Reference & Extension Services' department provided library instruction and a reference service. The 'Interlibrary loan' service was also under this department. 'Multimedia Service' department was responsible for audio-visual and other multimedia services. The new structure also adopted the 'teamwork' idea. For example, two branch libraries, 'Science Branch Library' and 'Humanities Branch Library', used to be separate branch libraries, were moved to the department of 'Readers Services'. They became two teams—'Science/Technology Team', and 'Humanities/Social Science Team'. (Fig. 7.44)

The title of library manager (University Librarian) was not changed after reorganisation.

Figure 7.43 Organisational Structure of Library F1 before Reorganisation

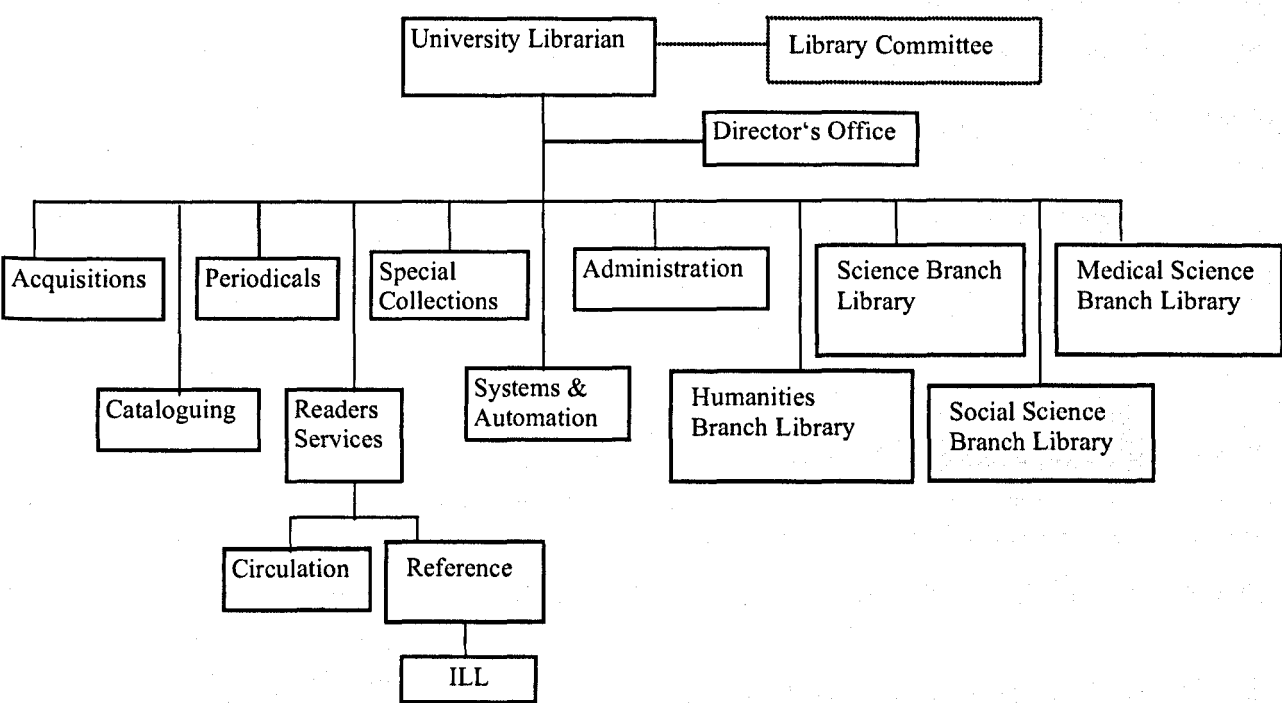
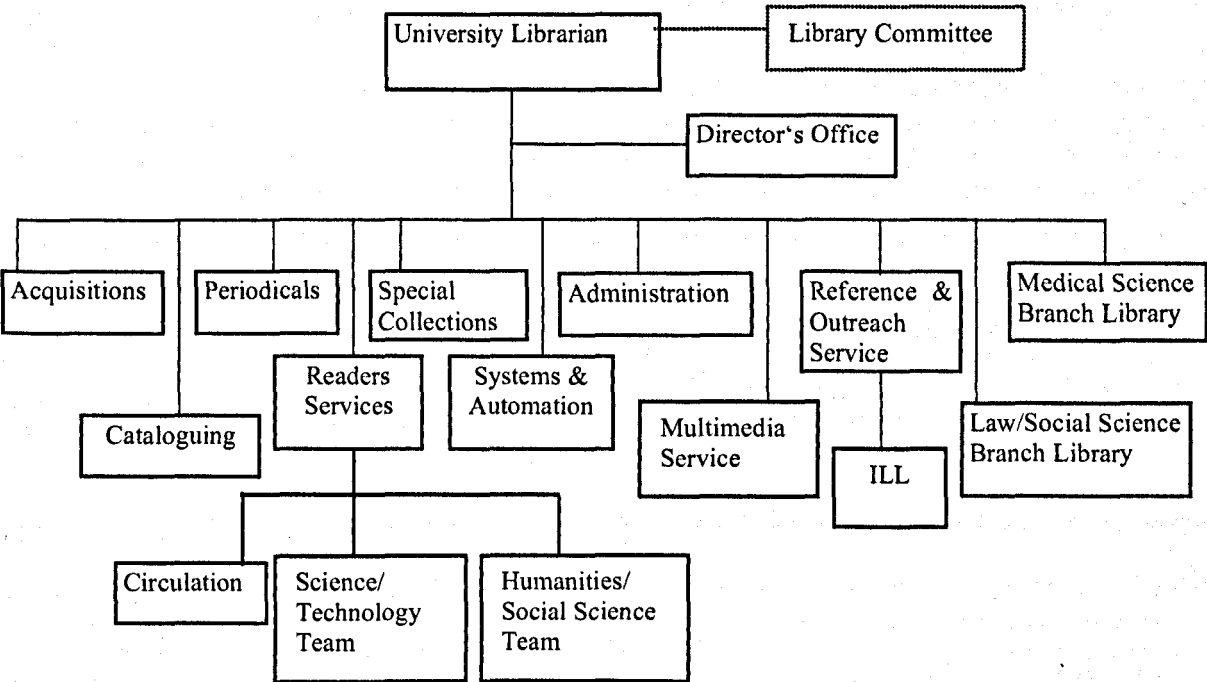


Figure 7.44 Organisational Structure of Library F1 after Reorganisation at 1998



- **Library G1**

Library G1 had converged with campus Computing service after reorganisation. The management level and hierarchical structure did not change after reorganisation. Library G1 had two departments before reorganisation, 'Technical Service' and 'Public Service'. They performed different functions (Fig. 7.45). The Computing centre had four teams (Fig. 7.46). When the Computing Centre was merged to the library, the new structure had three main teams: Book Service Team, Information Technology Team, and System Development Team (Fig. 7.47). 'Book Service Team' was responsible for traditional library functions and services while the other two teams were responsible for library automation and IT related services and its support.

The title of library manager (Director) remained the same after reorganisation.

Figure 7.45 Organisational Structure of Library G1 before Reorganisation

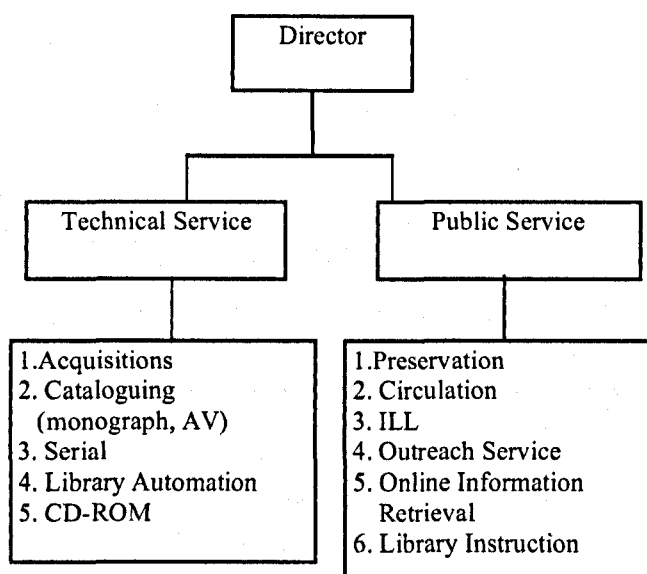


Figure 7.46 Organisational Structure of Computing Centre before Reorganisation

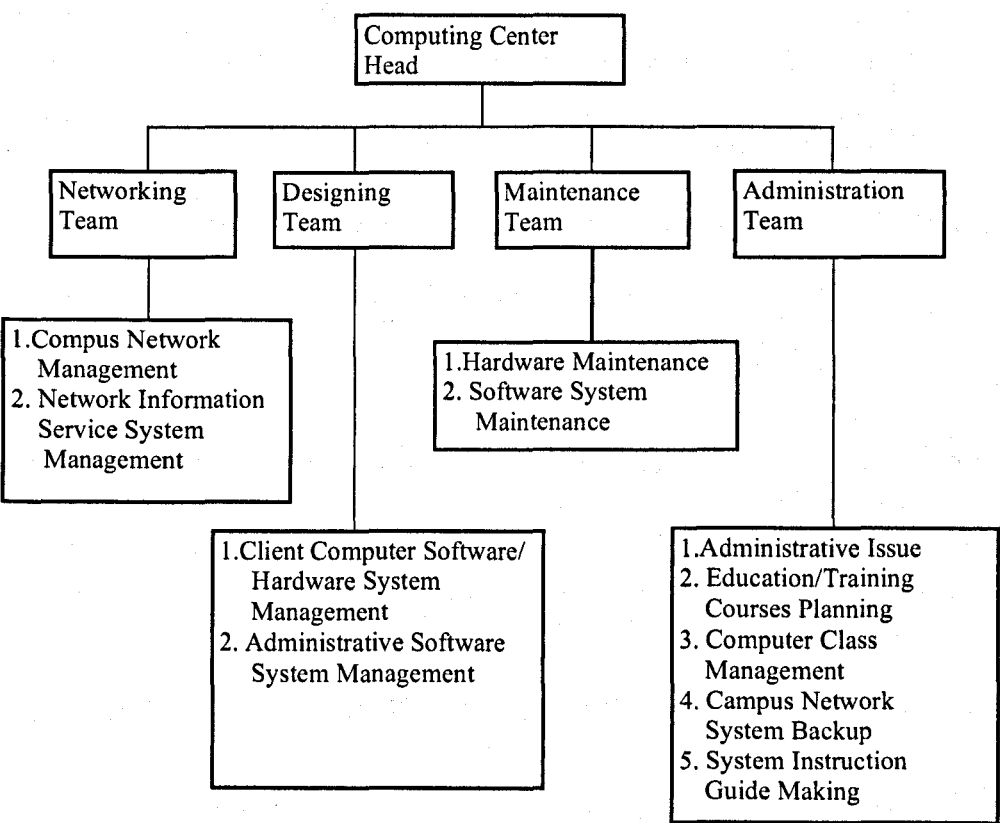
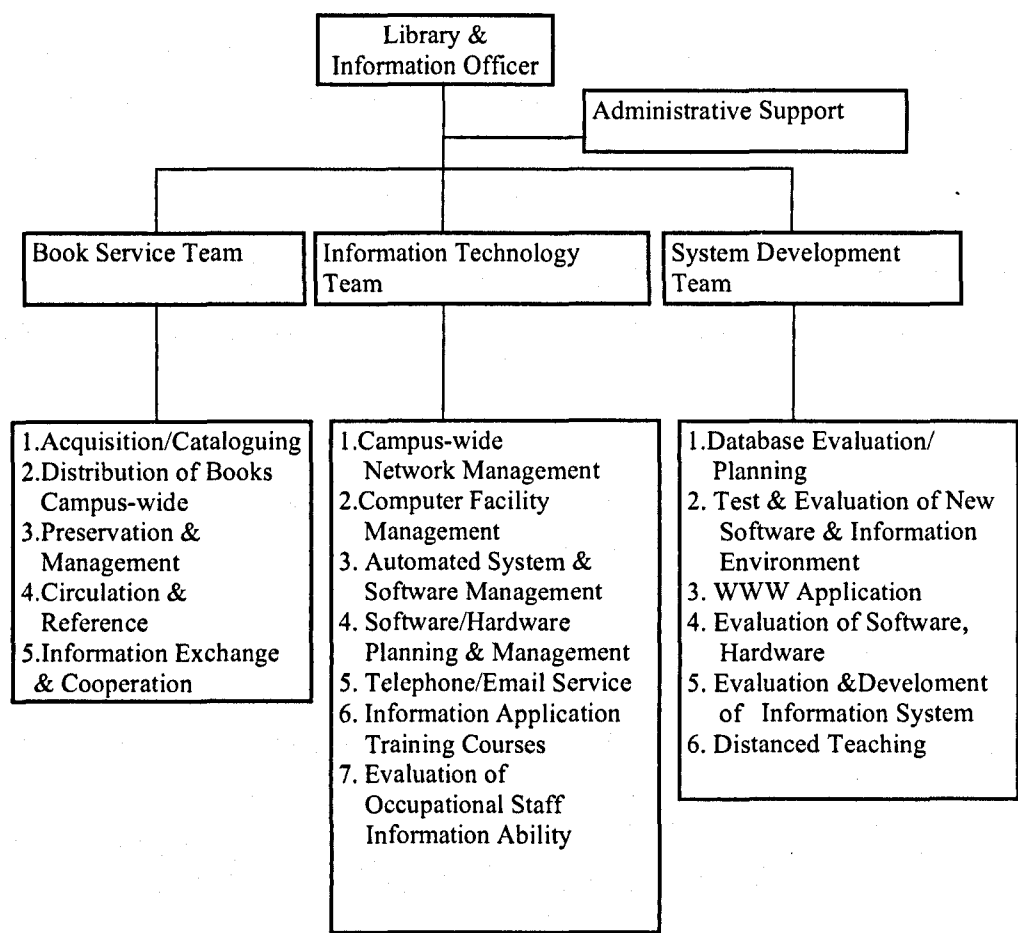


Figure 7.47 Organisational Structure of Library G1 after Reorganisation





- **Library H1**

Library H1 embarked on the convergence with campus Computing Service in 2001. The reasons for change were to meet the trend of a digital age, to develop a digital collection (resources), and to downsize. The reorganisation method was very similar to that of Library G1. The management level and hierarchical structure remained unchanged after reorganisation. Library H1 had three departments. One of them was 'Systems Information' department (Fig. 7.48). Computing Service had three departments responsible for system support, information services, and network operation respectively (Fig. 7.49). The characteristic of convergence was the combination of 'information' services and 'system' support functions to make the new structure more efficient and to integrate technical staff and facilities. Besides, the new department 'Collection Management' was created to deal with the new digital collection and related issues. (Fig. 7.50)

The title of library manager (Director) was not changed after reorganisation.

Figure 7.48 Organisational Structure of Library H1 before Convergence with Campus Computing Service

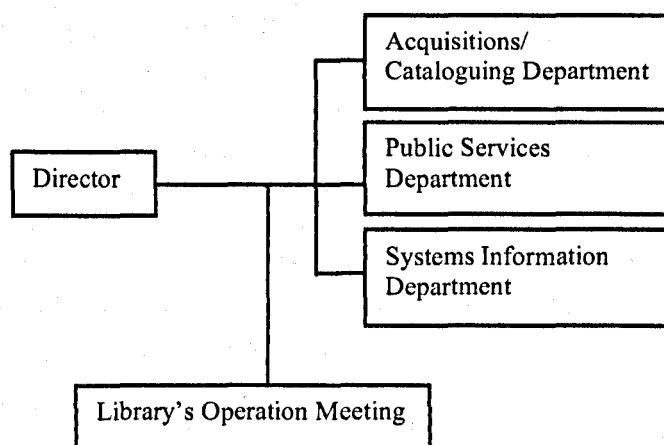


Figure 7.49 Organisational Structure of Computing Service before Convergence with Library

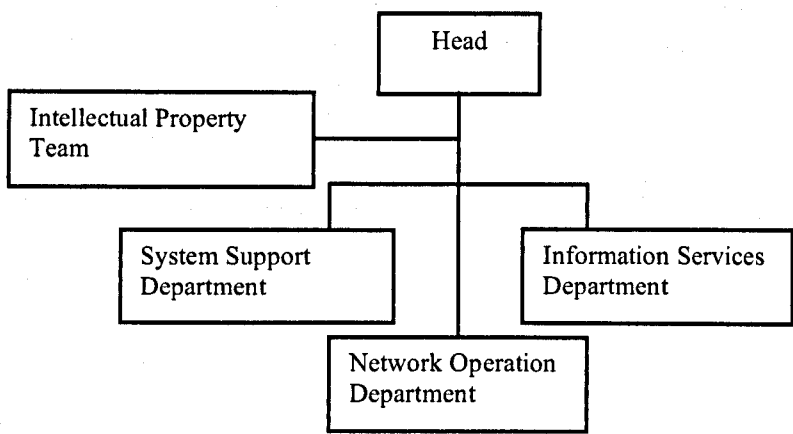
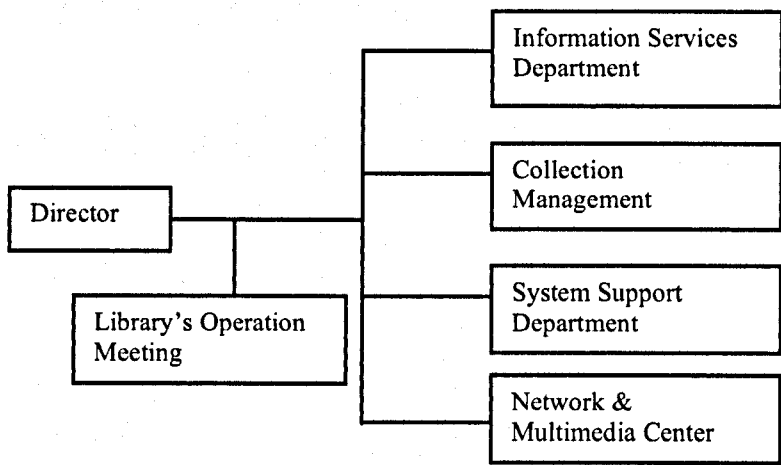


Figure 7.50 Organisational Structure of Library and Information Services after Convergence at 2001



- **Library I1**

Library I1 had four departments; the Computer Centre had four departments too. The reorganisation was undergone by analyzing and integrating the system and functions of the parent institution's information services (Library services and Computer Centre). The analysis of both the structures and the converged service was shown in Fig. 7.51. It was evident that 'Collection Development' in the old structure was renamed to 'Book Management' in the new structure. The 'Reference Services' department of the library was combined with the 'Technical Services' department of the Computer Centre to form a new 'Information Extension Services' department. The 'Automated System' department of the library was combined with 'Administration and Academic System' to form a new 'System Development' department. The 'Audio-Visual Media' department of the library was combined with 'Communication Technology' of the Computer Centre to form a new 'Media Services' department. The characteristic of reorganisation was to integrate similar functions/services of the parent institution to take advantage of efficiency and integrated resources.

Figure 7.51 Analysis and Integration of System and Function of Information Services before Convergence

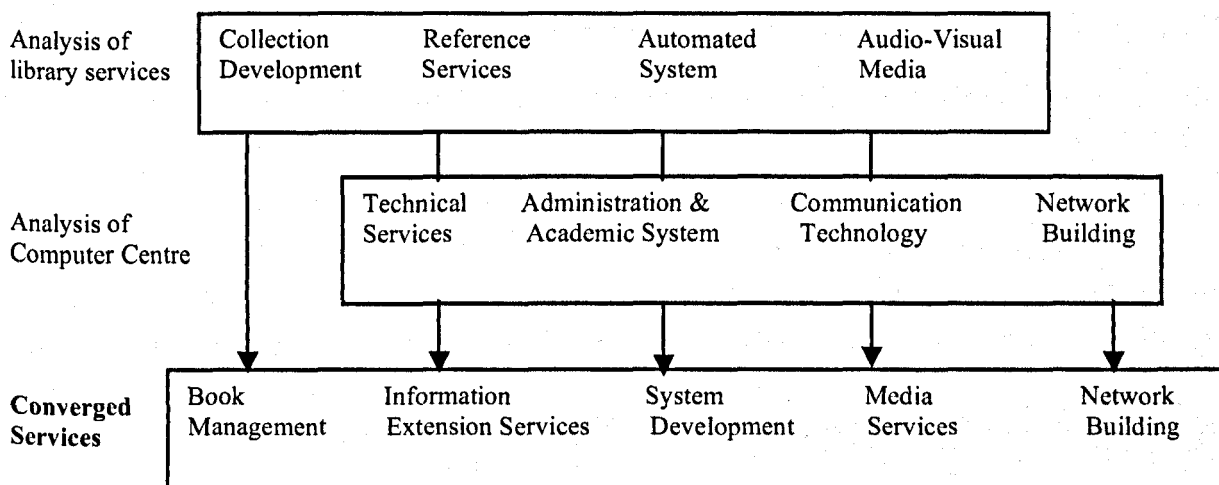
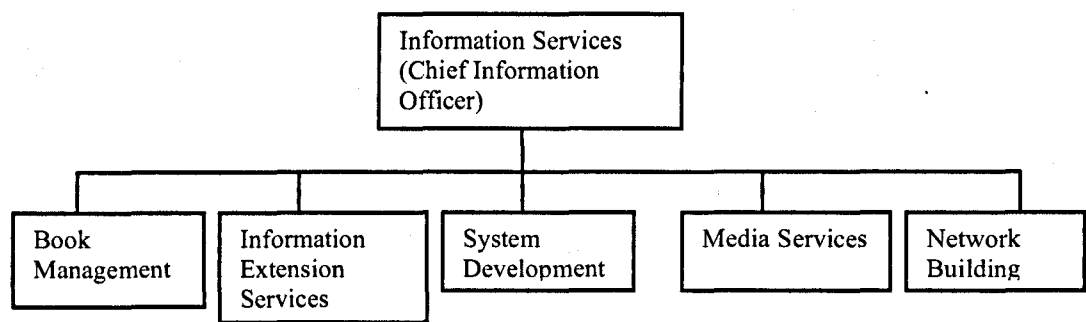


Figure 7.52 Organisational Structure of Information Services after Library I1 converged with Computer Center



• **Library J1**

Library J1 did not change its management level or its hierarchical structure after reorganisation. The method of reorganisation was to combine the ‘Acquisitions’ department with the ‘Cataloguing’ department to form a ‘Acquisitions/Cataloguing’ department. A new department of ‘Digital Information’ was created to handle the management of the library automated system and library network services. It was in charge of the electronic database. This department was also in charge of the introduction of all information technologies (Figs 7.53 and 7.54).

The title of the library manager (Director) was not changed after reorganisation.

Figure 7.53 Organisational Structure of Library J1 before Reorganisation

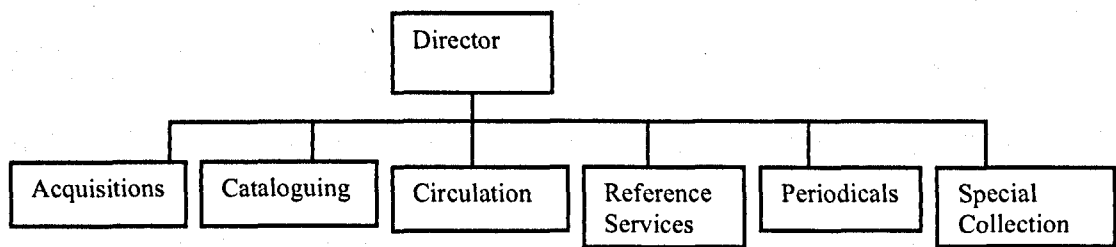
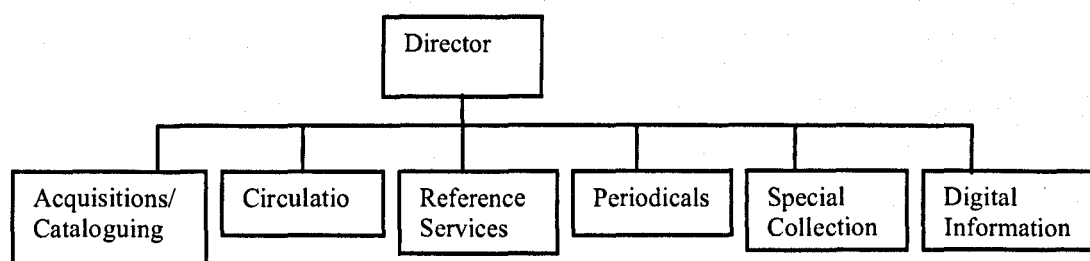


Figure 7.54 Organisational Structure of Library J1 after Reorganisation at 2002



### Library K1

Library K1 had a hierarchical structure with two management levels and six functional departments before reorganisation (Fig. 7.55). The structure and management tiers did not change after reorganisation. Its structure was redesigned by combining the 'Acquisitions' with the 'Cataloguing' department to form an 'Acquisitions/Cataloguing' department. Besides, the combination of 'Preservation' with 'Readers Services' department formed a 'Preservation/Readers Services' department. The 'Information System' department was renamed to 'System' department. The 'Reference' department was a newly created department in the new organisation (Fig. 7.56). The main characteristic of organisational change was to create three 'Task Force' teams: 'Collection Development Team', 'WWW Development Team', and 'Professional Development Team' (Fig. 7.57). The Task Force teams were set up by the University Librarian, depending on the situation; each team had meetings and discussions regularly and reported their tasks on library meeting.

The title of library manager (University Librarian) was not changed after reorganisation.

Figure 7.55 Organisation Structure of Library K1 before Reorganisation

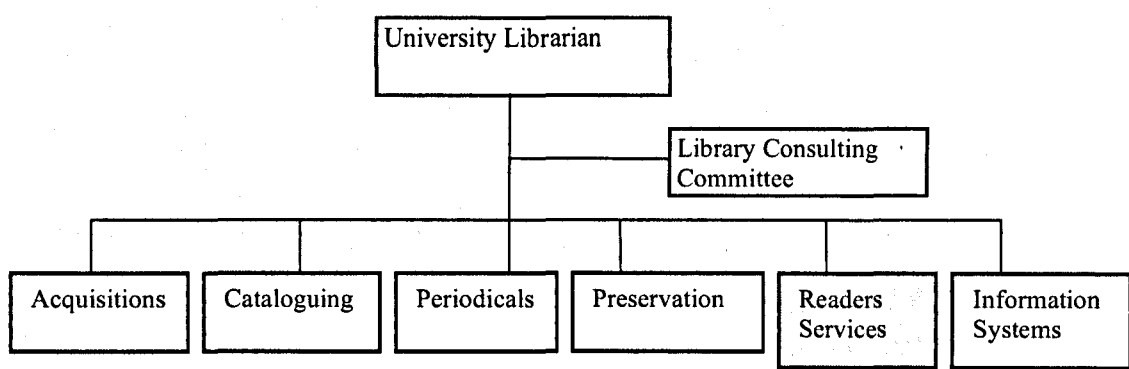
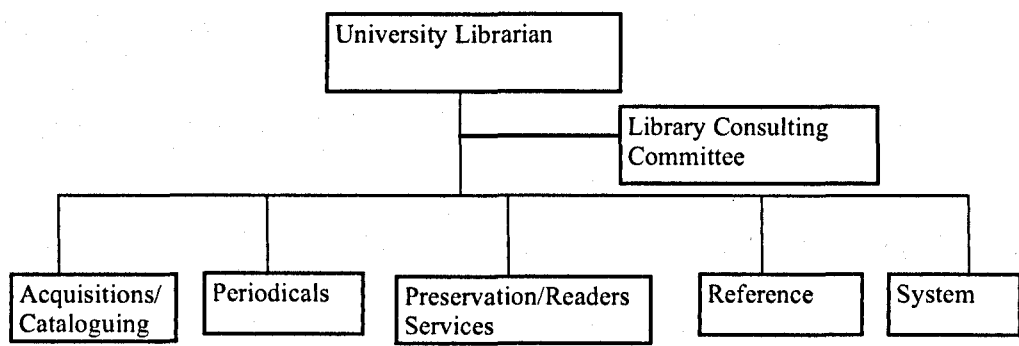
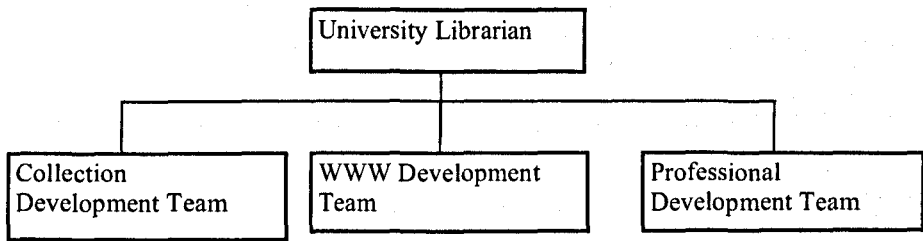


Figure 7.56 Organisation Structure of Library K1 after Reorganisation



\*The Issuing desk is managed by Preservation/Reader's Services Department, Reference desk is managed by Reference Department and Acquisitions/Cataloguing Department (in rotation), the Serials Services is managed by Serials Department.

Figure 7.57 Three Task Force Teams Were Created by Library K1 after Reorganisation



- **Library L1**

Library L1 had a hierarchical structure with three management levels and five functional departments before reorganisation (Fig. 7.58). The management tier was increased by one after reorganisation (Fig. 7.59). The new structure was basically functionally-organised, but also had some matrix arrangement. The method of reorganisation included the combination of the ‘Acquisitions’ department with the ‘Cataloguing’ department to form a ‘Technical Services’ department which was under the ‘Technical Services’ division. It created a new ‘Information Value-Added’ department which was also under ‘Technical Services’ division. The reorganisation also involved renaming the ‘Readers Services’ department to ‘Reference Services’ department and renamed the ‘Preservation’ department to ‘Preservation/Circulation’ department. IT related services were the main characteristics of the new structure. For example, ‘Value-Added Information’ department was in charge of library automated system, the processing of digital resources, the design of courseware, and the electronic publishing of the University. ‘Reference Services’ department was responsible for ‘information literacy’, ‘digital resources’, and ‘extension services’.

Figure 7.58 Organisational Structure of Library L1 before Reorganisation

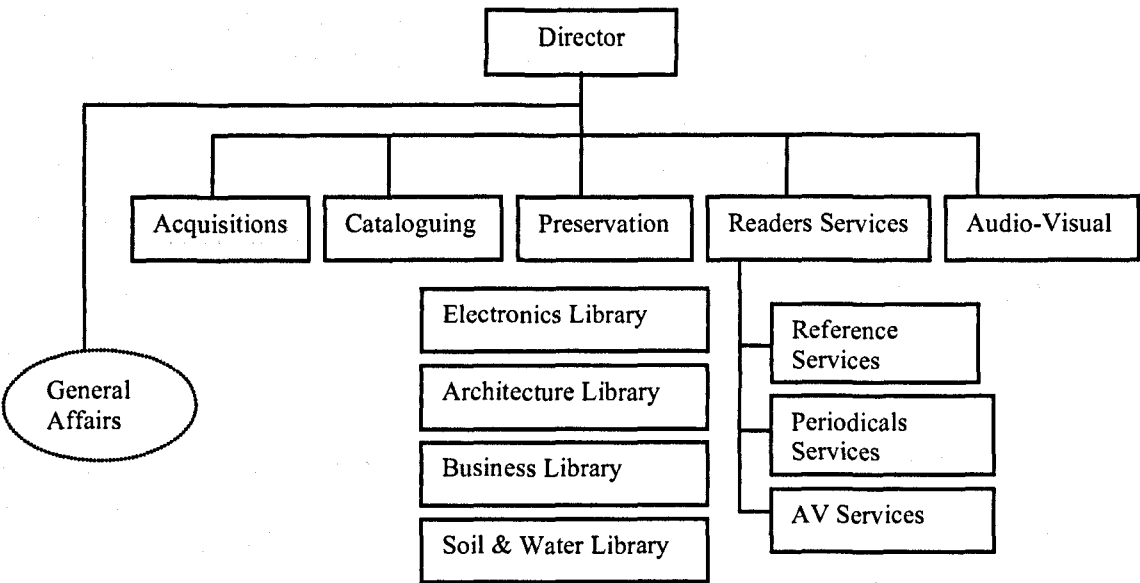
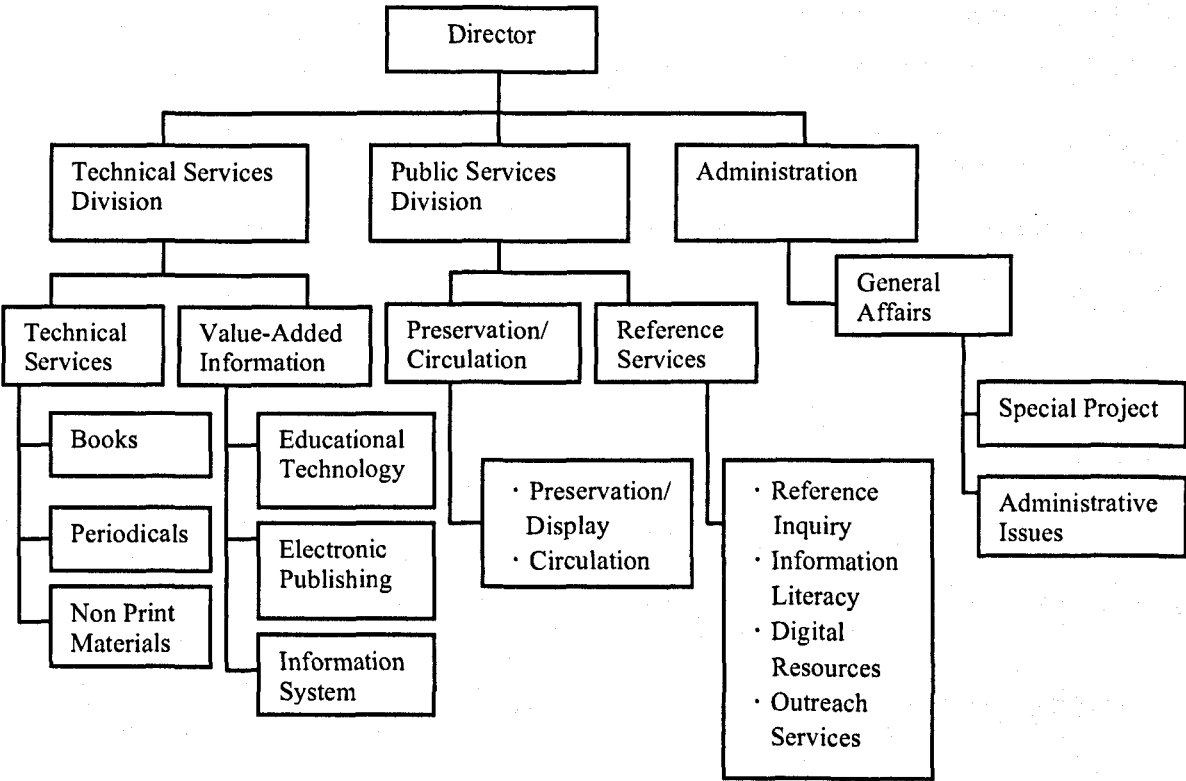




Figure 7.59 Organisational Structure of Library L1 after Reorganisation at 2001



### 7.2.1 Departmental Structure

Having considered the twelve examples, we can now discuss the three aspects of structural changes, hierarchical levels and changes of title more generally.

The characteristics of departmental structure of libraries within Taiwan universities were summarized as follows:

- Most libraries in Taiwan still preferred a *hierarchical structure* and adopted a *functional organisation*. But the 'teamwork' concept was adopted by some libraries to complement the disadvantages of functionally-organised structure. A 'subject team' or a 'Task Force' or a 'Committee' was formed to enhance the coordination and communication within organisation. For example, 'Science/Technology Team', 'Humanities/Social Science Team', 'Book Service Team', 'Collection Development Team', 'WWW Development Team', and 'Professional Development Team' (in libraries F1, G1, and K1)
- Some reorganisation cases in Taiwan were the result of administrative change of the parent institution. Many private institutions have been upgraded from a junior college to a four-year technical college, or even raised from a polytechnic to a university. Therefore, the library was simultaneously upgraded to upper level in university administrative structure. For example, Library E1 was formerly under the supervision of a 'Teaching Support Office' before reorganisation, but was under the direct supervision of the University President after reorganisation. In this case, the position of library staff can be upgraded and therefore it provided an opportunity to conduct organisational change.
- The combination of the 'Acquisitions' department with 'Cataloguing' department to form a 'Acquisitions/Cataloguing' department and the combination of the 'Preservation' department with the 'Readers Services' department to form 'Preservation/Readers Services' became popular method of reorganisation, and implemented by five of the twelve examples (Library A1, B1, C1, D1 J1, and K1).
- For supporting audio-visual or multimedia services brought by advancement of information and communication technology. Several libraries created a separate 'Audio-Visual' department (or a 'Multimedia' department) or to conduct convergence with campus AV service institution to provide such services. For example, library A1, library F1, library H1, and library I1 established such department after reorganisation.

- The periodical service was much more emphasized by university libraries. Therefore, some libraries created a separate 'Periodicals' department or separated the periodical function from other department to become an independent department to provide a better periodical service. Library B11 and library C had the department.
- 'Reference services' was getting much more attention. Some libraries had renamed 'Readers Services' department to 'Reference Services' department or created a separate Reference department in the new structure. Library C1, D1, F1, and K1 were some of the examples.
- The importance of a library automated system had become greater in the new structure. For example, 'Information' department, or 'System(s) Information' department, or 'Information System' department, or 'System Support' department, or 'Value-Added Information department' were created by libraries after reorganisation to support the library automated system.
- In the life-long learning environment, the relationship between universities and their communities become much closer. Universities have been providing extended courses or continuing education courses for community. Therefore, a library's services were requested to reflect the strategy of parent institution for extended education. One library created a new 'Reference & Outreach Services' department to support the parent institution's extended education.
- University libraries indicated that they had cooperation relationship with campus Computing Services. Some had converged with them to respond to the demand of library automation and computer network services. Very recently, the reason for cooperation or convergence was cooperative development of digital resources and digital collection etc.

### **7.2.2 Level of Hierarchy (Number of Management Levels)**

The academic libraries in the survey reported fewer changes than might be expected from those theoretical projections (see Table 7.3). No change in the number of organisational levels was reported by ten libraries (Libraries A1, B1, C1, D1, E1, G1, H1, I1, J1, and K1) after reorganisation. Library F1 and L1 were two exceptions; Library F1 reported an increase, Library L1 reported a decrease. Library F1 was an extra-large library and upgraded the 'Reference Services' and 'ILL' function and therefore reduced one tier of management level after reorganisation (from four tiers to three tiers). Library L1 was medium-sized but added one tier of position (Assistant Director) under 'Director', therefore increased one tier of management level

(from three tiers to four tiers). Although libraries G1, H1, and I1 had converged with Computer Centre, the management level did not change.

Having inspecting the twelve libraries which providing organisational chart, the researcher found that the number of management levels of libraries (no matter what size the library was) were mostly either two or three which were quite flat during the last 15 years (1985-2001). Ten libraries retained the same numbers of management levels after reorganisation. Even if the organisational structure change involved the library converging with other services, the hierarchical tier was not increased.

Table 7.3 Number of Management Levels at Some Taiwan Universities, by Collection Size

| Library | Collection Size | Number of Management Level |       |           |       |
|---------|-----------------|----------------------------|-------|-----------|-------|
|         |                 | 1985-1997                  |       | 1996-2001 |       |
|         |                 | Before                     | After | Before    | After |
| F1      | Extra-large     | *                          | *     | 4         | 3     |
| C1      | Large           | 2                          | 2     | 2         | 2     |
| A1      | Medium          | 2                          | 2     | *         | *     |
| B1      | Medium          | 2                          | 2     | 2         | 2     |
| E1      | Medium          | 3                          | 3     | 3         | 3     |
| I1      | Medium          | 2                          | 2     | *         | *     |
| J1      | Medium          | *                          | *     | 2         | 2     |
| K1      | Medium          | 2                          | 2     | 2         | 2     |
| L1      | Medium          | *                          | *     | 3         | 4     |
| D1      | Small           | *                          | *     | 2         | 2     |
| G1      | Small           | 3                          | 3     | *         | *     |
| H1      | Small           | *                          | *     | 2         | 2     |

\*: Means the library did not provide organisational chart

### 7.2.3 Title of Library Managers

Almost all of the libraries remained the traditional title for library manager, i.e. 'University Librarian' or 'Director' after reorganisation except two. One used the title of 'Chief Information Officer', the other used the title of 'Library & Information Officer'.

## 7.3 Comparison

The respondents from thirteen UK university libraries and twelve Taiwan university libraries provided the basic data for the discussion of organisational structure change of libraries. Having inspected the organisational structure charts at some UK and Taiwan universities, we will now consider major similarities and differences of those particular changes in libraries in the two countries in respect to the departmental structure, level of hierarchy, and title of library managers.

### Departmental Structure

- **Integration of Technical Services and Public Services**

In 1990s, several authors (Buttlar and Garcha 1992, Larsen 1991) in the library periodical literature had indicated that the division of labour in academic libraries has traditionally been organised into technical services and public, or readers, services. (The divisions may be known by titles differing from the traditional ones) However, this traditional separation of the two major divisions of libraries has often been the focus for discussions of library organisational change. As new forces (i.e. library automation) will break down these existing pattern, the line between public and technical services is now blurring.

Although Buttlar and Garcha (1992) and Larsen (1991) indicated that this arrangement has worked fairly efficiently, particularly in large library collections and their bureaucracies, looking at the organisational structure charts of UK, we found that the design of organisational structure in libraries within UK universities had departed from the traditional bifurcated pattern to a more integrated and innovative nature. Therefore, the 'integration of technical services and public services' was not apparent in most charts after reorganisation. The researcher found that the integration of traditional bifurcated pattern of technical and public service functions appeared in 18% of UK respondents within the initial survey period (1985-1995). The percentage was even lower (only 8%) within the follow-up survey period (1996-2001). Examples of 'integration of technical services and public services' were two libraries (Libraries C, F) in the UK which had

technical and public services divisions before reorganisation and had undergone integration after reorganisation. On the contrary, two libraries (Libraries J and L) had become a bifurcated pattern after reorganisation. The span of control of Library J was very large with nine department heads reporting to the University Librarian before reorganisation. To reduce the span of control of the University Librarian, two 'Associate Librarians' were appointed (one was responsible for 'Reader Services', the other one was responsible for 'Technical Services') to share the administrative responsibilities. Library L had merged some functions of technical services and created a 'Subject Support' division to improve the public services.

Most of the libraries within Taiwan universities were not designed following the bifurcated pattern, they were mostly divided into four major functional departments (Acquisitions, Cataloguing, Preservation, and Readers Services). However, the percentage of 'integration of public services and technical services' was slightly higher compared to that of UK libraries with 34% of Taiwan respondents using this method within the initial survey period (1985-1997) and 36% within the follow-up survey period (1996-2001). Size may explain why more libraries within Taiwan universities adopted the method of integration. The collection size in Taiwan was small to medium. Smaller libraries have always expected staff members to be more flexible. Integration of functions can effectively use the human resources. The survey results suggested that 'integration of functions' was apparent but was not the only method of organisational structure change. Examples of 'integration' were two libraries (Libraries E1, G1) in Taiwan had technical and public services division before reorganisation and had undergone integration after reorganisation. On the contrary, one library (Library L1) had become a bifurcated pattern after reorganisation by increasing one management tier.

#### • **Team-based Staffing Structures**

Looking at the organisational charts in both countries, team-based structures existed more commonly in UK universities than that in Taiwan, particularly after reorganisation (Libraries A, B, D, E, G, H, L, and M in the UK and Library G1 in Taiwan). Varied teams (i.e. 'Service Team', 'Library Team', 'Subject Team', 'Faculty Team', 'Campus Teams' etc.) were adopted by individual library to provide library staff more opportunity to participate, plan, and take more decision-making responsibility about library services and operation. The findings were further supported by the viewpoints of Sykes (1996), (Drake 1993), and Crist (1994). Fielden Report repeatedly emphasizes the importance of adopting team-based management structures—for instance subject teams and project teams (Sykes 1996). Drake (1993) also indicated that 'the formulation of work groups or teams and the focus on people instead of collections may flatten

the organisation and reducing reporting levels. Crist (1994) found that 'library administrators used managerial strategies to flatten the organisational structure. The strategies included reducing the staff complement, redeploying professional staff away from functional roles such as reference, and establishing work teams (i.e. reducing the proportion of managerial positions and pushing decision-making responsibilities for lower level staff in the hierarchy).

- **Creation of a New Division/Department/Function**

In Taiwan, 'Information' (Information System/System Information) department, 'AV Services' department, and 'Reference Services' department were most often reported as new to the libraries during the initial survey period. The creation of a new 'Multimedia Services', 'Periodical', 'Reference/Reference & Extension Services', 'Digital Information', or 'Information Value-Added' department were most occurred during the follow-up survey period (usually after second reorganisation). The addition of new functions in Taiwan indicated the rapidly expanding need that libraries have for managing new systems and services or improving the customers' services.

In the UK, 'customer-oriented' and 'information' services were emphasized in the new structure. New structure also tended to integrate the management of different resources and systems. IT-related services and support was reflected in the new structures. New alignments of functions and non-traditional work unit groupings were becoming more commonplace. One clear feature of change was the increased emphasis on 'teaching and learning' support through the creation of a separate 'Learning and Research Support' department) and this did not feature in Taiwan libraries.

- **Changes in Name of Division/Department/Function**

Larsen (1991) mentioned that 'the names given to the divisions provide another perspective on their character and role within the organisational structure. Changes of names can be the result of combination of departments or functions. Or, the departments were being redefined to communicate expanded or redefined roles'.

Organisational charts showed that 'name change' was definitely a particular element in the organisational and functional shifts within libraries in the two countries from 1985-2001. When the comparison was made between two countries with respect to the changes of names, the components included in libraries within UK universities were mostly more diversified than that of Taiwan before and after reorganisation, particularly in the libraries which reorganised more than once within the 15 years survey period. One major similar change in the two countries was the

combining of the 'Acquisitions' with the 'Cataloguing' department. The title for the enlarged department was different from one country to the other. For example, libraries in Taiwan usually combined the 'Acquisitions' with the 'Cataloguing' to form a 'Acquisitions/Cataloguing' department, or combined the 'Preservation' with the 'Readers Services' to form a 'Preservation/Readers Services' department. In the UK, however, a 'Bibliographical Services' department was mostly the combination of the 'Acquisitions' with the 'Cataloguing' department. The 'Cataloguing' department' was renamed to 'Bibliographical Services' department.

- **Convergence Model**

The extent of convergence was obviously increased with time in the two countries. In the initial survey, both UK and Taiwan had seven convergence cases (which referred to 16% of reorganisation cases in the UK, 18% in Taiwan). In the follow-up survey, both UK and Taiwan had five convergence cases (which referred to 29% of reorganisation cases in the UK, 25% in Taiwan).

Within the overall picture of the growth of convergence, Field (2001) said that considerable diversity may be observed, in respect of the title of the merged service and its head, the degree of inclusivity in the service make-up, and the internal structures of the service.

The degree of inclusivity in the service convergence was more diversified in the UK than that in Taiwan. The main difference was that five convergence cases in the UK involving more difference services (for example, 'Language Centre', 'Learning Resource Centre') while four libraries in Taiwan had conducted convergence with either Computer Centre or Audio-Visual Centre. In the UK, Library C completely merged with 'Computing Services' focusing on 'Academic Support'. Library E and LRC (Learning Resource Centre) services were brought together after first reorganisation (1995). Campus audio-visual support was incorporated after second reorganisation (1996). Therefore, a wide variety of functions (operation, computing support, and subject teams) had been brought within each LRC. The traditional library functions (Acquisitions, Cataloguing, and Document Supply) were under the 'Technical Services Unit'. Library H was convergence of the library and other support services (Computing Services, Language Centres, and Media Services) after first reorganisation (1995). 'Learning Support' was merged after second reorganisation (1998). Library K brought together the two services (Library, Computer and Media Services) after reorganisation (1995). Library L amalgamated with Computing Services after second reorganisation (1991). Two 'Assistant Director' positions were created to deal with 'Support' function and 'Operations' function. The former one was responsible for all subject support, the latter one was responsible for technical service aspects of



library and all computing services. In Taiwan, four libraries (Libraries A1, G1, H1, and I1) had conducted convergence with either Computer Centre or Audio-Visual Centre after reorganisation. Library A1 converged with 'Audio-Visual Centre' in campus. Library G1, H1, and I1 all converged with Computing Service.

The internal structure of the service was rather different in the two countries. The most significant difference was that UK university's libraries paid more attention on the cooperation between different services or with academics while Taiwan's libraries did not present this trend in their new structures. For example, the convergence cases in the UK strongly emphasized the intention of cooperation of library with academics, but it did not feature in Taiwan libraries. In the UK, Library B created Information Services by merging four units. Four key areas of transition in this reorganisation included: 1. enhancement of liaison with academic departments (created a new 'Academic Liaison' unit); 2. cooperation in enquiry desk services (created a new 'Enquiry & Help Desk Services' unit); 3. joint training of staff (created a new 'Staff Training & Development' unit); 4. collaboration between converged services on development projects and information services (created a new 'Projects Management' unit and a new 'Performance Monitoring & Management Information' unit). Four key areas discussed above in which operational convergence was possible (Foster 1995). Library C had 'Client Services' to enhance the cooperation with academics. 'Client Services' were mainly in charge of user training and liaison with academic departments. After Library K converged with 'Computer and Media Service', two 'Assistant Librarians' were responsible for liaison with academic departments for information work.. 'Liaison Librarian' and 'Computing Advisors' posts were also set up to help communication and cooperation issues between the converged units and they were also in charge of 'research support' for four subjects. Another key transition in the new structure in the UK university libraries was on customer (client) services. Examples included: Library C created a 'Public Services' unit to be responsible for 13 libraries' services and 'Help desks' were under this division.

The new structures for service in Taiwan were not exactly the same. However, they shared some similar characteristics. Three important departments/teams: information services, system development (or system support), and network & multimedia (or information technology) appeared in the converged structures. The traditional library functions (Acquisitions, Cataloguing, Preservation, and Readers Service) were either combined or under a larger department, eg. 'Book Service Team', or 'Collection Management', or 'Book Management' department. Besides Library I1 had a new name 'Information Services' for the converged structure, others retained the name of 'Library'.

### **Changes of Level of Hierarchy**

What was happening to the level of hierarchy after reorganisation in the two countries? Was the number of management levels in an organisation changed, increased, or decreased?

Most university libraries in both countries preferred a hierarchical structure before and after reorganisation. The survey results showed that the number of management levels adopted by thirteen samples of university libraries in the UK was mostly either three or four, and mostly two or three tiers in twelve samples of university libraries in Taiwan. It suggested that the level of hierarchy of in the UK seemed to be taller than that of in Taiwan. To test for a relationship between the number of management level and size of libraries, no clear correlation existed. Large libraries in the samples from UK universities were likely to have more management tiers than small one. University libraries in the UK mostly tended to become flatter by reducing one or two tiers of management level after reorganisation. One of the most interesting characteristics after library reorganisation within UK universities was several libraries had flattened the structure by deleting the 'Deputy Librarian' position (Libraries A, B, C, F, L). But this was not the case in Taiwan because the position of 'Deputy Librarian' did not exist in any library within Taiwan universities. The removal of second level managers indicated that the span of control of library directors was enlarged. It enhanced the staff communication of organisation and, therefore, increased the efficiency of the organisation. This change was similar to those theoretical projections (Boisse 1996, Johnson and Marquardt 1996). Most sample libraries in Taiwan universities did not change the management levels.

### **Changes of Title of Library Managers**

Usually the title of library managers will change following the changes of names of libraries. The title of library managers will sometimes retain the same after the library conducting reorganisation. If a library manager is promoted to be the leader in a converged service, he/she always has new title.

Having inspected thirteen samples in the UK and twelve samples in Taiwan, the difference of titles in the two countries was not very obvious before reorganisation. However, the title of library managers in the UK was basically more diversified than that of in Taiwan after reorganisation in both surveys, particularly in the follow-up survey. Examples of these in the UK included: 'Librarian and Director of Information Services', 'Head of Learning Services', 'Director of Learning & Information Services', 'Head of Information & Learning Resource

Services & University Librarian', 'Head of ILRS & University Librarian', 'Director of Learning Information Services', 'Director of LIS' etc. University libraries in Taiwan, on the contrary, retained more traditional titles (for example, 'Librarian', or 'University Librarian', or 'Director') for library managers in both surveys even converged with other support services. There were only two new titles reported after reorganisation: 'Chief Information Officer', 'Library & Information Officer'.

Diversified title of library managers in the UK meant that the roles of libraries were changed. Looking at the characteristics of organisational charts in the thirteen UK libraries, the researcher concluded that the new titles on one hand significantly reflected the increasing emphasis on teaching and learning support of libraries. On the other hand, the new title indicated a more converged information service of libraries which integrating different information technologies and resources. Two samples with new titles in Taiwan merely reflected that they have integrated the function of information and computing with library services. But the role of libraries in teaching and learning support was not apparently indicated in the new titles by Taiwan's libraries.

#### **7.4 Summary**

The researcher found that organisational chart of individual library was rather unique in the two countries in both survey periods. However, the differences and similarities in organisational structure change are indicated and revealed in this research.

Organisational theorists have predicted that the organisational structure of libraries in the future will be flattened (with fewer levels of management and more sub-units of libraries). It will emphasize the importance of communication and interaction at all levels (Boisse, Johnson and marquardt 1996). This research suggested that university libraries in the UK were likely to be flatter but university libraries in Taiwan were not. This conclusion can not be generalised to all university libraries in the two countries because it was merely drawn from thirteen samples in the UK and twelve samples in Taiwan. If the organisational charts provided by sample libraries have been significantly or slightly modified then, they can not reflect the actual situations of libraries and may influence the judgement of the researcher. Therefore, a further thorough study is strongly recommended to reach the generalisation.

Boisse (1996) believed that there is no 'best' way to organise a library. The actual organisational structure must reflect the specific needs of individual organisation, the direction and focus of its parent institution, and the strengths and skills of the human resources within the

library. Some libraries even have a mix of various structures. Boisse's opinion was also reflected in our survey research. From the inspection of characteristics of organisational structure change, we can not find any two structures were exactly the same. Each organisational structure was unique although some structures shared common characteristics. Therefore, one perfect model suitable for every library can not be obtained from this research. This research suggested that a common model was to integrate campus academic computing services with the library. Another common model involved meshing campus audio-visual services with the library. We can not say that a converged service will be the best model for university libraries, because there are some universities where converged services have subsequently deconverged; whilst others have resolutely maintained the independence of the two services (Discombe 2003). Many factors still influence the establishment of new structures of libraries in modern information society. The researcher suggests that university libraries must continue pursuing a suitable and responsive organisational structure by modifying their current organisational structures or creating a new one.

## **Chapter 8 Summary, Conclusions and Recommendations**

This chapter is the summary of the research; conclusions and recommendations are also made. The researcher believes that the experience of library reorganisation in both the UK and Taiwan universities will provide an example to the university libraries which are preparing for or considering such changes. Perhaps they will be able to apply some of these findings and valuable lessons to their new paradigm in innovation of organisational design.

### **8.1 Purposes and Procedures of the Study**

The primary purpose of this study was to examine the extent of library reorganisation within the UK and Taiwan universities and the principal differences and similarities on organisational structure changes in the two countries between 1985 and 2001.

In order to provide a more complete analysis of the research problem, the study aimed:

1. To investigate the extent to which university libraries have been reorganising within UK and Taiwan universities.
2. To determine what environmental factors are driving organisational structure change in libraries within UK and Taiwan universities.
3. To identify the possible methods of library reorganisation within UK and Taiwan universities.
4. To describe the characteristics of organisational structure, the principal differences and similarities in organisational structure change of libraries within UK and Taiwan universities.
5. To explore the challenges of organisational structure change of libraries within UK and Taiwan universities.
6. To recommend a management model of organisational structure for university libraries based on the findings of the survey.

This study was a population study. The population was comprised of all library directors (or equivalent managers) within the UK and Taiwan universities. This was a total of 98 library directors in the initial survey within UK universities; the population for the follow-up survey was those who had responded to the initial survey which was 58 library directors. On the other hand, in Taiwan universities, the initial population was a total of 88 library directors with the 55 library directors

who responded to the initial survey becoming the population for the follow-up survey.

This study was composed of two surveys, the initial survey (comprising two stages of survey) and the follow-up survey. First stage of the initial survey had concentrated upon investigating the organisational structure change of university libraries. The second stage of the initial survey had mainly focused on investigating further the university libraries which had converged with other services, center or department etc). The follow-up survey was to obtain more up-to-date information about library reorganisation within UK and Taiwan universities after the initial survey.

The initial survey questionnaire, a cover letter and a postage-paid and addressed return envelope were sent to library directors in 1996 (UK survey) and in 1998 (Taiwan survey). In May 2002, six years after the initial survey in UK (1996) and four years after the initial survey in Taiwan (1998), a formal questionnaire, a cover letter and a postage-paid and addressed return envelope were sent to library directors which had responded in the initial survey. This survey intended to make cross-section comparison of extent of library reorganisation between UK and Taiwan universities and also make longitudinal comparison between the initial survey and follow-up survey.

The data collected were separately compiled by hand and were analysed using the *SPSS 8.0 for Windows* software program's data editor. Frequency, percentages and crosstabs were used to identify the characteristics of the data. *Chi-Square test* was used to analyse categorical variables to allow us to determine if differences in frequency existed across response categories or to analyse the relationship between two categorical variables to determine whether there was a significant relationship between variables; the level of significance was also analyzed.

Since the two sets of scores (UK's and Taiwan's) came from two different samples of people, the researcher adopted the unrelated t-test to test the hypothesis in order to calculate whether the means of the two sets of scores were significantly different from each other.

## **8.2 Summary of the Results of Hypotheses Testing**

The hypotheses for this study were:

### **A. Extent of library reorganisation**

H1: There was no significant difference in extent of library reorganisation between UK and Taiwan universities.

### **B: Selected background factors of libraries**

H2: There was no significant difference in collection size of library between UK and Taiwan universities.

H3: There was no significant difference in management style of library between UK and Taiwan universities.

H4: There was no significant difference in organisational structure of library between UK and Taiwan universities.

H5: There was no significant difference in installation of library automated system between UK and Taiwan universities.

H6: There was no significant difference in the provision of information technologies of library between UK and Taiwan universities.

H7: There was no significant difference in the impact of library automation and information technologies on the staffing pattern and working pattern between UK and Taiwan universities.

C. Environmental factors of library reorganisation

H8: There was no significant difference in the environmental factors driving organisational structure change in libraries within UK and Taiwan universities.

D. Methods of library reorganisation

H9: There was no significant difference in methods of library reorganisation between UK and Taiwan universities.

E. Aspects Considered before library reorganisation

H10: There was no significant difference in aspects considered before library reorganisation between UK and Taiwan universities.

F. Goals of library reorganisation

H11: There was no significant difference in goals of library reorganisation between UK and Taiwan universities.

G. Results of library reorganisation

H12: There was no significant difference in results of library reorganisation between UK and Taiwan universities.

H. Staff attitudes towards library reorganisation

H13: There was no significant difference in staff attitudes towards library reorganisation between UK and Taiwan universities.

Summary of the results of testing the hypotheses are presented in Table 8.1. Of the thirteen hypotheses, some were supported and others were not supported by the study. For most of the

hypotheses tested, only those items that were significantly different in the two countries will be presented in the table. Take hypotheses of 'environmental factors' for example, in the initial survey, UK had a significant higher percentage in the factor of pursuing a 'more effective administration' than that in Taiwan and the difference is significant.

Table 8.1 Comparative Results of Hypotheses Testing between UK and Taiwan

| Country                                     |           | UK                                                         | Taiwan                                                                      | Results of hypotheses testing |
|---------------------------------------------|-----------|------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------|
| Hypotheses                                  |           |                                                            |                                                                             |                               |
| H1:<br>Extent of library reorganisation     | Initial   | 78%                                                        | 70%                                                                         | Supported                     |
|                                             | Follow-up | 55%                                                        | 67%                                                                         | Supported                     |
| H2:<br>Collection size                      | Initial   | Most were medium to extra large                            | Most were small to medium                                                   | Not supported                 |
|                                             | Follow-up | N/A                                                        | N/A                                                                         |                               |
| H3:<br>Management style                     | Initial   | Decentralised (56%)                                        | Centralised (75%)                                                           | Not supported                 |
|                                             | Follow-up | N/A                                                        | N/A                                                                         |                               |
| H4:<br>Organisational structure             | Initial   | Combined functional/<br>subject-based pattern (79%)        | Functional pattern (96%)                                                    | Not supported                 |
|                                             | Follow-up | Combined functional/<br>subject-based pattern (52%)        | Functional pattern (74%)                                                    | Not supported                 |
| H5:<br>Library automated system             | Initial   | Integrated (74%)                                           | Integrated (82%)                                                            | Supported                     |
|                                             | Follow-up | N/A                                                        | N/A                                                                         |                               |
| H6:<br>Information technologies             | Initial   | Online catalogue; online database                          |                                                                             | Not supported                 |
|                                             | Follow-up | Distance learning                                          | Images/multimedia                                                           | Not supported                 |
| H7:<br>Staffing pattern and working pattern | Initial   | More flexible working place;<br>Eliminating some positions | More professional staff;<br>Staff reassignment<br>Position reclassification | Not supported                 |
|                                             | Follow-up | N/A                                                        | N/A                                                                         |                               |
| H8:<br>Environmental factors                | Initial   | More effective administration                              | Facilitate management function;<br>Library automation;<br>Online catalogue  | Not supported                 |
|                                             | Follow-up |                                                            | Construct a new building;                                                   | Not supported                 |



| Country                                  |           | UK                                                                       | Taiwan                                                                  | Results of hypotheses testing |
|------------------------------------------|-----------|--------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------|
| Hypotheses                               |           |                                                                          |                                                                         |                               |
|                                          |           |                                                                          | Change of demographics                                                  |                               |
| H9:<br>Methods of library reorganisation | Initial   | Eliminate functions/departments (units);<br>Rename departments/units     |                                                                         | Not supported                 |
|                                          | Follow-up |                                                                          | Create new functions/departments (units)                                | Not supported                 |
| H10:<br>Aspects considered               | Initial   | The parent institutional climate;<br>Staff strengths and weaknesses      | The climate of the library                                              | Not supported                 |
|                                          | Follow-up |                                                                          |                                                                         | Supported                     |
| H11:<br>Goals of reorganisation          | Initial   | Other                                                                    | Take full advantages of library automation and information technologies | Not supported                 |
|                                          | Follow-up | Other                                                                    |                                                                         | Not supported                 |
| H12:<br>Results of reorganisation        | Initial   | Staff resistance;<br>Complex subordinate/supervisor reporting structures | Maintenance problems on computers or other equipment                    | Not supported                 |
|                                          | Follow-up | Resistance to change                                                     | Boundary disputes between services;<br>Staff training and development   | Not supported                 |
| H13:<br>Staff attitude                   | Initial   | Agree                                                                    | Unknown                                                                 | Not supported                 |
|                                          | Follow-up | N/A                                                                      | N/A                                                                     |                               |

N/A: Means this item was not listed in the questionnaire

### 8.3 Summary of the Conclusions

#### Extent of Library Reorganisation

The overall extent of library reorganisation for both the UK and Taiwan universities was high over the 15 years period (1985-2001), however, there had been an overall decline during the follow-up survey period. This may be attributed to the shorter follow-up survey period. Another reason may be that most of the respondents had undergone organisational change in the initial survey and some of them did not need to embark on change within such a short time. By individual

country, different extent of change during two survey periods was also inspected. In the UK, the reorganisation frequency in the initial survey period was high with nearly half of reorganised libraries had reorganised more than once. The extent of change in UK became smaller with time. In Taiwan, the extent of reorganisation in both survey periods was high and very similar. About one third of reorganised libraries had more than one time experience. When the comparison was made between the UK and Taiwan about the extent of reorganisation, UK had a higher percentage of reorganisation than Taiwan in the initial survey even though the data collection period for Taiwan was two years longer than that of UK. In contrast, Taiwan had a higher percentage of reorganisation than UK in the follow-up survey. This suggested that reorganisation occurred slightly later in Taiwan than in the UK. Nevertheless these apparent temporal differences were not statistically significant. The future plans of organisational change were reported with 30% respondents from UK and 24% from Taiwan in the follow-up survey were considering the possibility. The survey results significantly change the traditional image of academic libraries. Academic libraries used to be regarded as stable, conservative and inflexible. Higher education institutions libraries in the two countries were very responsive to the climate of change that surrounded them. Since the response rate for both countries were just near 60%, therefore, we need to consider if the responding libraries represented a biased set. If those that had not responded the questionnaires were those that had not conducted organisational structure change, then the extent of change was actually not so high as the initial survey result indicated. In other words, the non-respondents may have reorganised in the second survey periods, but the researcher did not survey them again. If the non-respondents in the initial survey were surveyed again, the extent of change may be higher in the follow-up survey.

### **Selected Background Factors of Libraries**

As to the background factors of libraries contributing to organisational structure change, unrelated t-test showed that there was a significant difference in UK and Taiwan university libraries regarding library size, managerial style, organisational structure etc. Most university libraries in the UK were medium to extra large-sized, but most university libraries in Taiwan were small to medium. More university libraries in the UK than that in Taiwan had decentralised management style. The difference was statistically significant. Different management style was due to different library size in the two countries. Pearson Correlation Coefficient showed that there was a positive linear relationship between collection size and management style. Small libraries tended to have a centralised management style while larger libraries tended to be composed of department or branch libraries. Since the overall collection size in the UK was significantly larger than that in Taiwan. It

explained that why more libraries in UK than that in Taiwan adopted decentralised management style. Libraries in the UK in the initial survey preferred a combined functional/subject-based organisational pattern while Taiwan preferred a functional one. Pearson Correlation Coefficient showed that there was a positive linear relationship between collection size and organisational structure. Smaller libraries tended to organise around functions and larger libraries tended to choose combined functional/subject patterns. As the collection size in UK university libraries were larger than that of Taiwan's, it can also explain why in the initial survey, a majority (79%) of libraries in the UK preferred combined functional/subject-based organisational structure and almost all (96%) libraries in Taiwan were functionally-organised. But the preference for organisational structure changed in the two countries in the follow-up survey with one third of UK libraries switched to functional pattern and one fifth of Taiwan libraries changed from a traditional functional pattern to other structures. Nevertheless, the Pearson chi-square test revealed no significant relationship between extent of the library reorganisation and the collection size, the management style, the organisational structure of libraries studied.

The adoption of library automated system has long been recognised as one of the major reasons contributing to organisational structure change. In the initial survey, most of the libraries in the two countries adopted integrated library automated system rather than single function system while Taiwan had higher percentage of libraries than that of UK. However, unrelated t-test revealed no significant difference regarding library automated system installed in the UK and Taiwan. Besides, Chi-square test indicated that there was no positive relationship between the automated system installed (integrated system or single system) and the extent of library reorganisation. It suggested that library automation has relationship with organisational structure change, but it is not very much relevant with the kind of automated system installed.

In the initial survey, respondents from both countries mostly had delivered information technology related services, such as network, CD-ROM, e-mail services etc. Unrelated t-test revealed that the provision of other services, such as CD-ROMs, networks and email, showed no significant difference between the UK and Taiwan but there was a significant difference in the provision of 'online catalogue', and 'online database' services. More libraries from UK universities than that from Taiwan had 'online catalogue' and 'online database' services. In the follow-up survey, IT related services became more versatile with information resources/services (such as electronic journals, electronic document delivery etc.) had been provided. Levene's test revealed that both countries were very similar in their adoption of digitised collections, electronic journals, electronic document delivery, CD-ROMs and web sites but there was a significant difference in the UK and Taiwan university libraries with respect to the provision of 'images/multimedia' services,

and 'distance learning' services. More libraries in UK had 'distance learning' services than that in Taiwan. But Taiwan had a significantly higher percentage in providing 'images/multimedia services' than that in UK. The differences in the provision of ICTs related services mainly due to different development pace in libraries or affected by government's and parent institution's projects in the two countries.

The major impacts of library automation and information technologies on staffing patterns in the two countries were rather similar. The top three impacts in the UK were 'changes in professional/support staff roles', 'staff reassignments', and 'need more support staff'. The top three impacts in Taiwan were 'need more professional staff', 'staff reassignments', and 'changes in professional/support staff roles'. However, there was a significant difference in UK and Taiwan university libraries with respect to 'changes in professional/support staff roles', 'need more professional staff', and 'staff reassignment'. Libraries in Taiwan universities indicated an increase in the demand for 'professional staff' while the need for 'professional staff' in the UK remained almost balanced. More libraries in Taiwan had reassigned staff responsibilities than that of libraries in the UK. More libraries in the UK reported that they had changed 'professional/support staff roles'. The demand for support staff increased in the two countries, the result was contrary to what was reported in literature. The reason may be the cost to hire support staff was less expensive than that of professional staff.

The major impacts of library automation and information technologies on working patterns in the two countries were rather similar. The top three impacts in the two countries were 'redesigning staff jobs and duties', 'revising workflow and job description', and 'producing new positions'. Unrelated t-test revealed that there was a significant difference in UK and Taiwan university libraries with respect to 'more flexible working place', 'eliminating some positions', and 'position reclassification. Libraries in UK universities had a significant higher percentage in 'more flexible working place' and 'eliminating some positions' than that in Taiwan universities. On the contrary, libraries in Taiwan universities had a significant higher percentage in 'position reclassification' than that in UK universities. The results showed that libraries in Taiwan need more staff for both professional and support staff. It was impossible for them to conduct staff elimination even though they had introduced library automation and other information technologies to reduce the routine tasks and improve the operation and services.

## **Environmental Factors of Library Reorganisation**

For the convenience of comparison, the reasons for change were grouped into six different aspects (services, management, economic, socio-cultural, technology aspects, and other). Service reasons ('to improve services', 'to provide new services') and management reasons ('to increase efficiency', 'to facilitate management functions', 'administrative changes', 'change of personnel') were reported by both countries as top two major reasons in both surveys. But the ranking for other reasons were in some way not similar in the two countries in both survey. In the UK, socio-cultural reasons and economic reasons had similar importance in the initial survey and both ranked third, technological reason ranked fourth. However, the importance of economic reasons decreased in the follow-up survey and ranked fifth. In Taiwan, technological reasons ranked third and socio-cultural reasons ranked fourth in both survey. Economic reasons ranked fifth. The importance of economic reasons also decreased with time.

Both survey results indicated that there were a few reorganisational cases involving convergence activities. The reasons for the convergence were varied, some reasons were similar to those indicated in the literature (Revill 1992, Lovecy 1994, and Collier 1996, Moules 1997, Milne 1998, Corral 2000). The most important reason was 'to cooperate in supporting teaching, research, and learning; to prevent overlapping missions and strategies'. Under this circumstance, students can receive 'one-stop-shopping' service (Collier 1996). The second reason was 'to share (integrate) equipment/facilities/staff to pursue a more effective administration'. The range of skills and services offered in community support services can be managed within a single structure, and overall economies in the institution and reduction of internal competition for resource can be achieved (Collier 1996). Corral (2000) noted that a larger service unit should have more influence within the organisation and a combined budget can enable more cost-effectiveness and flexibility in resource allocation. It allows for different ways of organising staff (Milne 1998). The third reason was 'to exchange specialisation between organisations'. Different expertise can be pooled from the professional group (Collier 1996). 'Convergence make holistic IT planning, library staff can have quicker access to a wider range of IT expertise' (Corral 2000). Other important reasons included: 'to create a digital learning environment', and 'to centralize training of staff'.

Most of the reasons for convergence were similar in the two countries while only one reason (pursuing more effective administration) that UK university libraries reported a significantly higher percentage than the Taiwan libraries. The major reason for convergence was to enhance cooperation in supporting university's teaching, research, and learning. When the parent institution

launched distance education, support for distance learners became another demanding service for the library. The missions and strategies between services units in campus may become overlapping.

### **Methods of Library Reorganisation**

Different approaches and ranges of reorganisation are reported in the literature. First, single-organisational reorganisation, restructuring units within a library. Second, libraries converge with other services/department inside campus. Third, libraries converge with other libraries outside campus. Fourth, library is a member of a consortia etc.

The result showed that most of the library reorganisation in the two countries was only internal reorganisation rather than external reorganisation. The extent of the change depends largely on the individual situation of the libraries. The top two methods adopted in reorganisation in both countries were creation of new functions/departments/units and combination of functions. In the initial survey time, most libraries had created a separate 'Information/Information System/System Information' department, 'AV Services' department, 'Reference Services' department. In the follow-up survey time, the importance of the provision of electronic information resources/services, the development of the digital library, and 'teaching and learning support' were reflected in the organisational charts. The creation of a separate 'periodical' unit was especially common in university libraries of Taiwan. The combination of several departments into a larger department/division was reported by many respondents in both countries, for example, the combination of the 'Acquisition' with the 'Cataloguing' or the combination of the 'Preservation' with the 'Readers Services'. In general, the organisational structures within UK universities were mostly more versatile and innovative than that of Taiwan before and after change, particularly in the libraries which reorganised more than once within the 15 years survey period.

Library services have increased and become more versatile during the past two decades. With the rapid development of information and network technology, many libraries have network services, digital collection, and electronic information resources. When the parent institution launched distance education, support for distance learners became another demanding service for the library. The missions and strategies between services units in campus may become overlapping. With limited human resources and other restrictions, the best way to enhance services is through merged service or collaborative provision based on informal cooperation of separate services or other models between these two extremes (Corrall 2000). External reorganisation was reported by a few higher education institutions in UK and Taiwan. Nevertheless, the result showed that external reorganisation increased with time. It reflected a trend that the convergence of library and other

supporting service in campus occurred. The convergence cases within UK and Taiwan universities were mainly seeking cooperation to support teaching, research, and learning.

This trend was also mentioned by Brophy (2000), who indicated that a high degree of cooperation and coordination between libraries and other agencies was unavoidable in a hybrid environment. It will certainly require new forms of organisations, perhaps through convergence with IT departments or with those responsible for designing learning environments. In both surveys, 'Computing service' and 'Media/Audio-Visual service' ranked as the top two services which libraries converged with. 'Computing service' retained its top one place in the follow-up survey, but the importance of 'Media/Audio-Visual service' decreased. In the UK, the percentage of convergence with 'Language Centre' and 'Teaching/Learning Support' increased in the follow-up survey. In Taiwan, 20% respondents converged with 'Language center'. The result strongly suggests that the trend of convergence changed. The importance of the roles of 'Language Centre' and 'Teaching/Learning Support' become the new partners of university libraries in providing information services. This variation was due to the changing demand of library customers and the changing strategy of parent institutions. To increase the library services in a wide range of liaison activities that respond to the information needs of the academic community, libraries should seek an active partnership between the libraries and the institutional services in universities.

Convergence has had a profound effect on the services and operations in the higher education institutions libraries. The new structures still continue to evolve in response to the changing demands for the University and from users. Staff will constantly need to be ready to respond to these changes and this requires the adoption of a 'flexible' culture and a dynamic staff development and training policy. (Shoebridge 1998)

### **Characteristics of Library Reorganisation**

The traditional separation of the two major divisions (technical services, public services) of libraries has often been the focus for discussions of library organisational change. It is believed that environmental forces will break down this existing pattern. The researcher found that the integration of technical and public service functions appeared in only 18% of UK respondents within the initial survey period (1985-1995). The percentage was even lower (only 8%) within the follow-up survey period (1996-2001). It reflected that other methods of reorganisation were used beside the integration of technical services and public services. Libraries within Taiwan universities were mostly divided into four major functional departments (Acquisitions, Cataloguing, Preservation, and Readers Services), however, the percentage of 'integration of public services and technical

services' was slightly higher compared to that of UK libraries with 34% of Taiwan respondents using this method within the initial survey period (1985-1997) and 36% within the follow-up survey period (1996-2001).

Corbin (1992) once mentioned that 'the functional structure probably will form the basis of organising most work within libraries.' Nevertheless, the preference for organisational forms changed significantly with time. In the initial survey, more respondents' libraries in the UK organised their structures by a combined (mixed) functional/subject-based pattern. In the follow-up survey, More than half the respondents' libraries had chosen a 'matrix organisation', and more respondents' libraries chose a functional or subject-based model compared with the result in the initial survey. Nevertheless, most respondents in Taiwan adopted a functional organisation in both survey periods. The situation in Taiwan was more similar to what the Corbin's (1992) prediction.

In general, the organisational models adopted by UK university libraries can be classified into several kinds. The most common one was hierarchical structure. The second most common model was a team-based structure. A team-based structure groups library staff into functional or service teams/units. This structure can be like a circle structure. The members of the teams are at the rim and the senior management teams are at the centre. Senior management teams have to report to the University Librarian or Director. Many libraries have created different teams/groups/clusters along subject or functional lines to cut across departmental boundaries and/or combine specialists from a variety of functions and areas. This structure emphasizes teamwork and every team has the equal importance in the organisation. Finally, the network structure was also reported by UK university libraries; it was particularly common in convergence cases. There were six examples of convergence that adopted this structure. In contrast, most respondents' libraries in Taiwan preferred hierarchical structure. Because of the disadvantages of functionally-organised structure, the concept of teamwork was shown in a few library organisational charts. A 'task force' or 'committee' was created to enhance the coordination and communication within organisation.

A flatter organisation (with fewer levels of management) is predicted as the emerging trend for organisation of the future. From this study, the prediction was true in the UK experience but was not in the Taiwan experience. In the UK, the management levels adopted by libraries was three tiers to four tiers for all sizes of the library. The number of management levels tended to reduce during the last 15 years (1985-2001). To test for a relationship between the number of management level and size of libraries, no clear correlation existed between the number of management level and size of libraries. Large libraries from UK universities in the survey were more likely to have more management tiers than small one. One of the major characteristics after library reorganisation was several libraries had flattened the structure by deleting the 'Deputy Librarian' position. The



decrease of the hierarchical tiers implied that the span of control of library directors was enlarged. It also enhanced the staff communication of organisation. In Taiwan, the result showed that the management levels of libraries in Taiwan were mostly very small and usually either two tiers or three tiers for all sizes of the library. Most libraries retained the same management level after reorganisation (no matter what size the library was). The organisational structure did not become more vertical even the reorganisation involved convergence. Although most libraries did not change management level after reorganisation, some respondents reported that the level of the library in university administrative status was upgraded. The main reason was because of the administrative change of the parent institution. When the status of parent institutions have been raised, the library was simultaneously upgraded to a higher level in the university administrative structure.

The library and the computing unit are generally the largest and the decisive players within a converged organisation.

The title of the library and its head was more traditional in the two countries before reorganisation. But it became much more diversified in the UK after reorganisation, such as: 'Information Services Director', 'Head of Learning Services', 'Director of Learning Information Services', 'Librarian and Director of Information Services', and 'Head of Information & Learning Resource Services & University Librarian' etc. Royan (1994) discovered no fewer than seventeen different service names in the converged environment. In Taiwan, almost all respondents retained the traditional title for library manager after reorganisation except two. One was 'Chief Information Officer', the other was 'Library & Information Officer'.

### **The Challenges of Organisational Structure Change**

The researcher found that challenges of organisational structure change should not be underestimated. Many aspects need to be considered when designing an organisational structure. There were some similarities in the aspects considered in the two countries. For example, both countries reported considering 'the extent of managerial support', 'staff interest in the change', and 'staff resistance'. In the initial survey, more UK respondents than that in Taiwan considered their 'parent institutional climate' and 'staff abilities'. Libraries in Taiwan, however, reported that their major concern was 'the climate of the library'. In the follow-up survey, the aspects considered showed no significant difference in the two countries, but the influences of 'parent institution' were getting much attention in Taiwan. It suggested that parent institution had more influence on libraries' project of reorganisation in the last five years. The researcher wants to describe several important aspects in detail as follows:

First, the vision, mission, and strategy etc. of the parent institution should be taken into account if a library wants to provide more effective services for its parent institution. Second, 'managerial support' is necessary for any kind of organisational change. The implementation of change demands managerial support within and outside the library, particularly support from top-level authorities and library staff. It is important for library directors to have a proactive attitude and good public relation to gain the support of all corporate constituencies. Third, 'climate of the libraries' is a very important aspect. Any change should follow the goal and direction of the library development and should be based on its available resources and staffing patterns. Fourth, 'staff strengths and weaknesses' needs to be comprehensively understood. Creation of new tasks and redistribution of old ones will demand library staff to have suitable skills and knowledge. If the change involves reassignment, then the training and preparation for the new assignment should be considered. Finally, 'staff attitudes towards change' is a key aspect. Change of the library organisational structure always involves the change of staff work, and this will unavoidably create stress and anxiety for staff members. This will directly or indirectly affect the work efficiency and library services. Managers need to review the sources of resistance and devise an effective solution. One of the solutions is to provide adequate education and training when change is made. Library staff should be informed about the change issue as early as possible. Another solution is providing the opportunity of staff involvement in the change process. The other solution is by regular communication. The process of planning must be clearly understood and the role of all participants is precisely defined.

### **Leadership Style and Management Model**

The environment in which universities and libraries exist is creating the need for change in the ways universities and libraries function, organise and provide services. These changes are attitudinal, behavioral and structural (Drake 1993). Leadership style played a decided role in organisational change (Lee 1993). 'Organisational development has developed a value based view of leader/subordinate relations that supports the power exchange required for collaboration and interlevel adjustments between staff and managers (Lee 1993). Faerman (1993) also suggested that library administrators who want to move their organisations to become more user-centered need to understand how leadership style affects the types of strategies they may choose in making this transition. She advocated finding a balance among the possible choices of leadership styles and using a variety of strategies to achieve organisational goals.

To cope with the external and internal pressures, it is necessary for libraries to have improvement in both the quantity and quality of changes in organisational structures. Libraries have therefore sought to take advantage of various management strategies and have embraced various movements, from TQM and quality circles to the team approach (team working) to the flattened organisation to empower employees and to a variety of combinations of these (Biosse 1996). Neal and Steele (1993) asserted that the organisational structure of many research libraries is increasingly dysfunctional for today's needs as it fails to empower staff. Drake (2000) indicated that strategic planning, master planning and meeting institutional and departmental goals are becoming more important. Brophy (2000) indicated that organisations differ widely in management style. Differences in style derive from a range of factors including the history of the organisation and the style which it has inherited; the style which is 'imposed' or 'encouraged' by the parent organisations; the personalities of the managers; the conception of the managers, etc.

Two library directors in Hu's (1997) survey indicated that each library had its own history and background. It was unnecessary to set up a standard library reorganisation. Each library could implement library reorganisation in its own way. Boiss (1996) believed that there is no one 'best' way to reorganise a library. The organisational structure of a library must reflect the needs of the organisation, the direction and focus of the parent institution, and the strengths and skills of the human resources within the library. Drake (1993) pointed out that the 'organisational structure of the future will be determined by technology, the desired customer service model, library purposes and goals'. Although there is no single structure that will be appropriate for all libraries, the library will have to change its culture, values, mental models of the library and behaviors. Drake (1993) indicated that large research libraries will have to be more adaptable and flexible than smaller libraries. Vickery (2001) noted that there is no perfect model for every library at the moment, each library should review the different models, ranging from extending the span of existing jobs to creating a new section. And select the one best suited to its own circumstances. These opinions were further emphasized in this survey. This research did not find any two structures which were exactly the same. Every library's organisational structure was unique. It suggested that university libraries have taken different routes to modify or create a new and appropriate organisational structure according to its internal and external situation. Many factors still influenced their choice of new structure. In general, every model was designed to meet individual library's goals and especially developed based on their parent institution's strategic vision for the future.

Most libraries in the future will probably base their services on a mix of physical objects (books, paper-based journals, videotapes and the like) and electronic 'stuff' (web pages, remote data services, CD-ROMs etc) (Brophy 2001). For this reason, organisational structures that stress the

management and delivery of 'hybrid library' services seem to be the most useful. Law (1998) found that students use the library as a physical place more and more, while faculty members use it less and less, expecting to find resources available at the desktop. He suggested a joint model can develop in which support and basic training for undergraduates is delivered within the library/information centre and support for research is delivered in the office/laboratory by the multi-skilled teams of library and computing staff. Another view he proposed is the development of 'hybrid staff' where the individuals are multi-skilled. The findings, in some respect, are quite consistent with the viewpoints of Brophy and Law. Inspecting the organisational charts after change, it was evident that there were more departments or functions related to the provision of electronic services created. Furthermore, team-based structures appeared in most organisational charts also indicated that libraries wanted to take advantage of multi-skilled staff from book cataloguing to network installation, assuming some commonality of skills only in the user support area. It strongly suggested that provision of a integrated and 'seamless' service to the user is the largest challenge for library managers.

#### **8.4 Recommendations**

The following recommendations are made from the survey research and the review of related literature.

1. The parent institutions should reconsider the adequacy of the number of library staff at all levels. This research suggested that the demand for support staff in the two countries was increasing rather than decreasing after the introduction of library automation and information technologies. Libraries in Taiwan universities also indicated an increase in the demand for professional staff. It reflected that the number of library staff was not meeting the needs of library operation and services. As the information technologies-related services increase during the past decade. So do the user expectations. If the current staffing can not meet the needs of the parent institution, then it is necessary to make some revision of personnel policies.
2. The adoption of library automation and other technologies absorb some routine tasks, the roles between professional and support staff are blurred. Support positions will take greater job responsibilities. Many tasks previously done by professional librarians have been transferred to support staff, therefore, the roles of professional and support staff need to be changed and well-defined after organisational change. Library administrators

must explain clearly and make sure all understand their roles, responsibilities, and expectations. Most libraries (87%) in the UK had changed 'professional/support staff roles' while only 40 % respondents in Taiwan had done so. Library administrators in Taiwan need to catch up later in this issue. Johnson (1996) mentioned that the new role of professional staff would be on teaching, marketing the library and its services, staff training, and liaison activities.

3. A formal reorganisation programme (plan) is strongly recommended in any type of reorganisation. The programme involves the assessing both the external environment and the organisation itself. It must fit with those of the parent institution. A formal reorganisation programme can be a very effective means of communicating concerns, intentions and problems to the wider community. The elements included in the programme should be clearly described.
4. 'The ability of change management' of LIS managers and directors is often critical to the success of library organisational changes. The management of change involves various aspects (Day and Edwards 1998). Firstly, the managers must support staff through restructuring. Openness, good communications, clear vision, leadership and training are essential to release library staff's anxiety and uncertainty caused by change. Secondly, the managers must have a positive attitude towards change. Day and Edwards (1998) pointed out that change can be a creative force, but some managers may see change as loss of management control. They advised managers to think creatively in pursuing a new vision under the circumstances of insecurity and uncertainty. Thirdly, LIS managers need to collaborate with other individuals and groups in the creation of information strategies to manage change. But LIS managers need to resolve the barriers to collaboration relate to clashes of organisational cultures, personal incompatibilities and different approaches to change, and the managers should develop appropriate organisational structures. The result showed that the issue of clashes of organisational culture, particularly, between LIS and computing centres, persists. The finding suggested that it was usually the 'library director' to take the leadership in the new structure. Some of them were promoted to a higher level position and/or had new titles to reflect their actual role in the new organisation. Therefore, the problem of cultural change was an important challenge facing the leaders of converged services.
5. Parent institutions should provide appropriate managerial support for library reorganisation. Managerial support from the parent institution is a decisive factor in a successful reorganisation. The parent institution's policy and climate can have

significant impact on library reorganisation. At Keele university, the positioning of 'Information Service' in the university's organisational chain of command was very high (reporting directly to the Vice-Chancellor). Such high management level enabled the Information Service to move the university forward into a converged information structure, but also establishes the relative value of information management and information transfer in the institutional environment (Foster 1997). When Central University Libraries at Southern Methodist University began to review their operations and to develop a strategic plan for the future, the work flow processes of Processing Services Division (a division consisting of the three departments: acquisitions, cataloguing, and serials) were critically reviewed. The library began to undergo a reorganisational effort in order to alleviate these problems. The results of this reorganisation case suggested that one of the key elements for success was adequate support from top administrative levels in the organisation. Along with formal administrative backing, adequate resources, time, and a degree of freedom to perform necessary tasks were also important support (Dworaczyk 1998). Lovecy (1994) noted that 'the degree to which different institutions in the UK have moved towards merger rather than simply collaboration between the various services has been dependent upon personalities as much as on institutional policy'.

## **8.5 Recommendations for Further Research**

Several recommendations are made for further research.

1. The further research can focus on the impact of strategic alliances between universities on the libraries' organisational structure. The reasons for every strategic alliance between universities are varied. The reasons can be political or financial. Usually, the merging is encouraged and requested for more efficient utilization of administrative and academic resources. Inspecting on the development of higher education, the merging of universities has become an emerging trend around the world. Will the organisational structure be affected if the project of strategic alliances proceed?
2. What will be the impact of 'consortia' on the organisational model of libraries? Consortia such as the Western Governors' University, the California State University System, the University System of Georgia, and the Consortium of University Research Libraries in the UK are growing. These consortia represent collaborative efforts to provide education to people who cannot study in campus, to increase personnel productivity, and reduce

- costs (Drake 2000). If the library itself or its parent institution is a member of a Consortium then, what will be the effect on the organisational structure?
3. The impact of e-learning and digital library programmes on the library organisational structure should be studied. 'As the rapid development of e-learning and digital library (or virtual library) in academic libraries, the linking of these new resources and services with parent institutions' teaching and learning methods has been examined from different ways (Currier 2002). At the moment, most libraries are hybrid libraries and providing both printed materials and electronic resources. However, the follow-up survey showed that 29% of UK respondents and 45% of Taiwan respondents indicated that 'developing digitized collection, digital library' were the reasons for change. In 1996, the recommendations from The Follett Report in the UK and its aftermath dominated the development of academic libraries in the 1990s, especially through the Electronic Libraries Programme (eLib). In 2001, four UK higher education institutions using VLEs (Virtual Learning Environments) were surveyed by INSPIRAL (INVeStigating Portals of Information Resources And Learning), funded by the UK Joint Information Systems Committee (JISC). INSPIRAL examined the non-technical, institutional issues involved in linking digital library resources and service with VLEs in UK higher education (Currier 2002). Trends in the UK towards accessing digital materials at the user's desk/computer is likely to change the library's role away from mainly providing hard-copy materials in a physical space towards the provision of seamless electronic services to suit the user's convenience. This is likely to change again some of the library's tasks and responsibilities and therefore its structure and organisation (or something along those sorts of lines perhaps). In Taiwan, the development of digital library programme was conducted through several cooperative projects. Each project focused on digitising specific collection or resources. The final goal of all the projects is to enhance resources sharing and preserve the knowledge of human beings more effectively. Therefore, the development of e-learning and digital library programme has become a very important issue in the library community.

Most studies about library reorganisation in higher education institutions were from US. This study is the first attempt to investigate the situation in both the UK and Taiwan. Although this study has only investigated the general aspects concerning organisational structure changes of university libraries in both the UK and Taiwan, the findings definitely drew a clear picture of library reorganisation in the higher education institutions in the two countries. The researcher

believes that this study can provide a useful basis for further study of this topic; library managers can also learn much from the findings and experience in the two countries if they are preparing for or considering such changes. As the environmental factors surrounding higher education institutions change with time, library managers must recognize the importance of the relevant research, both within and outside the library environment, in order to make the best and the most appropriate decision. Therefore, they can be confident in designing an innovative organisational structure for their libraries.



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# APPENDIX 1

## List of Universities Surveyed in the UK

| Name of university                     | Initial survey respondent* | Follow-up survey respondent |
|----------------------------------------|----------------------------|-----------------------------|
| Aberdeen University                    | V                          |                             |
| Anglia Polytechnic University          | V                          | V                           |
| Aston University                       | V                          | V                           |
| University of Bath                     | V                          | V                           |
| University of Birmingham               | V                          | V                           |
| Bradford University                    | V                          | V                           |
| University of Bristol                  | V                          | V                           |
| University of Buckingham               | V                          | V                           |
| Cambridge University                   | V                          | V                           |
| City University                        | V                          | V                           |
| Coventry University                    | V                          | V                           |
| De Montfort University                 | V                          |                             |
| University of Derby                    | V                          |                             |
| Dundee University                      | V                          | V                           |
| University of East London              | V                          |                             |
| Edinburgh University                   | V                          | V                           |
| Glasgow Caledonian University          | V                          | V                           |
| University of Greenwich                | V                          | V                           |
| Heriot-Watt University                 | V                          |                             |
| University of Hertfordshire            | V                          | V                           |
| University of Hull                     | V                          |                             |
| University of Leicester                | V                          | V                           |
| Liverpool John Moores University       | V                          | V                           |
| Imperial College                       | V                          | V                           |
| King's College London                  | V                          |                             |
| Queen Mary and Westfield College       | V                          |                             |
| London Guildhall University            | V                          |                             |
| Loughborough University                | V                          | V                           |
| Manchester Metropolitan University     | V                          | V                           |
| Middlesex University                   | V                          | V                           |
| Napier University                      | V                          | V                           |
| University of Newcastle upon Tyne      | V                          |                             |
| University of North London             | V                          |                             |
| University of Northumbria at Newcastle | V                          |                             |
| University of Nottingham               | V                          |                             |
| Oxford University                      | V                          | V                           |
| University of Paisley                  | V                          | V                           |
| University of Plymouth                 | V                          |                             |
| Queen's University of Belfast          | V                          | V                           |
| Reading University                     | V                          | V                           |
| Saint David's University College       | V                          |                             |
| Sheffield Hallam University            | V                          |                             |
| The University of Sheffield            | V                          |                             |
| South Bank University                  | V                          | V                           |
| University of Southampton              | V                          |                             |
| University of St Andrews               | V                          |                             |
| Staffordshire University               | V                          | V                           |
| University of Stirling                 | V                          |                             |
| University of Sunderland               | V                          |                             |
| University of Wales Bangor             | V                          |                             |

| Name of university                               | Initial survey respondent* | Follow-up survey respondent |
|--------------------------------------------------|----------------------------|-----------------------------|
| University of Wales Swansea                      | V                          |                             |
| University of Wales Aberystwyth                  | V                          |                             |
| University of Wales Institute                    | V                          |                             |
| University of Warwick                            | V                          | V                           |
| University of the West of England                | V                          | V                           |
| University of Westminster                        | V                          |                             |
| University of Wolverhampton                      | V                          |                             |
| University of York                               | V                          | V                           |
| University of Abertay Dundee                     |                            |                             |
| Bournemouth University                           |                            |                             |
| University of Brighton                           |                            |                             |
| Brunel University                                |                            |                             |
| University of Central England in Birmingham      |                            |                             |
| University of Central Lancashire                 |                            |                             |
| University of Durham                             |                            |                             |
| University of East Anglia                        |                            |                             |
| Essex University                                 |                            |                             |
| University of Exeter                             |                            |                             |
| University of Glamorgan                          |                            |                             |
| Glasgow University                               |                            |                             |
| University of Huddersfield                       |                            |                             |
| University of Humberside                         |                            |                             |
| University of Keele                              |                            |                             |
| University of Kent at Canterbury                 |                            |                             |
| Kingston University                              |                            |                             |
| University of Lancaster                          |                            |                             |
| University of Leeds                              |                            |                             |
| Leeds Metropolitan University                    |                            |                             |
| University of Liverpool                          |                            |                             |
| University of London (University library)        |                            |                             |
| Goldsmiths' College                              |                            |                             |
| London School of Economics and Political Science |                            |                             |
| University of London (Royal Holloway Library)    |                            |                             |
| University College London                        |                            |                             |
| University of Luton                              |                            |                             |
| University of Manchester                         |                            |                             |
| University of Manchester: UMIST                  |                            |                             |
| Nottingham Trent University                      |                            |                             |
| Oxford Brookes University                        |                            |                             |
| University of Portsmouth                         |                            |                             |
| The Robert Gordon University                     |                            |                             |
| University of Salford                            |                            |                             |
| University of Strathclyde                        |                            |                             |
| University of Surrey                             |                            |                             |
| University of Sussex                             |                            |                             |
| University of Teesside                           |                            |                             |
| Thames Valley University                         |                            |                             |
| University of Ulster                             |                            |                             |

V: Respondents

\*: Respondents in the initial survey became the population for the follow-up survey

## APPENDIX 2

### List of Universities Surveyed in Taiwan

| Name of university                                            | Initial survey respondent* | Follow-up survey respondent |
|---------------------------------------------------------------|----------------------------|-----------------------------|
| National Taiwan University                                    | V                          | V                           |
| National Taiwan Normal University                             | V                          |                             |
| National Chung Hsing University                               | V                          | V                           |
| Kaohsiung Medical University                                  | V                          |                             |
| Chung Yuan Christian University                               | V                          |                             |
| Tunghai University                                            | V                          | V                           |
| National Tsinghua University                                  | V                          |                             |
| China Medical College                                         | V                          |                             |
| Tamkang University                                            | V                          |                             |
| Taipei Medical University                                     | V                          | V                           |
| Feng Chia University                                          | V                          | V                           |
| Chinese Culture University                                    | V                          |                             |
| Tatung University                                             | V                          |                             |
| National Changhua University of Education                     | V                          | V                           |
| National Taiwan University of Science and Technology          | V                          | V                           |
| National Yang-Ming University                                 | V                          |                             |
| National Open University                                      | V                          | V                           |
| Chang-Gung University                                         | V                          | V                           |
| National Taichung Teachers College                            | V                          | V                           |
| National Taipei Teachers College                              | V                          |                             |
| National Hualien Teachers College                             | V                          | V                           |
| National Pingtung Teachers College                            | V                          | V                           |
| National Hsinchu Teachers College                             | V                          | V                           |
| National College of Physical Education and Sports             | V                          | V                           |
| Yuan-Ze University                                            | V                          |                             |
| National Chung Cheng University                               | V                          | V                           |
| Huafan University                                             | V                          |                             |
| Ming Chuan University                                         | V                          |                             |
| Shih Hsin University                                          | V                          |                             |
| National Pingtung University of Science and Technology        | V                          | V                           |
| Shih Chien University                                         | V                          |                             |
| Tzu Chi University                                            | V                          |                             |
| Chaoyang University of Technology                             | V                          | V                           |
| National Taipei University of Technology                      | V                          |                             |
| National Taiwan College of Arts                               | V                          |                             |
| Aletheia University                                           | V                          | V                           |
| National Kaohsiung First University of Science and Technology | V                          | V                           |
| National Chi Nan University                                   | V                          |                             |
| National Taiwan College of Physical Education                 | V                          | V                           |
| Kung Shan University of Technology                            | V                          |                             |
| Chia Nan University of Pharmacy and Science                   | V                          |                             |
| Southern Taiwan University of Technology                      | V                          | V                           |
| National Tainan College of the Arts                           | V                          | V                           |
| Hsuan Chuang College                                          | V                          | V                           |
| National Kaohsiung University of Applied Science              | V                          | V                           |
| Tainan Woman's College of Arts & Technology                   | V                          | V                           |



| Name of university                                   | Initial survey respondent* | Follow-up survey respondent |
|------------------------------------------------------|----------------------------|-----------------------------|
| Ta-Hwa Institute of Technology                       | V                          | V                           |
| Hungkuang Institute of Technology                    | V                          | V                           |
| National Kaohsiung Institute of Marine Technology    | V                          |                             |
| Fooyin Institute of Technology                       | V                          | V                           |
| National Huwei Institute of Technology               | V                          |                             |
| Shu-Te University                                    | V                          | V                           |
| Navy University                                      | V                          | V                           |
| National Defense Medical College                     | V                          | V                           |
| Army Politics University                             | V                          |                             |
| National Cheng Kung University                       |                            |                             |
| Soochow University                                   |                            |                             |
| National Chengchi University                         |                            |                             |
| National Chiao Tung University                       |                            |                             |
| National Central University                          |                            |                             |
| Providence University                                |                            |                             |
| Fu Jen Catholic University                           |                            |                             |
| National Taiwan Ocean University                     |                            |                             |
| National Kaohsiung Normal University                 |                            |                             |
| Chung Shan Medical and Dental College                |                            |                             |
| National Sun Yat-Sen University                      |                            |                             |
| National Institute of the Arts                       |                            |                             |
| National Tainan Teachers College                     |                            |                             |
| Taipei Municipal Teachers College                    |                            |                             |
| National Chiayi Teachers College                     |                            |                             |
| National Taitung Teachers College                    |                            |                             |
| Da-Yeh University                                    |                            |                             |
| Chung-Hua University                                 |                            |                             |
| I-Shou University                                    |                            |                             |
| National Yunlin University of Science and Technology |                            |                             |
| Chang Jung College of Management                     |                            |                             |
| National Dong Hwa University                         |                            |                             |
| National Taipei College of Nursing                   |                            |                             |
| Nanhua University                                    |                            |                             |
| Taipei Physical Education College                    |                            |                             |
| Open University of Kaohsiung                         |                            |                             |
| National Chiayi Institute of Technology              |                            |                             |
| Minghsin Institute of Technology                     |                            |                             |
| Central Police University                            |                            |                             |
| Airforce University                                  |                            |                             |
| Army University                                      |                            |                             |
| Chung Cheng College                                  |                            |                             |
| Defense Management College                           |                            |                             |

V: Respondents

\*: Respondents in the initial survey became the population for the follow-up survey

### **APPENDIX 3**

#### **Survey Instrument, Cover Letter Used in the UK**

##### **Appendix 3-1 Initial Survey (First Stage) Cover Letter Sent to Library Directors**

33 Russell Court  
Cambridge CB2 1H  
6<sup>th</sup> November 1995

Dear

I am conducting a Mphil/PhD survey research about 'The Impacts of Library Automation and Information Technology on U.K. University Library Organisational Structure'. I would be very grateful if you would help me by answering some questions about your library's situation. It will not take very much of your time to complete the questionnaire as the questions are quite straightforward.

The main purposes of this research are:"

1. Attempting to assess the extent to which university libraries may have been reorganising since 1985 and how the work of university librarians is structured (focusing on the possible integration of technical services and public services).
2. Predicting the organisational structure of the university library of the future based on the findings of the survey.
3. Suggesting a model of effective human resources management for university libraries.
4. Suggesting an emerging model of organisational structure for university libraries.

Please feel free to answer any questions, because all information given will be treated as confidential.

When you have answered the questions, please post the questionnaire back to me using the enclosed envelope within three weeks (before 27<sup>th</sup> of November) or sooner if you can. I would be very pleased to send a copy of the results of my research to you as soon as possible.

Thank you very much indeed in anticipation for your help. I look forward to hearing from you.

Yours sincerely

Shiow-Man Liao (Research student of City University, Department of Information Science)

p.s. If the library has been reorganised since 1985, would you please enclose a copy of organisational charts before- and after- reorganisation? Thank you.

## Appendix 3-2 Initial Survey Questionnaire—First Stage

### LIBRARY ORGANISATIONAL STRUCTURE QUESTIONNAIRE

**\*\*Please tick any that apply**

**1. The stocks of this library are:**

- ☐ less than 100,000 volumes
- ☐ 100,000 to 499,999 volumes
- ☐ 500,000 to 999,999 volumes
- ☐ 1 million volumes or more

**2. How many automated library systems does this library have? (includes both first time and later generation system)**

- ☐ totally integrated automated library system
- ☐ single system (please specify which)
  - ☐ acquisition
  - ☐ cataloguing
  - ☐ serials control
  - ☐ issuing (circulation)
  - ☐ OPAC (online public access catalogue)
  - ☐ administration
  - ☐ other (please specify) \_\_\_\_\_

**3. What kind of new information technology has this library introduced? (for staff or for users or for both)**

- ☐ online catalogue
- ☐ CD-ROM
- ☐ online database
- ☐ network (includes local area network, national network, Internet)
- ☐ email
- ☐ other (please specify) \_\_\_\_\_

**4. This library:**

- ☐ is basically centralized
- ☐ consists of decentralized departmental or branch libraries

**5. The organisational structure of this library is:**

- ☐ functionally-organised (acquisition, cataloguing...)
- ☐ organised on a subject basis (humanities, social science, science and technology...)
- ☐ combined functional/subject pattern

**6. Has this library reorganised during the last ten years (1985-1995)?**

- ☐ yes
- ☐ no
- ☐ do not know

**7. Is the library planning to reorganise within the next two years?**

- ☐ yes
- ☐ no
- ☐ do not know

**8. How many times has this library reorganised during the last ten years?**

- ☐ once

- ☐ twice  
☐ more than twice (please specify how many) \_\_\_\_\_

9. Many of the remaining questions refer to a particular library reorganisation. If this library has reorganised more than once, please indicate to which reorganisation your answers refer:

\_\_\_\_\_

10. If this library has reorganised, the reasons for change are (please rank the order):

- ☐ change of economic conditions  
☐ change in administration  
☐ change in human expectations--library staff and library users  
☐ to increase efficiency  
☐ to improve services  
☐ to facilitate management functions  
☐ technological--the introduction of library automation  
☐ technological--the introduction of online catalogue  
☐ technological--the introduction of other information technology  
☐ other (please specify) \_\_\_\_\_

11. Which of the following aspects does this library consider before reorganisation?

- ☐ the climate of the library  
☐ the parent institutional climate  
☐ the extent of managerial support  
☐ staff strengths and weaknesses  
☐ how interested staff members are in the proposed innovation  
☐ how resistant staff members are to change  
☐ other (please specify) \_\_\_\_\_

12. The goals of reorganisation were/are:

- ☐ decrease costs  
☐ increase production  
☐ greater flexibility  
☐ improve organisational structure  
☐ increase job satisfaction  
☐ increase staff communication and cooperation  
☐ take full advantage of library automation and information technology  
☐ other (please specify) \_\_\_\_\_

13. The methods of reorganisation were/are:

- ☐ integration of public services (reader services) and technical services  
☐ combination of functions  
☐ new functions or departments (units) created  
☐ dispersion of functions  
☐ functions or departments (units) eliminated  
☐ departments (units) renamed  
☐ other (please specify) \_\_\_\_\_

14. The organisation of this library is based on separate technical/public services functions?

- ☐ yes  
☐ no (please go to 18)

15. If this library has integrated public services and technical services, what is the method of it?

- ☐ multiple roles  
☐ dual function positions (staff sharing)

- ☐ job rotation
- ☐ temporary assignment
- ☐ shifting of assignment
- ☐ split assignment
- ☐ other (please specify) \_\_\_\_\_

**16. After reorganisation, which functions in public services are shared by technical services staff?**

- ☐ reference desk service
- ☐ online searching
- ☐ bibliographic instruction
- ☐ circulation
- ☐ interlibrary loan
- ☐ selection/collection management
- ☐ other (please specify) \_\_\_\_\_

**17. After reorganisation, which functions in technical services are shared by public services staff?**

- ☐ acquisition
- ☐ selection/collection management
- ☐ monographic cataloguing
- ☐ serials cataloguing
- ☐ bibliographic searching
- ☐ serials order/record
- ☐ processing
- ☐ database maintenance
- ☐ systems maintenance
- ☐ preservation
- ☐ other (please specify) \_\_\_\_\_

**18. If this library has combined different functions, what are the names of functions being combined?**

\_\_\_\_\_

**19. If this library has created new functions or departments, what are the names of them?**

\_\_\_\_\_

**20. If this library has eliminated old functions or departments, what are the names of them?**

\_\_\_\_\_

**21. If this library has renamed departments, what are the names of them? (please indicate both the old names and the new names)**

| old names | new names |
|-----------|-----------|
| _____     | _____     |
| _____     | _____     |
| _____     | _____     |

**22. If this library has dispersed functions, what are the names of them?**

\_\_\_\_\_

**23. The results of reorganisation were/are:**

- ☐ shifting of responsibilities
- ☐ increases productivity and efficiency
- ☐ cost reduction

- ☐ improves services
- ☐ improves communication
- ☐ increases staff satisfaction
- ☐ increases cooperation
- ☐ more flexible organisational structure
- ☐ staff resistance
- ☐ produces staff stress
- ☐ complex subordinate/supervisor reporting structures
- ☐ inappropriate furniture
- ☐ inadequate equipment to meet job demands
- ☐ maintenance problems on computers or other equipment
- ☐ other (please specify) \_\_\_\_\_

**24. The attitudes of staff towards reorganisation:**

- ☐ objection
- ☐ acceptance
- ☐ do not know

**25. Does this library have staff education or training programme when implementing organisational change?**

- ☐ yes
- ☐ no
- ☐ do not know

**26. Does this library have staff education or training programme to meet the demands of introducing library automation and information technology?**

- ☐ yes
- ☐ no (please go to 28)
- ☐ do not know

**27. What kind of education or training programme does this library use?**

- ☐ formal curricula
- ☐ workshops
- ☐ seminars
- ☐ vendor demonstration
- ☐ cross training of staff
- ☐ visiting other library's automated system
- ☐ participating library automation project
- ☐ staff development committee or ad hoc task
- ☐ CAI (computer assisted instruction)
- ☐ training manual
- ☐ other (please specify) \_\_\_\_\_

**28. The impact of library automation and information technology on this library staffing pattern is:**

- ☐ more professional staff
- ☐ fewer professional staff
- ☐ more support staff (non-professional staff)
- ☐ fewer support staff
- ☐ staff reassignments
- ☐ changes in professional/support staff roles
- ☐ other (please specify) \_\_\_\_\_

**29. The impact of library automation and information technology on this library working pattern is:**

- ☐ more flexible working time

- ☐ more flexible working place (location)
- ☐ position reclassification (upward or downward)
- ☐ producing new positions
- ☐ eliminating some positions
- ☐ revising workflow and job description
- ☐ redesigning staff jobs and duties
- ☐ other (please specify) \_\_\_\_\_

**30. In your opinion, what kind of competencies do staff need when introducing library automation and information technology:**

- ☐ computer skills
- ☐ database systems searching skills
- ☐ managerial and communication skills
- ☐ planning/problem solving skills
- ☐ financial management skills
- ☐ other (please specify) \_\_\_\_\_

**31. In your opinion, the introduction of library automation and new information technology facilitate the management functions**

- ☐ yes
- ☐ no
- ☐ do not know

**OPTIONAL:** Any other comments/concerns (please continue on a separate sheet if necessary).

### **Appendix 3-3 Initial Survey (Second Stage) Cover Letter Sent to Library Directors**

33 Russell Court  
Cambridge CB2 1H  
6<sup>th</sup> July 1996

Dear

Thank you very much indeed for your completion of the questionnaire which was sent to you last year. Your reply to the questionnaire was very appreciated and has contributed much helpful information and many suggestions to my Mphil/PhD survey research.

I need to apologise for not sending the survey results to you very soon, because the questionnaires are still being analysed. I will try to send a copy of survey results to you as soon as possible.

I am now sending another questionnaire for my further survey. This survey is to investigate the libraries which were (are going to) reorganising externally (eg Library has merged or is to merge with Computer Centre and/or Media Centre/Audio-Visual Services and/or Language Centre and/or Student Support etc.) to create a new organisational structure. This kind of reorganisation provides a new idea for supporting library services and may become an emerging trend for a library community.

I would be most grateful if you would help me again by answering several questions about your library's situation, experience or expectation for this kind of organisational change.

Please feel free to answer any questions, because all information given will be treated as confidential.

When you have completed the questionnaire, please return it in the enclosed envelope within two weeks (before 21<sup>st</sup> July) or sooner if you can.

Thank you very much indeed. I look forward to hearing from you.

Yours sincerely

Shiow-Man Liao (Research student of City University, Department of Information Science)



## Appendix 3-4 Initial Survey Questionnaire—Second Stage

### LIBRARY ORGANISATIONAL STRUCTURE CHANGE QUESTIONNAIRE

\*\* Please tick any that apply

\*\*\* The meaning of merger for this survey includes:

- ☐ A combines with B; or
- ☐ A links with B; or
- ☐ A associates with B; or
- ☐ A amalgamates with B; or
- ☐ A converges with B.

**1. Has/Will this library merged/merge with other Centre/Service/Department(s) since 1985?**

- ☐ yes, when did/will this happen? 19 \_\_\_\_.
- ☐ no
- ☐ do not know

**2. Which organisation was/will be merged with this library?**

- ☐ Learning Resources Service
- ☐ Information (Service)
- ☐ Computer/Computing Service
- ☐ Media/Audio-Visual Service
- ☐ Language Centre
- ☐ Teaching/Learning Support
- ☐ other (please specify) \_\_\_\_\_

**3. The motives for the merger were/are:**

- ☐ more economic administration
- ☐ more effective administration
- ☐ co-operation in supporting teaching, research, and learning
- ☐ exchanges of specialisation between organisations
- ☐ sharing of equipment and facilities
- ☐ sharing of staff
- ☐ centralised training of staff
- ☐ other (please specify) \_\_\_\_\_

**4. The merger programme was/is suggested by:**

- ☐ government policy
- ☐ parent institutional policy
- ☐ library
- ☐ user
- ☐ other (please specify) \_\_\_\_\_

**5. Who was/will be in charge of MANAGING MERGER PROCESS?**

- ☐ parent institutional administrator
- ☐ Learning Resources Service director
- ☐ Library director
- ☐ Information Service director
- ☐ Computer Service director
- ☐ Media Service director
- ☐ Language Centre director
- ☐ Teaching/Learning Support director
- ☐ new external appointee
- ☐ team work

\_\_\_ other (please specify) \_\_\_\_\_

**6. Did/Will this merger process have a reorganisation programme?**

- \_\_\_ yes
- \_\_\_ no
- \_\_\_ do not know

**7. The reorganisation programme included/will include:**

- \_\_\_ implementation schedule
- \_\_\_ set up a Task Force (Steering Committee) to plan the merger
- \_\_\_ recruitment of key personnel
- \_\_\_ construction of a new building
- \_\_\_ staff communication opportunities/tools (eg. meeting, newsletter etc.)
- \_\_\_ retraining of staff
- \_\_\_ transfers of staff
- \_\_\_ inspection of individual task/job analysis
- \_\_\_ revise work flowchart
- \_\_\_ revise job description
- \_\_\_ apply additional funding
- \_\_\_ other (please specify) \_\_\_\_\_

**8. Which level of staff have/will participate(d) in the merger process?**

- \_\_\_ top managers
- \_\_\_ senior managers
- \_\_\_ middle managers
- \_\_\_ staff at all levels
- \_\_\_ other (please specify) \_\_\_\_\_

**9. Administratively, who is/will be the LEADER OF THE NEW ORGANISATION?**

- \_\_\_ parent institutional administrator
- \_\_\_ director of a larger unit
- \_\_\_ Library director
- \_\_\_ Learning Resources Service director
- \_\_\_ Information service director
- \_\_\_ Computer Service director
- \_\_\_ Media Service director
- \_\_\_ Language Centre director
- \_\_\_ Teaching/Learning Support director
- \_\_\_ a new director has been/will be appointed
- \_\_\_ other (please specify) \_\_\_\_\_

**10. The condition of merger was/will be:**

- \_\_\_ completely merged
- \_\_\_ partially merged
- \_\_\_ completely merged but retained a certain degree of autonomy
- \_\_\_ other (please specify) \_\_\_\_\_

**11. The methods of merger were/will be:**

- \_\_\_ combination in one building
- \_\_\_ networked organisation (work through networking and alliances)
- \_\_\_ creating liaison post/position in separate organisation
- \_\_\_ staff transfer
- \_\_\_ function/service transfer
- \_\_\_ facility transfer

- ☐ software transfer
- ☐ other (please specify) \_\_\_\_\_

**12. If this library has merged with other organisation(s), the advantages of merger were/are:**

- ☐ improve services
- ☐ save money on administration
- ☐ efficiency on administration
- ☐ more flexible structure
- ☐ effective use of human resources
- ☐ effective use of equipment and facilities
- ☐ improve cooperation and communication
- ☐ promotion of staff to a higher level post
- ☐ other (please specify) \_\_\_\_\_

**13. The problems (obstacles) which were/are encountered in merger process were/are:**

- ☐ different mission
- ☐ different structure
- ☐ different ethos of organisation
- ☐ financial condition
- ☐ legislation issues
- ☐ technology issues
- ☐ geographic (location) issues
- ☐ construction of a new building
- ☐ negotiation issues between organisations which were/are to be merged
- ☐ communication and cooperation
- ☐ the extent of independence (autonomy) to be allowed
- ☐ the status (post level) of staff
- ☐ the low morale of staff
- ☐ the anxieties and sensitivity of staff
- ☐ staff training and development
- ☐ other (please specify) \_\_\_\_\_

**14. In your opinion, the merger improves/will improve control and management:**

- ☐ yes
- ☐ no
- ☐ do not know

**OPTIONAL:** 1. Any detailed information on the above questions (points) you wish to give me.

2. Any other comments/concerns (please continue on a separate sheet if necessary).

### Appendix 3-5 Follow-Up Survey Cover Letter Sent to Library Directors

Shiow-Man Liao  
Acquisitions Department  
National Central Library  
20 Chung-Shan South Road  
Taipei, Taiwan  
R.O.C.

6<sup>th</sup> May 2002

Dear Director/University Librarian

I am conducting a PhD survey research on 'Organizational Structure Change of University Libraries: A Comparison of UK and Taiwan'. I would be very grateful if you would help me by answering some questions about your library's situation. It may seem like a long questionnaire, but it asks mainly to only tick items from lists, it should not take you very long to complete it, and the information you provide will be extremely valuable for this research.

I have conducted an initial survey in 1995 investigating 'The Impacts of Library Automation and Information Technology on UK University Library Organizational Structure'. Since then, the roles of librarians, computing staff and other information specialists have been developing in response to the rapid changes taking place in the higher education. The academic library's role in supporting learning and teaching is being given much greater prominence. Academic libraries are facing the challenges to explore the use of ICTs (Information and Communications Technologies) in learning and teaching more vigorously, including distance learning. More staff restructuring or converged service cases in HE institutions have been reported in the UK.

The main purposes of this follow-up survey research are:

1. To investigate the extent to which university libraries may have been reorganizing between 1996-2001.
2. To determine the driving forces of library organizational structure change.
3. To indicate the characteristics of the new organization if the library has undergone reorganization.
4. To suggest an emerging model of organizational structure for university libraries in supporting teaching and learning.

Please feel free to answer any questions, because all information given will be treated as confidential.

The same questionnaire will be also sent to you by e-mail. When you have answered the questions, please send (or e-mail) your reply back to me before 27th of May or sooner if you can. I would be very pleased to send a copy of the results of my research to you as soon as possible.

Thank you very much indeed in anticipation for your help. I look forward to hearing from you.

Yours sincerely

Shiow-Man Liao

(Research student with City University, Department of Information Science)  
Supervisor: Dr Penny A Yates-Mercer

## Appendix 3-6 Follow-Up Survey Questionnaire

### ORGANIZATIONAL STRUCTURE CHANGE QUESTIONNAIRE

- The extent of *reorganization* for this survey ranges from “reorganization of units within a library” to “convergence with other services/department/library”
- The meaning of *convergence* for this survey includes: library service merges/combines/integrates/cooperates/links/associates/amalgamates with other service/department/library

\* Please tick any that apply

#### PART I. INFORMATION ABOUT THE LIBRARY. PLEASE ANSWER ALL THE QUESTIONS.

Name of your library: \_\_\_\_\_

Number of full-time professional librarians: \_\_\_\_\_

Number of full-time nonprofessional librarians: \_\_\_\_\_

The library composes the following departments/units:

\_\_\_\_\_

\_\_\_\_\_

##### 1. The current organization structure of this library is: (single-choice)

- (1) ☐ functional organization  
(the organization usually is subdivided into functional units, such as acquisitions, cataloguing...)
- (2) ☐ self-contained-unit organization  
(it groups organizational activities on the basis of services, customers, products, or geography, such as subject-based services)
- (3) ☐ matrix organization  
(combined functional/self-contained-unit structure, the structure is normally functionally designed in terms of its vertical axis, but designed on some other principle in terms of its horizontal axis.)
- (4) ☐ other (please specify) \_\_\_\_\_

##### 2. What kind of electronic resources/services are provided in this library? (multiple choice)

- (1) ☐ digitized collection, electronic library, digital library
- (2) ☐ electronic journals, electronic books
- (3) ☐ electronic document delivery
- (4) ☐ images services/multimedia
- (5) ☐ distance learning
- (6) ☐ online catalog
- (7) ☐ CD-ROM/ online database
- (8) ☐ web sites or Internet sites, homepage
- (9) ☐ other (please specify) \_\_\_\_\_

#### PART II. INFORMATION ABOUT REORGANIZATION IN YOUR LIBRARY. PLEASE ANSWER ALL QUESTIONS.

- Many of the remaining questions refer to a particular library reorganization. If this library has reorganized more than once, please answer the questions in respect of the latest reorganization

##### 3. Has this library reorganized in structure between 1996 and 2001? (single choice)

- (1) ☐ yes, when was the change implemented? \_\_\_\_\_
- (2) ☐ no Please go to Question 18
- (3) ☐ do not know Please go to Question 18

##### 4. The reorganization plan was suggested by: (multiple choice)

- (1) \_\_\_ government
- (2) \_\_\_ parent institution
- (3) \_\_\_ library itself
- (4) \_\_\_ other (please specify) \_\_\_\_\_

**5. The reorganization program included: (multiple choice)**

- (1) \_\_\_ implementation schedule
- (2) \_\_\_ set up a Task Force (Steering Committee) to plan the reorganization
- (3) \_\_\_ identification of key post holders/recruitment of key personnel
- (4) \_\_\_ inspection of individual task/job analysis
- (5) \_\_\_ revise work flowchart/ job description
- (6) \_\_\_ converge operations as overlaps are identified
- (7) \_\_\_ transfers of staff
- (8) \_\_\_ staff communication opportunities/tools (eg. meeting, newsletter etc.)
- (9) \_\_\_ (joint) staff training and development activities
- (10) \_\_\_ IT and information strategies
- (11) \_\_\_ apply additional funding
- (12) \_\_\_ construction of a new building
- (13) \_\_\_ other (please specify) \_\_\_\_\_

**6. The reasons for change were: (multiple choice)**

- (1) \_\_\_ changes in higher education
- (2) \_\_\_ administrative changes in parent institution (ie. merged with other institutions; convergence of supporting services in university)
- (3) \_\_\_ joined library consortia/ cooperative program
- (4) \_\_\_ developed digitized collection, digital library, electronic library
- (5) \_\_\_ change of demographics (student population)
- (6) \_\_\_ change in scholarly publishing/communications
- (7) \_\_\_ change of personnel (new staff, staff retire, staff leave)
- (8) \_\_\_ change in human (library staff and library users) expectations
- (9) \_\_\_ provided new services
- (10) \_\_\_ facilitated management functions
- (11) \_\_\_ introduced new technologies (such as library automation)
- (12) \_\_\_ constructed a new building
- (13) \_\_\_ change of economic conditions
- (14) \_\_\_ other (please specify) \_\_\_\_\_

**7. The goals of change were: (multiple choice)**

- (1) \_\_\_ saved management costs
- (2) \_\_\_ provided new services
- (3) \_\_\_ better utilization of human resources
- (4) \_\_\_ increased production
- (5) \_\_\_ pursued a more flexible organizational structure
- (6) \_\_\_ increased staff job satisfaction
- (7) \_\_\_ increased staff communication and cooperation
- (8) \_\_\_ took full advantages of ICTs
- (9) \_\_\_ other (please specify) \_\_\_\_\_

**8. Which aspects did this library consider before change? Please indicate the way in which they were considered and the most significant factors (such as the parent institutional climate, organization culture, organization size, organization strategy etc.)**

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**9. The methods of reorganization were: (single choice)**

- (1) ☐ single-organizational reorganization (reorganization of units within a library)  
Please go to Question 10
- (2) ☐ converged with other services/dept. (ie. computer center) inside campus  
Please go to Question 11
- (3) ☐ converged with other libraries outside campus Please go to Question 12
- (4) ☐ participated a consortia Please go to Question 12
- (5) ☐ other (please specify) \_\_\_\_\_ Please go to Question 16

**10. If library reorganization involved only single-organizational reorganization, please indicated which of the following methods has been adopted? (multiple choice)**

- (1) ☐ integration of public services (reader services) and technical services
- (2) ☐ combination of functions, what were the names of functions being combined?  
\_\_\_\_\_
- (3) ☐ new functions or departments (units) created, what were the names of them?  
\_\_\_\_\_
- (4) ☐ functions or departments (units) eliminated, what were the names of them?  
\_\_\_\_\_
- (5) ☐ departments (units) renamed, what are the names of them? \_\_\_\_\_
- (6) ☐ downsizing (reducing in personnel)
- (7) ☐ reengineering (redesigned the organization's core work processes)
- (8) ☐ other (please specify) \_\_\_\_\_

**Now please go to Question 16**

**11. If library reorganization involved converging with other services/departments, which organization has been converged with this library? (multiple choice)**

- (1) ☐ Computing Services (IT organization)
- (2) ☐ Media/Audio-Visual Services
- (3) ☐ Language Center
- (4) ☐ Teaching/Learning Support
- (5) ☐ other (please specify) \_\_\_\_\_

**12. The reasons for the convergence were: (multiple choice)**

- (1) ☐ creation of digital learning environment (ie. distance education; to serve remote students)
- (2) ☐ shared vision (ie. cooperation in supporting teaching, research, and learning)
- (3) ☐ overlapping missions and strategies
- (4) ☐ increased the organization's effectiveness
- (5) ☐ integration of (technical) staff (ie. exchanges of specialization between organizations)
- (6) ☐ sharing of equipment and facilities
- (7) ☐ external forces
- (8) ☐ other (please specify) \_\_\_\_\_

**13. Who was in charge of MANAGING the convergence process? (single choice)**

- (1) ☐ parent institutional administrator (ie. provost)
- (2) ☐ Library director
- (3) ☐ new external appointee
- (4) ☐ team work
- (5) ☐ other (please specify) \_\_\_\_\_

**14. Administratively, who is the LEADER of the new organization? (single choice)**

- (1) ☐ parent institutional administrator
- (2) ☐ Library director
- (3) ☐ new external appointee
- (4) ☐ other (please specify) \_\_\_\_\_

**15. The convergence of services was: (single choice)**

- (1) \_\_\_ organizational/managerial convergence (two services were effectively merged into one)
- (2) \_\_\_ operational convergence (two services worked closely together)
- (3) \_\_\_ strategic convergence
- (4) \_\_\_ technological convergence
- (5) \_\_\_ cultural convergence
- (6) \_\_\_ functional convergence
- (7) \_\_\_ other (please specify) \_\_\_\_\_

**16. The advantages of reorganization have been: (multiple choice)**

- (1) \_\_\_ provided new services/improved services
- (2) \_\_\_ cost reduction
- (3) \_\_\_ increased productivity and efficiency
- (4) \_\_\_ more flexible organizational structure
- (5) \_\_\_ effective use of human resources
- (6) \_\_\_ effective use of equipment and facilities
- (7) \_\_\_ improved communication and cooperation
- (8) \_\_\_ increased staff satisfaction
- (9) \_\_\_ promotion of staff to a higher level post
- (10) \_\_\_ other (please specify) \_\_\_\_\_

**17. The disadvantages of reorganization have been: (multiple choice)**

- (1) \_\_\_ different mission/strategies
- (2) \_\_\_ different organizational structure
- (3) \_\_\_ different ethos (culture) of organization
- (4) \_\_\_ boundary disputes between services
- (5) \_\_\_ negotiation/communication/cooperation issues between organizations
- (6) \_\_\_ resistance to change (personal level or organizational level)
- (7) \_\_\_ the status (post level) of staff
- (8) \_\_\_ staff training and development
- (9) \_\_\_ financial condition (the costs of reorganizing are too high)
- (10) \_\_\_ technology issues
- (11) \_\_\_ geographic (location) issues
- (12) \_\_\_ other (please specify) \_\_\_\_\_

**18. Is the library planning to reorganize in the near future?**

- (1) \_\_\_ yes, if so, when? \_\_\_\_\_
- (2) \_\_\_ no
- (3) \_\_\_ do not know
- (4) \_\_\_ in progress

**OPTIONAL: Any other comments/concerns (please continue on a separate sheet if necessary).**

**\*\*If this library has been reorganized between 1996-2001, would you please enclose a reorganization program and an copy of organization charts before- and after- reorganization? Thank you.**

**\*\*\*Please check here \_\_\_ if you wish a summary of this study**

**\*\*\*THANK YOU VERY MUCH INDEED FOR YOUR COOPERATION\*\*\***

Please return the questionnaire to Shioh-Man Liao (e-mail: [liao53@msg.ncl.edu.tw](mailto:liao53@msg.ncl.edu.tw))



## **APPENDIX 4**

### **Survey Instrument, Cover Letter Used in Taiwan, ROC**

#### **Appendix 4-1 Initial Survey (First Stage) Cover Letter Sent to Library Director**

Shiow-Man Liao  
Acquisitions Department  
National Central Library  
20 Chung-Shan South Road  
Taipei, Taiwan  
R.O.C.  
5<sup>th</sup> March 1998

Dear

I am conducting a Mphil/PhD survey research about 'The Impacts of Library Automation and Information Technology on Taiwan University Library Organisational Structure'. I would be very grateful if you would help me by answering some questions about your library's situation. It will not take very much of your time to complete the questionnaire as the questions are quite straightforward.

The main purposes of this research are:

1. Attempting to assess the extent to which university libraries may have been reorganising since 1985 and how the work of university librarians is structured (focusing on the possible integration of technical services and public services).
2. Predicting the organisational structure of the university library of the future based on the findings of the survey.
3. Suggesting a model of effective human resources management for university libraries.
4. Suggesting an emerging model of organisational structure for university libraries.

Please feel free to answer any questions, because all information given will be treated as confidential.

When you have answered the questions, please post the questionnaire back to me using the enclosed envelope within three weeks (before 25<sup>th</sup> of March) or sooner if you can. I would be very pleased to send a copy of the results of my research to you as soon as possible.

Thank you very much indeed in anticipation for your help. I look forward to hearing from you.

Yours sincerely

Shiow-Man Liao (Research student of City University, Department of Information Science)

p.s. If the library has been reorganised since 1985, would you please enclose a copy of organisational charts before- and after- reorganisation? Thank you.

## Appendix 4-2 Initial Survey Questionnaire—First Stage

### LIBRARY ORGANISATIONAL STRUCTURE QUESTIONNAIRE

**\*\*Please tick any that apply**

**1. The stocks of this library are:**

- ☐ less than 100,000 volumes
- ☐ 100,000 to 499,999 volumes
- ☐ 500,000 to 999,999 volumes
- ☐ 1 million volumes or more

**2. This library:**

- ☐ is basically centralized
- ☐ consists of decentralized departmental or branch libraries
- ☐ other (please specify) \_\_\_\_\_

**3. The organisational structure of this library is:**

- ☐ functionally-organised (acquisition, cataloguing...)
- ☐ organised on a subject basis (humanities, social science, science and technology...)
- ☐ combined functional/subject pattern
- ☐ other (please specify) \_\_\_\_\_

**4. How many automated library systems does this library have? (includes both first time and later generation system)**

- ☐ totally integrated automated library system
- ☐ single system (please specify which)
  - ☐ acquisition
  - ☐ cataloguing
  - ☐ serials control
  - ☐ issuing (circulation)
  - ☐ OPAC (online public access catalogue)
  - ☐ administration
  - ☐ other (please specify) \_\_\_\_\_

**5. What kind of new information technology has this library introduced? (for staff or for users or for both)**

- ☐ online catalogue
- ☐ CD-ROM
- ☐ online database
- ☐ network (includes local area network, national network, Internet)
- ☐ email
- ☐ other (please specify) \_\_\_\_\_

**6. The impact of library automation and information technology on this library staffing pattern is:**

- ☐ more professional staff
- ☐ fewer professional staff
- ☐ more support staff (non-professional staff)
- ☐ fewer support staff
- ☐ staff reassignments
- ☐ changes in professional/support staff roles
- ☐ other (please specify) \_\_\_\_\_

**7. The impact of library automation and information technology on this library working pattern is:**

- ☐ more flexible working time
- ☐ more flexible working place (location)
- ☐ position reclassification (upward or downward)
- ☐ producing new positions
- ☐ eliminating some positions
- ☐ revising workflow and job description
- ☐ redesigning staff jobs and duties
- ☐ other (please specify) \_\_\_\_\_

**8. In your opinion, the introduction of library automation and new information technology facilitate the management functions**

- ☐ yes
- ☐ no
- ☐ do not know

**9. Has this library reorganised since 1985?**

- ☐ yes, how many times? \_\_\_\_ (please continue answering the following questions)
- ☐ no (please continue answering questions 10, 21, 22)
- ☐ do not know (please continue answering questions 10, 21, 22)

**10. Is the library planning to reorganise within the next two years?**

- ☐ yes
- ☐ no
- ☐ do not know

\* Many of the remaining questions refer to a particular library reorganisation. If this library has reorganised more than once, please answering the following questions according to the latest reorganisation

**11. The reorganisation programme was/is suggested by:**

- ☐ government policy
- ☐ parent institutional policy
- ☐ library
- ☐ user
- ☐ other (please specify) \_\_\_\_\_

**12. Did/Does the library have a reorganisation programme?**

- ☐ yes (please continue answering the following questions)
- ☐ no (please continue answering questions 14 to 22)
- ☐ do not know (please continue answering questions 14 to 22)

**13. The reorganisation programme includes/included:**

- ☐ implementation schedule
- ☐ set up a Task Force (Steering Committee) to plan the merger
- ☐ recruitment of key personnel
- ☐ construction of a new building
- ☐ staff communication opportunities/tools (eg. meeting, newsletter etc.)
- ☐ education/retraining of staff
- ☐ transfers of staff
- ☐ inspection of individual task/job analysis
- ☐ revise work flowchart
- ☐ revise job description
- ☐ apply additional funding
- ☐ other (please specify) \_\_\_\_\_

**14. If this library has reorganised, the reasons for change are:**

- ☐ change of economic conditions
- ☐ change in administration
- ☐ change in human expectations--library staff and library users
- ☐ to increase efficiency
- ☐ to improve services
- ☐ to facilitate management functions
- ☐ technological--the introduction of library automation
- ☐ technological--the introduction of online catalogue
- ☐ technological--the introduction of computer network
- ☐ other (please specify) \_\_\_\_\_

**15. Which of the following aspects does this library consider before reorganisation?**

- ☐ the climate of the library
- ☐ the parent institutional climate
- ☐ the extent of managerial support (parent institution's support or staff's support)
- ☐ staff strengths and weaknesses
- ☐ how interested staff members are in the proposed innovation
- ☐ how resistant staff members are to change
- ☐ other (please specify) \_\_\_\_\_

**16. The goals of reorganisation were/are:**

- ☐ decrease costs
- ☐ increase production
- ☐ greater flexibility
- ☐ improve organisational structure
- ☐ increase job satisfaction
- ☐ increase staff communication and cooperation
- ☐ take full advantage of library automation and information technology
- ☐ other (please specify) \_\_\_\_\_

**17. The methods of reorganisation were/are:**

- ☐ integration of public services (reader services) and technical services (eg. staff sharing, job rotation)
- ☐ combination of functions, what are the names of functions being combined?  
\_\_\_\_\_
- ☐ new functions or departments (units) created, what are the names of them?  
\_\_\_\_\_
- ☐ dispersion of functions, what are the names of them?  
\_\_\_\_\_
- ☐ functions or departments (units) eliminated, what are the names of them?  
\_\_\_\_\_
- ☐ departments (units) renamed (please indicate both the old names and the new names)

old names

new names

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- ☐ other (please specify) \_\_\_\_\_

**18. The results of reorganisation were/are:**

- ☐ shifting of responsibilities
- ☐ increases productivity and efficiency
- ☐ cost reduction
- ☐ improves services
- ☐ improves communication and cooperation
- ☐ increases staff satisfaction
- ☐ more flexible organisational structure
- ☐ staff resistance
- ☐ produces staff stress/anxiety
- ☐ complex subordinate/supervisor reporting structures
- ☐ inappropriate furniture
- ☐ inadequate equipment to meet job demands
- ☐ maintenance problems on computers or other equipment
- ☐ other (please specify) \_\_\_\_\_

**19. The attitudes of staff towards reorganisation:**

- ☐ objection, \_\_\_% of total staff
- ☐ acceptance, \_\_\_% of total staff
- ☐ do not know

**20. Has this library reorganised with other services/departments/institutions?**

- ☐ yes, please specify which: \_\_\_\_\_
- ☐ no

**21. Is library planning to cooperate or merge with other services/departments/institutions?**

- ☐ yes, please specify which: \_\_\_\_\_
- ☐ no
- ☐ do not know

**22. The relationship between library and computing services is:**

- ☐ operate independently
- ☐ has cooperation relationship, please specify which function?
- ☐ belongs to the same department (directed by the same manager)
- ☐ other (please specify) \_\_\_\_\_

OPTIONAL: Any other comments/concerns (please continue on a separate sheet if necessary).

\_\_\_\_\_

#### **Appendix 4-3 Initial Survey (Second Stage) Cover Letter Sent to Library Director**

Shiow-Man Liao  
Acquisitions Department  
National Central Library  
20 Chung-Shan South Road  
Taipei, Taiwan  
R.O.C.  
3<sup>rd</sup> August 1998

Dear

Thank you very much indeed for your completion of the questionnaire which was sent to you last year. Your reply to the questionnaire was very appreciated and has contributed much helpful information and many suggestions to my Mphil/PhD survey research.

I need to apologise for not sending the survey results to you very soon, because the questionnaires are still being analysed. I will try to send a copy of survey results to you as soon as possible.

I am now sending another questionnaire for my further survey. This survey is to investigate the libraries which were (are going to) reorganising externally (eg Library has merged or is to merge with Computer Centre and/or Media Centre/Audio-Visual Services and/or Language Centre and/or Student Support etc.) to create a new organisational structure. This kind of reorganisation provides a new idea for supporting library services and may become an emerging trend for a library community.

I would be most grateful if you could help me again by answering several questions about your library's situation, experience or expectation for this kind of organisational change.

Please feel free to answer any questions, because all information given will be treated as confidential.

When you have completed the questionnaire, please return it in the enclosed envelope within two weeks (before 20<sup>th</sup> August) or sooner if you can.

Thank you very much indeed. I look forward to hearing from you.

Yours sincerely,

Shiow-Man Liao (Research student of City University, Department of Information Science)

## Appendix 4-4 Initial Survey Questionnaire—Second Stage

### LIBRARY ORGANISATIONAL STRUCTURE CHANGE QUESTIONNAIRE

**\*\* Please tick any that apply**

**1. Which organisation was/will be merged/converged with this library?**

- ☐ Computer/Computing Service
- ☐ Media/Audio-Visual Service
- ☐ Language Centre
- ☐ Teaching/Learning Support
- ☐ Information (Service)
- ☐ Learning Resources Service
- ☐ other (please specify) \_\_\_\_\_

**2. Time of merger/convergence:**

- ☐ 19\_\_
- ☐ do not know

**3. The motives for the merger/convergence were/are:**

- ☐ more economic administration
- ☐ more effective administration
- ☐ co-operation in supporting teaching, research, and learning
- ☐ exchanges of specialisation between organisations
- ☐ sharing of equipment and facilities
- ☐ sharing of staff
- ☐ centralised training of staff
- ☐ other (please specify) \_\_\_\_\_

**4. Who was/will be in charge of MANAGING MERGER/CONVERGENCE PROCESS?**

- ☐ parent institutional administrator
- ☐ Library director
- ☐ Computer Service director
- ☐ Media Service director
- ☐ Language Centre director
- ☐ new external appointee
- ☐ team work
- ☐ other (please specify) \_\_\_\_\_

**5. Which level of staff have/will participate(d) in the merger/convergence process?**

- ☐ top managers
- ☐ senior managers
- ☐ middle managers
- ☐ staff at all/most levels
- ☐ other (please specify) \_\_\_\_\_

**6. Administratively, who is/will be the LEADER OF THE NEW ORGANISATION?**

- ☐ parent institutional administrator
- ☐ Library director
- ☐ Computer Service director
- ☐ Media Service director
- ☐ Language Centre director
- ☐ a new director has been/will be appointed
- ☐ other (please specify) \_\_\_\_\_

**7. The condition of merger/convergence was/will be:**

- ☐ completely merged/cooperated
- ☐ partially merged/cooperated
- ☐ completely merged/cooperated but retained a certain degree of autonomy
- ☐ other (please specify) \_\_\_\_\_

**8. The methods of merger/convergence were/will be:**

- ☐ combination in one building
- ☐ networked organisation (work through campus network)
- ☐ creating liaison post/position in separate organisation
- ☐ staff transfer
- ☐ function/service transfer
- ☐ facility transfer
- ☐ software transfer
- ☐ other (please specify) \_\_\_\_\_

**9. If this library has merged/converged with other organisation(s), the advantages of merger/cooperation were/are:**

- ☐ improve services
- ☐ save money on administration
- ☐ efficiency on administration
- ☐ more flexible structure
- ☐ effective use of human resources
- ☐ effective use of equipment and facilities
- ☐ improve cooperation and communication
- ☐ promotion of staff to a higher level post
- ☐ other (please specify) \_\_\_\_\_

**10. The problems (obstacles) which were/are encountered in merger/ convergence process were/are:**

- ☐ different mission
- ☐ different structure
- ☐ different ethos (culture) of organisation
- ☐ financial condition
- ☐ legislation issues
- ☐ technology issues
- ☐ the low morale of staff
- ☐ geographic (location) issues
- ☐ construction of a new building
- ☐ negotiation issues between organisations which were/are to be merged
- ☐ communication and cooperation
- ☐ the extent of independence (autonomy) to be allowed
- ☐ the status (post level) of staff
- ☐ the anxieties and sensitivity of staff
- ☐ staff training and development
- ☐ other (please specify) \_\_\_\_\_

Any other comments/concerns (please continue on a separate sheet if necessary).



## Appendix 4-5 Follow-Up Survey Cover Letter Sent to Library Director

Shiow-Man Liao  
Acquisitions Department  
National Central Library  
20 Chung-Shan South Road  
Taipei, Taiwan  
R.O.C.

6<sup>th</sup> May 2002

Dear Director/University Librarian

I am conducting an PhD survey research on 'Organizational Structure Change of University Libraries: A Comparison of UK and Taiwan'. I would be very grateful if you would help me by answering some questions about your library's situation. It may seem like a long questionnaire, but it asks mainly to only tick items from lists, it should not take you very long to complete it, and the information you provide will be extremely valuable for this research.

I have conducted an initial survey in 1998 investigating 'The Impacts of Library Automation and Information Technology on Taiwan University Library Organizational Structure'. Since then, the roles of librarians, computing staff and other information specialists have been developing in response to the rapid changes taking place in the higher education. The academic library's role in supporting learning and teaching is being given much greater prominence. Academic libraries are facing the challenges to explore the use of ICTs (Information and Communications Technologies) in learning and teaching more vigorously, including distance learning. More staff restructuring or converged service cases in HE institutions have been reported in the UK.

The main purposes of this follow-up survey research are:

1. To investigate the extent to which university libraries may have been reorganizing between 1996-2001.
2. To determine the driving forces of library organizational structure change.
3. To indicate the characteristics of the new organization if the library has undergone reorganization.
4. To suggest an emerging model of organizational structure for university libraries in supporting teaching and learning.

Please feel free to answer any questions, because all information given will be treated as confidential.

The same questionnaire will be also sent to you by e-mail. When you have answered the questions, please send (or e-mail) your reply back to me before 27th of May or sooner if you can. I would be very pleased to send a copy of the results of my research to you as soon as possible.

Thank you very much indeed in anticipation for your help. I look forward to hearing from you.

Yours sincerely

Shiow-Man Liao (e-mail:  
(Research student with City University, Department of Information Science)  
Supervisor: Dr Penny A Yates-Mercer

## Appendix 4-6 Follow-Up Survey Questionnaire

### ORGANIZATIONAL STRUCTURE CHANGE QUESTIONNAIRE

- The extent of *reorganization* for this survey ranges from “reorganization of units within a library” to “convergence with other services/department/library”
- The meaning of *convergence* for this survey includes: library service merges/combines/integrates/cooperates/links/associates/amalgamates with other service/department/library

\* Please tick any that apply

#### PART I. INFORMATION ABOUT THE LIBRARY. PLEASE ANSWER ALL THE QUESTIONS.

Name of your library: \_\_\_\_\_

Number of full-time professional librarians: \_\_\_\_\_

Number of full-time nonprofessional librarians: \_\_\_\_\_

The library composes the following departments/units:

##### 1. The current organization structure of this library is: (single-choice)

- (1) \_\_\_ functional organization  
(the organization usually is subdivided into functional units, such as acquisitions, cataloguing...)
- (2) \_\_\_ self-contained-unit organization  
(it groups organizational activities on the basis of services, customers, products, or geography, such as subject-based services)
- (3) \_\_\_ matrix organization  
(combined functional/self-contained-unit structure. the structure is normally functionally designed in terms of its vertical axis, but designed on some other principle in terms of its horizontal axis.)
- (4) \_\_\_ other (please specify) \_\_\_\_\_

##### 2. What kind of electronic resources/services are provided in this library? (multiple choice)

- (1) \_\_\_ digitized collection, electronic library, digital library
- (2) \_\_\_ electronic journals, electronic books
- (3) \_\_\_ electronic document delivery
- (4) \_\_\_ images services/multimedia
- (5) \_\_\_ distance learning
- (6) \_\_\_ online catalog
- (7) \_\_\_ CD-ROM/ online database
- (8) \_\_\_ web sites or Internet sites, homepage
- (9) \_\_\_ other (please specify) \_\_\_\_\_

#### PART II. INFORMATION ABOUT REORGANIZATION IN YOUR LIBRARY. PLEASE ANSWER ALL QUESTIONS.

- Many of the remaining questions refer to a particular library reorganization. If this library has reorganized more than once, please answer the questions in respect of the latest reorganization

##### 3. Has this library reorganized in structure between 1996 and 2001? (single choice)

- (1) \_\_\_ yes, when was the change implemented? \_\_\_\_\_
- (2) \_\_\_ no Please go to Question 18
- (3) \_\_\_ do not know Please go to Question 18

**4. The reorganization plan was suggested by: (multiple choice)**

- (1) ☐ government
- (2) ☐ parent institution
- (3) ☐ library itself
- (4) ☐ other (please specify) \_\_\_\_\_

**5. The reorganization program included: (multiple choice)**

- (1) ☐ implementation schedule
- (2) ☐ set up a Task Force (Steering Committee) to plan the reorganization
- (3) ☐ identification of key post holders/recruitment of key personnel
- (4) ☐ inspection of individual task/job analysis
- (5) ☐ revise work flowchart/ job description
- (6) ☐ converge operations as overlaps are identified
- (7) ☐ transfers of staff
- (8) ☐ staff communication opportunities/tools (eg. meeting, newsletter etc.)
- (9) ☐ (joint) staff training and development activities
- (10) ☐ IT and information strategies
- (11) ☐ apply additional funding
- (12) ☐ construction of a new building
- (13) ☐ other (please specify) \_\_\_\_\_

**6. The reasons for change were: (multiple choice)**

- (1) ☐ changes in higher education
- (2) ☐ administrative changes in parent institution (ie. merged with other institutions; convergence of supporting services in university)
- (3) ☐ joined library consortia/ cooperative program
- (4) ☐ developed digitized collection, digital library, electronic library
- (5) ☐ change of demographics (student population)
- (6) ☐ change in scholarly publishing/communications
- (7) ☐ change of personnel (new staff, staff retire, staff leave)
- (8) ☐ change in human (library staff and library users) expectations
- (9) ☐ provided new services
- (10) ☐ facilitated management functions
- (11) ☐ introduced new technologies (such as library automation)
- (12) ☐ constructed a new building
- (13) ☐ change of economic conditions
- (14) ☐ other (please specify) \_\_\_\_\_

**7. The goals of change were: (multiple choice)**

- (1) ☐ saved management costs
- (2) ☐ provided new services
- (3) ☐ better utilization of human resources
- (4) ☐ increased production
- (5) ☐ pursued a more flexible organizational structure
- (6) ☐ increased staff job satisfaction
- (7) ☐ increased staff communication and cooperation
- (8) ☐ took full advantages of ICTs
- (9) ☐ other (please specify) \_\_\_\_\_

**8. Which aspects did this library consider before change? Please indicate the way in which they were considered and the most significant factors (such as the parent institutional climate, organization culture, organization size, organization strategy etc.)**

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**9. The methods of reorganization were: (single choice)**

- (1) ☐ single-organizational reorganization (reorganization of units within a library)  
Please go to Question 10
- (2) ☐ converged with other services/dept. (ie. computer center) inside campus Please go to Question 11
- (3) ☐ converged with other libraries outside campus Please go to Question 12
- (4) ☐ participated a consortia Please go to Question 12
- (5) ☐ other (please specify) \_\_\_\_\_ Please go to Question 16

**10. If library reorganization involved only single-organizational reorganization, please indicated which of the following methods has been adopted? (multiple choice)**

- (1) ☐ integration of public services (reader services) and technical services
- (2) ☐ combination of functions, what were the names of functions being combined?  
\_\_\_\_\_
- (3) ☐ new functions or departments (units) created, what were the names of them?  
\_\_\_\_\_
- (4) ☐ functions or departments (units) eliminated, what were the names of them?  
\_\_\_\_\_
- (5) ☐ departments (units) renamed, what are the names of them? \_\_\_\_\_
- (6) ☐ downsizing (reducing in personnel)
- (7) ☐ reengineering (redesigned the organization's core work processes)
- (8) ☐ other (please specify) \_\_\_\_\_

Now please go to Question 16

**11. If library reorganization involved converging with other services/departments, which organization has been converged with this library? (multiple choice)**

- (1) ☐ Computing Services (IT organization)
- (2) ☐ Media/Audio- Visual Services
- (3) ☐ Language Center
- (4) ☐ Teaching/Learning Support
- (5) ☐ other (please specify) \_\_\_\_\_

**12. The reasons for the convergence were: (multiple choice)**

- (1) ☐ creation of digital learning environment (ie.distance education; to serve remote students)
- (2) ☐ shared vision (ie. cooperation in supporting teaching, research, and learning)
- (3) ☐ overlapping missions and strategies
- (4) ☐ increased the organization's effectiveness
- (5) ☐ integration of (technical) staff (ie. exchanges of specialization between organizations)
- (6) ☐ sharing of equipment and facilities
- (7) ☐ external forces
- (8) ☐ other (please specify) \_\_\_\_\_

**13. Who was in charge of MANAGING the convergence process? (single choice)**

- (1) ☐ parent institutional administrator (ie. provost)
- (2) ☐ Library director
- (3) ☐ new external appointee
- (4) ☐ team work
- (5) ☐ other (please specify) \_\_\_\_\_

**14. Administratively, who is the LEADER of the new organization? (single choice)**

- (1) ☐ parent institutional administrator
- (2) ☐ Library director
- (3) ☐ new external appointee
- (4) ☐ other (please specify) \_\_\_\_\_

**15. The convergence of services was: (single choice)**

- (1) ☐ organizational/managerial convergence (two services were effectively merged into one)
- (2) ☐ operational convergence (two services worked closely together)
- (3) ☐ strategic convergence
- (4) ☐ technological convergence
- (5) ☐ cultural convergence
- (6) ☐ functional convergence
- (7) ☐ other (please specify) \_\_\_\_\_

**16. The advantages of reorganization have been: (multiple choice)**

- (1) ☐ provided new services/improved services
- (2) ☐ cost reduction
- (3) ☐ increased productivity and efficiency
- (4) ☐ more flexible organizational structure
- (5) ☐ effective use of human resources
- (6) ☐ effective use of equipment and facilities
- (7) ☐ improved communication and cooperation
- (8) ☐ increased staff satisfaction
- (9) ☐ promotion of staff to a higher level post
- (10) ☐ other (please specify) \_\_\_\_\_

**17. The disadvantages of reorganization have been: (multiple choice)**

- (1) ☐ different mission/strategies
- (2) ☐ different organizational structure
- (3) ☐ different ethos (culture) of organization
- (4) ☐ boundary disputes between services
- (5) ☐ negotiation/communication/cooperation issues between organizations
- (6) ☐ resistance to change (personal level or organizational level)
- (7) ☐ the status (post level) of staff
- (8) ☐ staff training and development
- (9) ☐ financial condition (the costs of reorganizing are too high)
- (10) ☐ technology issues
- (11) ☐ geographic (location) issues
- (12) ☐ other (please specify) \_\_\_\_\_

**18. Is the library planning to reorganize in the near future?**

- (1) ☐ yes, if so, when? \_\_\_\_\_
- (2) ☐ no
- (3) ☐ do not know
- (4) ☐ in progress

**OPTIONAL: Any other comments/concerns (please continue on a separate sheet if necessary).**

**\*\*If this library has been reorganized between 1996-2001, would you please enclose a reorganization program and an copy of organization charts before- and after- reorganization? Thank you.**

**\*\*\*Please check here ☐ if you wish a summary of this study**

**\*\*\*THANK YOU VERY MUCH INDEED FOR YOUR COOPERATION\*\*\***

**Please return the questionnaire to Shioh-Man Liao (e-mail: [liao53@msg.ncl.edu.tw](mailto:liao53@msg.ncl.edu.tw))**

## APPENDIX 5

### Initial Survey Questionnaire (First Stage)—UK Version vs. Taiwan Version

| Questions                                                                                              | UK Item No. | Taiwan Item No. |
|--------------------------------------------------------------------------------------------------------|-------------|-----------------|
| Stocks of library                                                                                      | V           | V               |
| The use of automated library system                                                                    | V           | V               |
| The use of information technology                                                                      | V           | V               |
| The management style                                                                                   | V           | V               |
| The organizational structure                                                                           | V           | V               |
| Reorganization experience                                                                              | V           | V               |
| Plan to reorganization                                                                                 | V           | V               |
| Frequency of reorganization                                                                            | V           | N/A             |
| The reasons for change                                                                                 | V           | V               |
| The aspects considered                                                                                 | V           | V               |
| The goals of reorganization                                                                            | V           | V               |
| The methods of reorganization                                                                          | V           | V               |
| Separate technical/public services                                                                     | V           | N/A             |
| Integration of public/technical services                                                               | V           | N/A             |
| Functions in PS shared by TS                                                                           | V           | N/A             |
| Functions in TS shared by PS                                                                           | V           | N/A             |
| Combined functions                                                                                     | V           | V               |
| Created functions                                                                                      | V           | V               |
| Eliminated functions                                                                                   | V           | V               |
| Renamed departments                                                                                    | V           | V               |
| Dispersed functions                                                                                    | V           | V               |
| The results of reorganization                                                                          | V           | V               |
| Staff attitudes towards reorganization                                                                 | V           | V               |
| Staff education and training program for reorganization                                                | V           | N/A             |
| Staff education and training program for introduction of library automation and information technology | V           | N/A             |
| Categories of staff education and training program                                                     | V           | N/A             |
| The impact on staffing pattern                                                                         | V           | V               |
| The impact on working pattern                                                                          | V           | V               |
| Staff competencies needed                                                                              | V           | N/A             |
| The impact of library automation and information technology on management functions                    | V           | V               |
| People who suggested reorganization                                                                    | N/A         | V               |
| Set up a reorganization program                                                                        | N/A         | V               |
| Elements in reorganization program                                                                     | N/A         | V               |
| Reorganized with other services                                                                        | N/A         | V               |
| Plan to reorganize with other services                                                                 | N/A         | V               |
| relationship between library and computing services                                                    | N/A         | V               |

\*N/A: Means this item was not listed in the questionnaire

## APPENDIX 6

### Initial Survey Questionnaire (Second Stage)—UK Version vs. Taiwan Version

| Questions                                          | UK Item No. | Taiwan Item No. |
|----------------------------------------------------|-------------|-----------------|
| Merged/merge with other service                    | V           | V               |
| The services which was/will be merged with library | V           | V               |
| Motives for the merger                             | V           | V               |
| People who suggests(ed) merger program             | V           | N/A             |
| People who was/will be in charge of merger process | V           | V               |
| Set up a reorganization program                    | V           | N/A             |
| Elements in reorganization program                 | V           | N/A             |
| Staff participate in the merger process            | V           | V               |
| Leader of the new organization                     | V           | V               |
| Condition of merger                                | V           | V               |
| Methods of merger                                  | V           | V               |
| Advantages of merger                               | V           | V               |
| Problems in the merger process                     | V           | V               |
| Improve control and management                     | V           | N/A             |

N/A: Means this item was not listed in the questionnaire

## APPENDIX 7

### Convergence Time of university libraries in the UK and in Taiwan

| Initial survey |                  | Follow-up survey |                  |
|----------------|------------------|------------------|------------------|
| UK (7 cases)   | Taiwan (7 cases) | UK (5 cases)     | Taiwan (5 cases) |
| 1995           | 2001*            | 2001             | 2001             |
| 1994           | 1998*            | 2000             | 2001             |
| 1993           | 1997             | 1999, 2001**     | 2000             |
| 1993           | 1995             | 1999             | 1999             |
| 1991           | N/A              | 1998             | N/A              |
| 1991           | N/A              |                  |                  |
| 1989           | N/A              |                  |                  |
| 1989           | N/A              |                  |                  |

\*: Future plan

\*\* : Means the library had twice convergence experiences

N/A: Means the library did not provide data