A SURVEY OF THE CURRENT STATUS OF LIBRARY AUTOMATION IN MALAYSIAN CHINESE SECONDARY SCHOOLS

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ABSTRACT

The study was undertaken to determine the current status of library automation in Malaysian Chinese secondary schools (MCSSs), which comprise the Independent Chinese Secondary School (ICSS) and the National-type Secondary School (Chinese) (NTSS [C]). This study employed a survey research method. It primarily used mailed questionnaire for data collection. Telephone interviews and personal interviews were carried out to gather supporting data. An 8-page questionnaire, divided into 12 parts, with 45 questions was mailed to the school libraries from all the 60 ICSS and 76 NTSS (C) throughout the country. A total of 89 respondents (65.4%) returned the questionnaires, of which 56 (73.7%) were from NTSS (C) and 33 (55.0%) from ICSS. The study showed that the MCSS libraries only start to adopt library automation during the 1990s and actively involved in library automation starting the year 2000. As at 31st March 2003, there are only 43.8% libraries (39.3% NTSS (C) and 51.5% ICSS) implementing library automation. A total of 50 (56.2%) libraries are not automated, however 39 of them (78.0%) plan to do in the future. The study found that circulation is the function mostly automated by libraries, followed by cataloguing. Turnkey system is the choice for most automated NTSS (C) libraries, whereas ICSS, opt for systems developed in-house. The research study has also identified important factors in determining the types of systems used, and areas need for future planning initiatives in implementing library automation.

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ABBREVIATIONS

DDC	Dewey Decimal Classification
ERC	Electronic Resource Centre
ETD	Education Technology Division
ICSS	Independent Chinese Secondary School
ISBN	International Standard Book Number
IT	Information Technology
LC	Library of Congress
LCCN	Library of Congress Card Number
MARC	Machine Readable Cataloguing
MCSS	Malaysian Chinese Secondary School
MOE	Ministry of Education
NCS	New Classification Scheme for Chinese Library
NTSS (C)	National-Type Secondary School (Chinese)
OCLC	Online Computer Library Centre
RLIN	Research Libraries Information Network
SRC	School Resource Centre
WLN	Western Library Network

CHAPTER I

INTRODUCTION

1.1 IT Utilization and Library Automation In Malaysia

The year 1998 has seen information technology (IT) making rapid inroads into Malaysian schools since the inception of the Smart School concept. The Malaysian government has recognized IT as a strategic tool that can play a significant role in the national development. Hence, the government has invested a lot of money and time in promoting IT literacy in the national primary and secondary schools curricula aimed at meeting present and future demands on the Malaysian workforce.

Teh (1996) wrote: "to create a knowledge-based and information-rich Malaysian society, computer literacy by itself is not sufficient to achieve those objectives. Rather, to face the full onslaught of the Information Age today, more focus should be on the access and effective use of information." One has to take note of the fast generating information and its growth rate, and the importance of having the information resources properly bibliographical controlled, and disseminated to concerned individuals or users. To cope with the fantastic grown rate, information centres and libraries should be well equipped with efficient and fast information handling tools and techniques. IT needs to be utilized and library functions be automated. In order to contribute towards the objectives of building an information rich Malaysian society, Teh (1996) suggested that IT education strategy must embody a long-term plan to automate the school libraries.

In Malaysia, school libraries or school resource centres (SRCs) are parts of the whole continuum of educational provisions. Almost every primary and secondary school has its own library or resource centre (Fatimah, 2002). As at 31st January 2002, there were 1794 secondary schools and 7404 primary schools in Malaysia (Ministry of Education, 2003). School library automation started in the 1990s. Based on the survey conducted by Education Technology Division (ETD), Ministry of Education (MOE) Malaysia for the year 2001(MOE, unpublished), out of the 6680 responded primary schools, 1378 (20.63%) have implemented library automation and out of the 1654 responded secondary schools, 631 schools (38.15%) have started to use library automated system in their school libraries. Table 1 presents the systems being used and the distribution of the schools that have implemented library automation project.

Table 1

The Distribution of the Primary & Secondary Schools; No of Libraries that Implementing Library Automation System; and the Systems Chosen: 2001

No	State	No of Responded Schools		No of Libraries Being Automated		Systems Chosen & the No. of Schools					
		P.	*Sec.*	*P.*	*Sec.*	*Kom-Pus*	*SPPSS*	*SPPSP*	*P'kawan*	*Auto-pus*	*Others*
1	Perlis	65	23	1	23				24		
2	Kedah	478	131	188	60				10		
3	Penang	247	86	21	27				48		
4	Perak	320	92	25	41				66		
5	Selangor	558	198	221	89		305		1		4
6	Kuala Lumpur	183	83	25	25					24	26
7	N. Sembilan	330	98	55	53		62				46
8	Melaka	212	62	56	32		37	51			
9	Johor	823	177	425	130		555				
10	Pahang	488	143	33	46				79		
11	Terengganu	312	82	6	3		6				3
12	Kelantan	395	117	17	23	4	1		6		23
13	Sabah	1020	169	17	16					3	30
14	Sarawak	1249	193	288	63			351			
TOTAL		**6680**	**1654**	**1378**	**631**	**4**	**966**	**402**	**234**	**27**	**132**

(Source: MOE, unpublished)

P: Primary; **Sec**: Secondary **SPPSS**: Sistem Pengurusan Pusat Sumber
SPPSP: Sistem Pengautomasian Pusat Sumber **P'kawan**: Pustakawan
Others: Includes Smart School Management System, Pustaka, Bookmark, CDS/ISIS, Microsoft Access, Dbase, etc.

Other libraries such as academic, public and special libraries began automation projects as early as the 1970s. The distribution of the academic, public, special and national libraries using library-automated systems based on Raja Abdullah & Nor Aziah's study (1992) is shown in Table 2.

Table 2

The Distribution of Libraries and Information Centres Using Library Automated System

Libraries and Information Centres	Number	Applications
Academic Library	14	
International Islamic Univiversity Library		DOBIS / LIBIS
National University Malaysia Library		DOBIS / LIBIS
Northern University of Malaysia Library		SISPUKOM
Science University of Malaysia Library		DOBIS / LIBIS
Tun Abdul Razak Library, Johor		SISPUKOM
Tun Abdul Razak Library, P.J.		SISPUKOM
Tun Abdul Razak Library, Perlis		SISPUKOM
Tun Abdul Razak Library, PPP		SISPUKOM
Tun Abdul Razak Library, Sarawak		SISPUKOM
Tun Abdul Razak Library, Tereng		SISPUKOM
Tun Abdul Razak Library, Shah Alam		SISPUKOM
University of Agriculture Malaysia Library		VTLS
University of Malaya Library		ATLAS
University of Technology Malaysia, Library		DYNIX
Special Library	18	
Central Bank of Malaysia Library		TECHLIB PLUS
ESSO Malaysia Library		TECHLIB PLUS
Infokraf Malaysia Library		SISPUKOM
Institute of Medical Research Library		COLUMBIA LIB. SYS.
Kuala Lumpur Memorial Library		DYNIX
Malaysia Agr. Res. & Dev. Inst. Library		MULTILIS
Ministry of Defence Library		SISPUKOM
Ministry of International Trade & Industry Library		MICRO VTLS
National Productivity Centre Library		MICRO VTLS
New Straits Times Library		BRS-BIBC. RET. SER.
PERNAS Library		SISPUKOM
Public Bank Library		COLUMBIA LIB. SYS
Public Works Department Library		COLUMBIA LIB. SYS
Sarawak Shell Library		TECHLIB PLUS
Shell Malaysia		SISPUKOM
Specialist Teacher Training College Library		COLUMBIA LIB. SYS
State Economic Devt. Corp. Library		DYNIX
Tenaga Nasional Library		SISPUKOM
National Library	1	VTLS
Public Library	3	
Sabah State Library		URICA
Selangor Public Library		DYNIX
Pasir Gudang Public Library		SISPUKOM
TOTAL	36	

(Source: Raja Abdullah & Nor Aziah, 1992)

At present, the majority of the libraries shown in Table 2 have already migrated to either a newer system, or upgraded their existing systems to a newer version. For example, International Islamic University Library has migrated to Horizon, University of Malaya Library from ATLAS to DRA and PTAR, UiTM Library changed from SISPUKOM to ILMU Perdana.

A survey conducted by the National Library of Malaysia in 1989 involving 600 libraries and responded by 450 libraries indicated that there was an overall increase of 63 % for public libraries, 47 % for academic libraries, and 58 % for special libraries applying library automation system since 1982. (Raja Abdullah & Nor Aziah, 1992)

The surveys clearly indicated that the status of automation in Malaysia as a whole is encouraging and increasing yearly. The availability of microcomputers in the 1980s has made it possible for libraries to plan for automation. Most of these libraries purchase the entire computer system package as a turnkey system. In the last several years, the trend is moving from PC based system to the web-based library system as a result of the widespread use of the Internet and the World Wide Web.

1.2 The Value of School Library Automation

> *Librarians do not really have a choice about automating library functions. The entire world around them is busy using computer-related technology to run their operations.* (Wright, 1995, 5)

Why is the "entire world" automating library functions? Wright (1995) claimed that "the major reason for getting involved in the automation of library operations is to improve

the efficiency and effectiveness of library operations for library users. As more information is made available in a variety of formats and in a variety of places, the need to manage information efficiently becomes critical."

Wright (1995) also listed other reasons for applying technology to library operation or implementing library automation as:

i. To make information access easier, faster and perhaps at lower cost per transaction
ii. To complete library tasks more accurately and more quickly
iii. To provide a common system when libraries merge
iv. To cope with increasing demands
v. To allow more activities to be performed by clerical and paraprofessional staff
vi. To provide new services
vii. To collect better data to aid overall management of the library

In short, libraries are gaining a lot of benefits from automating its functions. Like other types of library, school libraries also gaining benefits once it starts to implement its library functions. Abdullah, et.al. (2002) indicates that the reasons given for automating a school library range from the practical to the philosophical, and cover aspects such as school library management, school and library efficiency, curriculum support, information access, information skill instruction, public relations, facilitating collaboration, and promoting equity.

Educational benefits derived from the computerization of library automation may include opportunities for students to develop information skills, to achieve greater

success in locating resources, to become independent and life long learner. The management benefits, which the school libraries will gain, include improved circulation of resources, extensive reporting- facilities, efficient book hire system, and increased access to the resource collection.

Realizing the benefits of library automation, the Ministry of Education officially launched a pilot project, which involved 14 schools (one school from each state), i.e. *Rangkaian Munsyi* (the Electronic Resource Centre [ERC]) in 1996. In 1999, another project, i.e. Smart School (*Sekolah Bestari*) pilot project involving 97 schools started. Both projects are being implemented in secondary schools.

1.3 Malaysian School Resource Centre

As has been notified earlier, almost all schools in Malaysia have its own resource centre or library. SRC was first known as "khutub khanah". Before it was re-named SRC, the name "khutub khanah" was once changed to "school library" and finally re-named as SRC. (Ab. Rahim & Ismail, 1990) SRC was first known as "khutub khanah" during the British colonial era, where books were stored in a corner of the school. According to the writers, the Malaysian schools libraries are different in scale and size. Some libraries are very well designed and well equipped with computers, air-condition, multimedia equipments, audio-visual and other modern facilities including a large size collection. Only after 1970, national secondary schools were provided furniture and room for the khutub khanah. In terms of space, Fatimah (2002) reported that the majority of the libraries are as big as three classrooms size. From 1989 onwards, all newly built schools

are given the whole floor of the building, which is equal to four-classroom sizes as school library. However, there are still schools that just have a specific room or corner to keep their small collections especially in the rural and under enrolled schools in Sabah and Sarawak.

Yong's (1997) study reported that the school library experiences its first transformation and significant development during 1960-1975. In 1962, a one-year full-time course for teacher librarians was introduced by MOE to enable the participants to acquire sufficient skills and knowledge so that they could organize libraries and help to train other teacher librarians.

In 1967, the Textbook Bureau of the MOE was given the responsibility of overseeing school library development. The Bureau initiated the INICEF pilot library project, which was carried out in 80 rural schools between 1972 and 1975. Selected schools were supplied books of up to 950 volumes. In return, the schools have to build up as models with proper cataloguing and classification system, to organized lending and borrowing of books and conduct library-based activities such as book-talks, story telling session and book exhibitions. (Jamaiah & Omar, 1994)

Yong (1997) further wrote that other significant developments were among others, the provision of an annual per capital grant by the government for all the school libraries and the formation of School Library Unit in the Schools Division of the MOE in 1973. The unit was responsible for planning, coordinating and supervising the school library development program in the country.

Teachers were encouraged to prepare and use various types of audio-visual materials as teaching aids in the 1970s. In the 1980s, the implementation of audio-visual materials increased. Provisions were made and the Audio Visual Aids (AVA) room was set up as an extension of the school library. In 1983, school libraries and the audio-visual room were centrally managed. At this stage of expansion of roles and functions, the library is re-named as the School Resource Centre. This resulted in the setting up of the SRC Department in the ETD. Thus, the development of all SRCs, came under the responsibility of ETD, MOE in 1988. (Fatimah, 2002)

In the 1990s, the advent of the advanced telecommunication and information technology is opened the opportunity to transform the existing SRCs once again. SRCs start to implement library automation during the 1990s. According to Abdullah, et.al (2002) school libraries are mostly using stand-alone system, turnkey product based on the personal computer.

The concept of Electronic Resource Centre was introduced to schools in 1995. To further promote computer and information literacy, MOE launched Smart School project four years later. The Smart School concept is premised on the belief that students should be educated to be "self-paced, self–access, and self-directed learners". To empower students to become lifelong learners, the modern technologies such as multimedia, CD-ROM, Internet, etc. are implemented in the smarts schools. (Chan, 2002)

With the advent of information technology and communication, and in the light of the Smart School concept, school libraries in Malaysia is moving towards providing an easier, faster and convenient access to the school communities.

1.4 History and Development of Library Automation in Government Secondary School

Literature related to school library automation is relatively scarce if compared to other types of libraries such as the academic and public libraries. The latest comprehensive study about the library automation is the unpublished survey conducted by ETD, MOE (2002). Among the local researches in library automation are conducted by Raja Abdullah & Nor Aziah, 1992; Rosyati, 1995 and Teh, 1996. The more recent papers generally describe the development of library information system and the potentials of it being used in Malaysian school libraries (Zainab & Abdullah, 2002; Abdullah et.al, 2002).

According to Rosyati (1995), there were studies about the history and development of library automation in Malaysia since 1970s where academic libraries involved in library automation. However, the history and development of library automation in school libraries can hardly be tracked. Based on literature review, it is known that the first attempt to implement library automation system in school library was under the *SISPUKOM-SUTERA* pilot project, followed by the introduction of the Electronic Resource Centre (ERC) Concept or *Rangkaian Munsyi* pilot project to the government secondary schools by MOE. Four years later, ERC has been adopted as one of the key features of Smart School pilot project that uses a wide array of information tools. And, the MOE proposed to extend the smart school concept nationwide in 2003 (Fatimah, 2002). Besides, there have been initiatives by individual school to automate library functions by developing systems in-house using Dbase and Microsoft Access.

The two major initiatives made by ETD in an attempt to automate Malaysian school libraries are further elaborated below.

1.4.1 SISPUKOM-SUTERA

According to Rosyati (1995), the first government secondary school in Malaysia that implemented library automation system through SISPUKOM-SUTERA project was Sekolah Menengah Sultan Salahuddin Abdul Aziz Shah (SMSSAAS) in Shah Alam. The library automation project started in 1993 and was expected to be accomplished in seven months. However, upon the completion of her thesis, Rosyati reported that the library automation project was not completed. The actual cost of the project was RM65, 494.56, including the expenses of hardware, software and system training.

SISPUKOM (*Sistem Perpustakaan Berkomputer* or Library Computer System) is a software jointly developed by the Research & Development team from Institut Teknology Mara (now renamed as University of Technology Mara) with Business Computer (H) Sdn. Bhd. (BCH) in 1985. This locally produced system allows full integration of all the modules, namely acquisition, cataloguing, authority control, serials, accounting, circulations, information retrieval services and OPAC. Report and statistic generation are also available. (Raja Abdullah & Nor Aziah, 1992)

SISPUKOM-SUTERA, on the other hand is an automation project for SRCs in Selangor and also others states in Malaysia that is using SISPUKOM as their resource centres' software. However, apart from Rosyati's case study (1995), the information relates to

the status of the project schools using SISPUKOM are lacking. However, from Raja Abdullah & Nor Aziah's (1992) paper, it is known that before SISPUKOM-SUTERA project started, there are already 39% (14 out of 36 autoamted libraries) of the libraries in Malaysia that used SISPUKOM.

1.4.2 Electronic Resource Centre / *Rangkaian Munsyi*

The ERC / *Rangkaian Munsyi* project was a cooperative work between the ETD, MOE, Malaysia and TELEKOM Malaysia Berhad, the major provider of telecommunication services. The project started in 1995 and was officially launched in 1996. It was agreed that one school from each states is chosen to participate in this project. The lists of the selected secondary schools are shown in Table 3.

Kasbon (2001) wrote that the facilities provided to each school under the ERC projects were:

i. *PC and Network*. A set of 14 multimedia computers networked LAN and WAN complete with a server, printers and other paraphernalia related to the system. Eight of them are placed in the SRC, three in the teachers' common room and another three for the usage of library automation.
ii. *Pre-installed software* in all computers.
iii. *Library automation software***.** ILMU PRIMA that is an upgraded version of SISPUKOM is provided.
iv. *CD-ROMs*. Sets of courseware in CD-ROMs.
v. *Access to Internet* through Jaring

Table 3

The 14 Schools Involved in the ERC Pilot Project

No	Schools	States
1	Sekolah Menengah Derma	Perlis
2	Sekolah Menengah Sultanah Asma,	Alor Setar, Kedah
3	Sekolah Menengah Penanti	Bukit Mertajam, Pulau Pinang.
4	Sekolah Menengah Tengku Menteri	Cangkat Jering, Perak.
5	Sekolah Menengah Agama	Kuala Lumpur.
6	Sekolah Menengah Perempuan Sri Aman	Petaling Jaya, Selangor.
7	Sekolah Dato' Sedia Raja	Rembau, Negeri Sembilan.
8	Sekolah Menengah Durian Tunggal	Melaka.
9	Sekolah Menengah Perempuan Sultan Ibrahim	Johor Bahru, Johor
10	Sekolah Menengah Ahmad	Pekan, Pahang
11	Sekolah Menengah Sultan Sulaiman	Kuala Terengganu, Terengganu
12	Sekolah Menengah Dato' Ahmad Maher	Kota Bahru, Kelantan
13	Maktab Sabah	Kota Kinabalu, Sabah
14	Sekolah Menengah Patinggi Abdul Gapor	Kuching, Sarawak

(Source: http://www.moe.edu.my/websekolah/09/ree0059/utus.htm)

Before the launch and through the progressive development stages, training is provided for the teachers in the following fields:

i. The management and maintenance of the system
ii. The use and maintenance of the ILMU PRIMA
iii. The use of computers and internet for teacher-in-charge of subjects and library
iv. The development of learning and teaching materials from computer resources
v. The inter-library and networking and connectivity.

The initial cost of supplying the hardware, software and establishing the network was born by the TELEKOM Malaysia Bhd. (Kasbon, 2001)

1.4.3 Smart School / *Sekolah Bestari*

Another project, which will quicken the tempo of Malaysian school libraries implementation of a library automation system, is the Smart Schools project. This project started in 1999. One of the nine modules of the project is called Educational Resource Module. The module has the following functional requirements (Fatimah, 2002)

i. Inputting and retrieval of teaching-learning materials
ii. Viewing the resources associated with a subject or a learning area
iii. Integrating of third party courseware that conforms to the integration of Smart School Management System (SSMS)
iv. Inputting and retrieval of personal data of available resource persons
v. Maintaining an inventory of the school's educational resource
vi. Automating the library functions.

Fatimah, further wrote that although the project is due to end in December 2002, Ministry of Education, Malaysia plans to roll out (in phases) the Malaysian Smart Schools concept to all the schools in the country in the year 2003. Thus, we can foresee that if everything goes smoothly, the implementation of a library automation system in all government secondary school libraries will become a reality in the future. Anyway,

till date, there is still lack of literature regarding the current status of smart schools, including the status of the libraries automation in smart schools.

1.5 Independent Chinese Secondary School & National-type Secondary School

The earliest record of Chinese primary schools in Malaya and Singapore dates back to 1815 when London Missionary Society started a Chinese school in Malacca. By 1920, there were 181 Chinese schools in the Federated Malay States and 313 in the Straits Settlements. By the eve of Second World War, the foundation of the Chinese education system up to secondary level had been laid. (Yong, 1997)

After the World War II, the colonial government (British) went about to forge a 'united system of education' and to do away with non-Malay vernacular education. (Kua 1990) During the 1960s, the Malaysia government was encouraging and promoting Chinese secondary schools and English secondary schools to convert into national-type secondary schools under the Education Act 1961. In return, the Malaysia government promised that English will be the medium of instruction and the schools will be fully subsidised by the government. For the Chinese secondary schools that are willing to transform, in addition, at least 13 periods were allowed to teach and learn Mandarin per week. As a result, all the English secondary schools and 55 Chinese secondary schools were converted to the national-type secondary schools. However, there are still 16 Chinese secondary schools, which strongly believe that mother tongue is the most powerful medium for teaching and learning purposes. Thus, they refused to convert to any type of school. (Dong Zong, 2000)

Since 1962, the converted Chinese secondary schools are called "National-Type Secondary Schools (Chinese) (NTSS [C]) and the 16 Chinese secondary schools that refused to convert to national-type schools are called "Independent Chinese Secondary Schools" (ICSS).

Currently, there are 60 Independent Chinese Secondary Schools in Malaysia. A total of 37 ICSS are located in West Malaysia and the other 23 are located in East Malaysia. (Dong Zong, 1991） The distribution of the ICSS in Malaysia is shown in Table 4.

Table 4

The Distribution of ICSS in Malaysia

No	West Malaysia	Number of ICSS
1	Johor	8
2	Melaka	1
3	Negeri Sembilan	2
4	Selangor	4
5	Kuala Lumpur	4
6	Perak	9
7	Kedah	3
8	Penang	5
9	Perlis	0
10	Kelantan	1
11	Terengganu	0
12	Pahang	0
	Total	**37**
	East Malaysia	
13	Sabah	9
14	Sarawak	14
	Total	**23**

(Source: Dong Zong, 1991)

At present, all the government and government-aided secondary schools use Bahasa Malaysia, the national language as the medium of instruction. (Wong 1980) In NTSS (C), Mandarin is taught as a subject and an average of 3 periods are used to teach and learn Mandarin per week. (Dong Zong, 2000)

The ICSS are not under the government education system of Malaysia. (Yong, 1997) Therefore, the development of ICSS's libraries is not under the supervision of the ETD, MOE, Malaysia.

1.6 The Status of Malaysian Chinese Secondary School Library Automation

Since the ICSS is not under the government education system of Malaysia, surveys conducted by government, for example the survey conducted by ETD (2001) did not include ICSS as its respondents. Secondly, the medium of instruction in most of the ICSSs is Mandarin. As a result, researchers who are not from Chinese education background will find difficulty or have no interest to conduct a study on ICSS. Thus, till date, there is no writing about the status of the ICSS library automation. Although Yong (1997) did mention about it, she only gave a very brief picture about the application of automation in the libraries.

Although the survey conducted by ETD, MOE for the year 2001 involving all the government secondary schools, which included NTSCs (C), the study did not mention the school type. Thus, it is within the interest of the researcher to investigate the current status of the library automation.

1.7 Statement of the Problem

Library automation is the latest innovation for efficient storage and accurate retrieval of information in an information rich society. According to *Information Power*, " all schools should actively plan for the automation of their records and procedures" (AASL, 1988). In the 21st century, it is easy to think that everyone has 'been there, done that' and automated their school libraries.

In Malaysia, although quite a number of schools have implemented library automation, the quality of cataloguing in many schools is still questionable. For example, some libraries still using out-of-date catalogues and the catalogue cards are un-filed. (Abdullah, et. al., 2002); Besides the government schools, the current status of the library automation in Chinese secondary schools is relatively vague.

It is known that computer technology is becoming more powerful and less expensive. New systems with various packages and versions are launched from time to time. In addition, most systems are moving from PC-based to the web-based library system as a result of the widespread use of the Internet and the World Wide Web. But, how far do the developments influenced Malaysian school libraries, specifically Malaysian Chinese secondary schools? The scarcity of basic information on the current status of Chinese secondary school library automation in Malaysia makes it difficult for further and more detailed studies. This study was conducted to provide baseline information, which would hopefully facilitate further studies in library automation.

1.8 Aim and Objectives

The aim of this research was to determine the current status of library automation in Malaysian Chinese secondary schools. Thus, libraries in Independent Chinese Secondary School and National-type Secondary School (Chinese) in Malaysia were selected as the population of the study.

Specifically, the objectives of this study is to identify ICSS and NTSS (C) that have automated their library functions, and to determine the extent of library automation in terms of:

a) The functions automated
b) The systems used
c) The choice of automation
d) The retrospective conversion done
e) The usage by the school community

1.9 Research Questions

Based on the statement of the problem described earlier, the researcher attempted to determine the current status of library automation in Malaysian Chinese secondary school. The following specific questions formed the focus of the research:

1. What is the status of library automation in Malaysian Chinese secondary schools? This involves finding out the number of school libraries that have automated and not automated their library functions.
2. What are the library functions that have been automated?
3. What is the system used by the school library?
4. Has the system met its overall requirement?
5. What are the processes involved in automating the library?
6. What are the other areas that computers are being used in the library?

1.10 Significance of the Study

Currently, there is still a lack of Chinese secondary school libraries automation survey being conducted in Malaysia. The survey conducted by Yong in 1997 entitled *The Current Status of Resourse Centers in Malaysian Chinese Schools* which did not include NTSS (C) as her research subject, however did not provide much information about school library automation. Some of the statistics in Yong's (1997) study such as technology status, number of school libraries with automation systems is useful for comparison in this study.

The importance of this study is that besides contributing information about the current status of the school library automation in the ICSS and NTSS (C), it could provide a basis for comparison of automation with libraries in Malaysian National Secondary Schools. The findings of the study could also provide preliminary information for policy makers to identify what needs to be done as far as library automation is concerned. The

data provided or findings could also assist non-automated schools in the process of choosing, planning and implementing their library automation. This includes which systems to chose or what is the available software in the market.

1.11 Research Limitations

Since the sample of the subjects used in this study was limited to the Malaysian school libraries in ICSS and NTSS (C), the findings cannot necessarily be generalized to all Malaysian secondary school resource centres. Yong (1997) found that there were only seven out of the 43 ICSSs in her study that implemented library automation in their school resource centres. Thus, another limitation of the study was that automation might not be widely implemented in the school libraries in ICSS and NTSS (C). Besides, as the study is to examine the automation of library functions, it was confined to the library system such as acquisition, cataloguing and circulation. Hence, it does not include any library tasks that utilise the computer and telecommunication technique such as reference work, office automation, etc.

1.12 Definitions

The following definitions apply to this study:

School Resource Centre (SRC)**.** *Pusat Sumber* or SRC is also known as the school library, media centre, learning resource centre or reading room. In this study, the

researcher chooses to use school library for uniformity.

Librarian or teacher-librarian. It is also known as media specialist. It refers to a person who is in charge or helps to run a school library, whether full time or part-time.

Library automation**.** Automation is defined as any library functions that are accomplished by used of a computer. The library functions include circulation, cataloguing, online public access catalogue or OPAC, acquisitions, and serials control. OPAC is equivalent to the card catalogue of a library, except that it is on the computer.

MARC. An acronym for Machine Readable Cataloguing. MARC is an international standard format for recording bibliographic information in a machine-readable form for communication or exchange among libraries and institutions. Eg. Can MARC, UK MARC, UTLAS MARC, US MARC.

Integrated systems**.** In an integrated system**,** all the library functions (acquisitions, cataloguing, circulation, serial control and OPAC) use a single database made up of a collection of files, such as bibliographic files, item files, authority files, vendor files, fiscal files, patron files, etc. All the functions are fully interactive of each other and are kept automatically in synchronization. All the files in an integrated system are interconnected.

Stand-alone systems: are programs for use with one computer, and they are usually for only one function, such as circulation. They are usually basic, reliable, and cheap, but not easily able to be expanded.

Locally developed system**.** A system, which a library designs, programs, installs, and tests locally from scratch, is define as locally developed system. The system will most probably meets the exact needs of the library and the library can modify and make changes when needed.

Turnkey system**.** An automated library system, which has been designed, programmed and tested by a vendor and then offered for sales by libraries, ready to be installed and operated. Usually vendors undertake to supply total library system package to the library as a purchasable end product, which includes the hardware, software, installation, training and maintenance. The system is able to customize to various installations but will be expensive; therefore a standard product is usually recommended.

Online database: Electronic database, e.g. ERIC, which is accessed via computer and a modem.

Bibliographic utility: An organization or firm that markets an online file of bibliographic and other records for use by many libraries. e.g. UTLAS in Ontario and TKM in Manitoba.

1.13 Organisation of The Report

This report is organised into five chapters, which are presented in the following manner. Chapter one provides an introduction and background information in general and its present status in the context of our country. It follows with the statement of the problem,

objectives of the study, research questions, significance of the study, research limitations, and definition of terms. Chapter two reviews and analyses relevant literature on library automation. Chapter three presents the research methodology that was used in the collection and the analysis of data. Chapter four presents the results and the statistical analysis of the findings. Chapter five concludes the research and provides interpretations of the findings, recommendations and suggestions for future studies into this area. A bibliography is provided and the questionnaire is included as appendices.

1.14 Summary

This chapter has presented the background of the study through an overview of the IT utilization and library automation in Malaysian schools. The researcher took a closer examination of the history and development of school library automation in the country. Professional literature contains many statements about the value and benefits of school library automation. Various studies have suggested that the efforts of school library automation are indeed generally positive. The aim to investigate the status of library automation in Malaysian Chinese secondary schools was highlighted in this chapter. Six research questions, which formed the focus of the research, were formulated. This chapter also discusses the importance of the information created as a result of the study. The limitations in the study were also discussed. Finally the chapter ended with a section on the definition of the keywords used in this study.

CHAPTER II

LITERATURE REVIEW

The literature pertinent to research on school libraries in Malaysia is relatively scarce, limited almost entirely to studies on its development, services, collection and management. To review the related and relevant literature, searches were accomplished by examinations of both general and specialized bibliographical tools, abstracts, online catalogues of library holdings and online databases. Searches made through the online databases available via the University of Malaya Library (UML) website include from Library and Information Science Abstracts (LISA), Dissertation Abstracts Online (DAO), Proquest, Wilson Web and Emerald. Other search tools being used are the Index Database (INDXDB) at UML to search the conference papers; Internet commercial search engines such as Google and Hotbot; Educational Resources Information Centre (ERIC) via the world wide web; and collection of thesis, dissertations and journals at UML and the Documentation Centre, MOE, as well as the online catalogue at ETD, MOE. The local publications from Dong Jiao Zong Research Centre and Huazi Resource & Research Centre were manually searched for the same purpose.

Terms or keywords used to retrieve the literature were among others; library automation, automation system, library system, school technology, information technology, school libraries, school resource centres, media centres, library survey, library automation survey, SISPUKOM, Rangkaian Munsyi, *pusat sumber sekolah*, Malaysian Education, library system vendor, Chinese schools, Chinese education, and various combinations of these terms or keywords.

In preparing this chapter, more than 100 items (books, journals, reports, conference papers and unpublished documents) were reviewed. However, items dealing with theoretical aspects of library automation have been omitted.

This review focused on library automation projects or activities emphasising school libraries. Most of the literature published on the subject emphasises the importance and need of computers in libraries, and many papers publish reports on current hardware and software libraries used. Literature on case studies of individual library automation projects is included.

The findings from the literature search are summarised in the following eight main areas, i.e. Library automation: an overview; Need for computerised library systems; Library systems software; Library systems selection; Funding of library automation; Retrospective conversion; Library automation surveys; and Library automation: Malaysian scenario.

2.1 Library Automation: An Overview

In developed countries such as Australia and Canada, some pioneering schools and school districts were experimenting with various forms of school library automation as early as the 1970s. However, it was with the emergence of the microcomputer or personal computer, at the beginning of the 1980s, that school library automation became more common. The literature shows that in the early 1980s, writers and librarians believe and argue that automation however would benefit large libraries rather than

small libraries such as the school libraries. Clyde (2000) states that this argument seemed mostly to be made on the grounds of cost and the time required to implement the system: automation of larger school libraries would be cost effective and result in efficiencies, but this kind of effort was not appropriate for smaller schools. Clyde further discusses that writers who took this view, usually had automation of the circulation system in mind as the primary goal of school library automation, and with automated access to the catalogue being a useful by-product of the process. This view was more common in the United States of America as indicated by Bocher (1994) than in Australia and Canada, where catalogue automation has generally been the priority for educational reasons.

According to Wright (1995), in the mid-1980s, most literature on library automation focused on minicomputer operations, the emerging standards such as the MARC format and access to bibliographic information through bibliographic utilities such as Online Computer Library Centre (OCLC), Research Libraries Information Network (RLIN), and Western Library Network (WLN). Due to the more and more common use of minicomputer in those years, Wright sees the opportunity to automate small libraries and he wrote: "the costs for computer hardware and peripherals came down, automation of library processes changed rapidly. It became financially feasible for smaller libraries to think about automating library process".

Bocher (1994) indicates that much of the literature on library automation focuses on large academic or public libraries that are implementing automated systems on large mainframes and minicomputers. There has not been a great effort by the library community to address the needs of smaller libraries, especially school libraries, to

implement automated systems operating on smaller microcomputers. He then remarks an interesting point: "This oversight is somewhat ironic considering that there are 84,500 K-12 schools (in United States). By comparison, they are only about 3,500 two- and four-year colleges and universities and approximately 2,000 public libraries and branches in communities larger than 50,000."(Bocher, 1994)

The situation in United States is quite similar in Malaysia. Computerised school library services in Malaysia have not been reviewed much in the literature of library science. One of the possible reasons is that Malaysian school libraries started to involve in the implementation of automation system fairly late if compared to the larger libraries. Most of the researches concerning library automation or technology application in library are focusing on larger libraries such as academic, public or special libraries. To date, only a survey of school library automation has been conducted at the national level by the ETD, MOE (2001). However, Independent Chinese secondary schools are excluded in the survey. Yong's study (1997) was the first and the only effort conducted to investigate the current status of the Malaysian Chinese school libraries. The survey investigated the status of library services, collections, management as well as library automation in Malaysian Chinese primary and secondary schools.

As shown from the lack of literature available, Meckler (2001) urges that more research needs to be done on the public school concerning media centre automation because library automation will remain a challenge to most school systems. According to Meckler, whether the school libraries have implemented it in the recent past or are considering it in the future, once the planning is done and implementation of the library has begun, everyone will discover that automation is an ongoing process. Because of the

new technologies, there will always be a need for improvements to enable access to information in the most efficient manner.

2.2 Need for Computerised Library Systems

From the reviews, it is known that almost all literature published on the subject emphasise the importance and need of computers in libraries, although some followed by the discussion on the disadvantages and challenges of library automation. Many states that school libraries need to be automated. Hutchinson (2002) claims that in the 21st century "no longer is it a discussion as to whether the school library should be automated, but rather how and what this automation should look like". Clyde (2000) even suggests that an automated school library is the right of every child and teacher. Moloney (1997) indicates that the ability of a computer to carry out the library functions quickly, accurately, and systematically, makes it a most useful tool; and, some of the librarians seen library automation as a major step in strengthening links in the region. Khalid (1996) notices the common issue highlighted in the library science area and indicates that we cannot mention present library literature or any conference without a reference to library automation.

In the paper discussing the issue and results of the first national survey of library automation in Australia, Dillon (1995) indicates that the focus of service in school libraries is shifting. Their provision of a static collection, however good, is no longer adequate. School libraries are becoming gateways to wider information networks. Automation is no longer seen as mere "housekeeping tools". They must provide that

essential access to an ever-increasing variety of sources of information such as multimedia, online database and the Internet.

Meghabghab (2002) is one of those who concerns much regarding automating small libraries. In order to fill a gap in the literature, besides describing the automation process in a "simple, systematic manner, taking into consideration the unique characteristics of school media centres and small libraries", Meghabghab presents a list of benefits of library automation for practitioners who may be involved in an automation project.

Everhart (1992), analysed the work of school library media specialists in automated and non-automated secondary school libraries in the United States, and found that those who had automated systems spent significantly more time in the development of the educational programme of the school library (including the use of technology for instructional purposes), while those who did not have an automated system spent significantly more time in production and circulation activities. Clyde (2000) also points out that a similar study of elementary school library media specialists in Iowa by Donham van Deusen (1996) showed that several direct services to students and teachers were positively influenced by automated circulation systems: consultation work, instances of providing individual assistance to students, and electronic support for teachers using technology. Further, automated circulation also appeared to reduce the non-professional work performed by library media specialists.

2.3 Library System's Software

Based on the literature reviews, it is found that there are various library systems available on the market. Besides the turnkey systems which may cause a lot to the small libraries with tight budget, there are also free software such as CDS/ISIS and low cost system such as BOOK MARK for the small libraries to choose.

Khalid (1995), who does quite a number of research studies about library automation in Pakistan, especially in the field of library system's software claims that the software is the most important item in the automation process, "A computer without software is similar to a man without his brain, or a library with neither books nor librarians." Khalid's studies present an overview of the present status of the use of library automation hardware and software in Pakistan. This includes the market, IT education and training in Pakistan. Although the studies focused on Pakistan, they are useful reference materials for researchers especially those are studying library automation in developing countries, like Malaysia.

After studying various aspects of library automation in Pakistan in 1995, Khalid (1996) in his study, concludes that library automation in Pakistan is in its infancy, no serious efforts have been made in the field of library in a proper manner, and with only six or seven years' experience in library, very few Pakistani have been trained well in library computerization. On the other hand, however, hundred of library packages have been developed and run successfully in advanced countries and there are many directories and other tools available that help librarians to select suitable software for their libraries.

In this regards, Khalid (1997) recommends CDS/ISIS as the best library software for developing countries and describes the thirty-four major characteristics of CDS-ISIS that make it especially appropriate for the libraries. Teh (1996) in his paper also describes CDS/ISIS, which is distributed free to libraries and information centres all over the world by Unesco as the basis for developing a working automated library system suitable for small libraries in developing countries such as Malaysia.

Besides CDS-ISIS, the development of some small and inexpensive integrated library automation systems also make small libraries in implementing library automation more financially feasible. One of these was Book Mark (Harper, 1997), developed by Dean Hodgson for the South Australian Education Department and now marketed internationally. This system was designed for very small schools; the development plan required that it be sufficiently robust as to require little ongoing support in isolated schools, and sufficiently simple as to be capable of being installed and operated by an untrained person if necessary (Clyde, 2000).

Currently, the library systems being used by Malaysia's government secondary schools are SPPSS, SPPSP, Pustakawan, Kompus, Autopus, Dbase, Microsoft Access, etc. Among the library systems, SPPSS is the most popular system being used, followed by SPPSP and Pustakawan. (Fatimah, 2002)

With regards to library systems that support Chinese characters, one of the key problems is the diversity of data coding programs. According to Li (1997), Ta-I Huang (1990) reviewed several coding systems that include the Japanese Industry Standard X0208-

1983, the Chinese mainland GB 2312-80, Big5, Chinese Character Interchange Code, Unicode, and so on. The author concluded that the best coding system is the Chinese Character Code for Information Interchange (CCCII). Yu Sung (1994), as noted by Li (1997), echoed Huang's view, pointing out that Big5 has a character set of 13,051, whereas CCCII consists of 53,049 characters. He thus considered CCCII more adequate for library use. Unfortunately, CCCII, though developed in 1981 and later used in the Chinese MARC, has never been accepted as the Chinese coding standard. Big5 can be converted to CCCII for data transmission, but not from CCCII to Big5 because the former contains more Chinese characters than the latter. Kai-tung Huang (1996), according to Li (1997), questioned the wisdom of different Chinese coding and suggested giving up self-interest and moving toward uniformity and standardization. (Li , 1997)

2.4 Library Systems Selection

The literature contains many statements about the selection of library system, which include the importance of system selection, factors affecting school library automation decisions, and factors to consider when making the transition to an automated system. There are also directories and checklist for librarians to refer to in order to select the best system.

The report entitled *Selection of automation systems: criteria for school libraries in Manitoba* (Manitoba Education and Training, 1991) presents an evaluation instrument to help educators at the school, school division/district, and provincial levels to evaluate,

identify, and select a comprehensive school library automation system. Four phases for school library automation are outlined and checklist instructions are given. The checklist includes: vendor, program, security, and statistical requirements for operation of all modules; module requirements for acquisitions, cataloguing, searching, and circulation. Forms for the justification for selection of an automation system and the automation system identification are also included.

Indermaur and Pru (1995) also develop a checklist for those secondary schools, which had purchased their original systems and were considering the possible of migrating their existing software to a second-generation automated library system. Manjunath [n.d.], in his paper entitled "*Library automation: why and how?*" presents 11 criteria for librarians in order to select the right software, among others are the developers; the times that the software has been revised for; parameters available for each module; whether the software has facility to import bibliographic data available in ISO2709 format and similarly export of data in this format; training and guidance after installation; whether available on major operating systems; whether it is web interface-able; whether it can be interfaced with the e-mail system of the campus network; whether it has taken care of Y2K compliant; how many installations it has got in the country, since when and major clients; whether it can offer OPAC and different rights to different logins.

Writing about her research on the factors affecting school library automation selection decision, Abbott (1995) commented that significant changes in education have meant that teacher librarians are facing the challenge of meeting increasingly more sophisticated requirements by their users. This being the case, it seems logical that

teacher librarians will require greater sophistication of the automated systems they install. Circulation control and ease of cataloguing have become less significant than OPAC design and compatibility with other technology (such as multimedia, online database, and the Internet.)

According to Abbott (1995), the selection of a system is a major decision, both in terms of cost to the school involved, and in terms of the credibility of the teacher librarian making the decision. She indicates that in the independent school system, the selection process tends to be one-off, i.e. school-by-school. Schools do not always expect to re-invest in the technology. Automation of library systems is often seen as a once only exercise. Thus, to make the right choice is very important. Unfortunately, there is relatively little literature available, which related specifically to the selection of library software for schools. In this regards, Abbott conducted a study to determine the essential elements of a successful method of selection of automation systems. In the study, interestingly, it is found that the first step in selection was not the preparation of goals/objectives, users' needs or purposes of automation. Rather, it was the examination of systems running in other schools taking vendor advice and relying on personal knowledge. In addition, Abbott (1995) describes the eight positive and also negative factors that influencing the selection process. The eight positive factors are commitment of all library staff, knowledgeable teacher librarian, adequate finance, adequate time to investigate and select, having time for sufficient site visits, use formalised checklists, cooperation of other librarians, and good public relation work carried our with school administration, teaching staff and students. Whereas, the eight negative factors are a finance-driven decision, a hardware decision, lack of interest by other library staff, the decision being imposed from above by the principal or school business manager,

inadequate time being given for the selection process, inaccurate vendor claims, the need for compatibility with other systems already in the school being the major reason for choice, and vendor failure or changes in ownership.

Hutchinson (2002) also discusses the factors to consider when making the transition to an automated system, including assessment, planning and selection. Meckler (2001) indicates that there are many different programs available for automation of library procedures. Libraries can choose to use stand-alone systems or integrated systems. If a library chooses a stand-alone system it is important to remember that it frequently cannot be expanded. The integrated systems, on the other hand, are usually designed for expansion and used with networking and online union catalogue.

In addition to the systems selection, Vernon (1996) discusses the automation options available to libraries with non-roman script, i.e. Hebrew and Arabic script collections and examines the automaton decisions that difference libraries worldwide have made.

2.5 Funding of Library Automation

From the literature, it is known that funding plays an important role in automating process and is one of the barriers to the implementation of automation especially smaller libraries. Khalid (1998) in his study concludes that funding is a major problem in developing countries for not automating their school libraries. Miller (1989), as cited by Baggett (1992), states that this statement is especially true in developing countries that permit limited library budget. Thus, if the library is to acquire the needed automation to

meet the needs of the students, planning and financial support are vital. Resourcefulness of the librarian is necessary to find and secure funding for automation.

Cibbarelli (2003) points that installation of integrated library systems in schools has historically lagged behind public, special, and academic libraries due to the cost and complexity of managing an automated system. Many school libraries are still not automated because the market sector above all others suffers from a lack of professionally trained staff and adequate budget.

The literature revealed that there are three major methods of funding school library automation in United States, i.e. (i) tax dollars --the traditional sources of funds, (ii) non-tax money sources, and (iii) a combination of the two. According to Burlingame (1989) small libraries can take advantage of alternative funding sources to address their automation needs. Additional or alternative funding came from foundations, corporations, endowments, and local fund-raisers. Some unusual methods of financing school library automation were used in various individual schools. For example a high school in Missouri, United States took 20 years of accumulated library fines to purchase an automated circulation system. A media specialist from a high school in Georgia, United States used overdue book fines and receipts from a photocopying machine to finance automation (Baggett, 1992) Miller and Shontz (1989) claim that public schools are becoming involved in fund raising and in seeking gifts and grants to finance automation projects.

Although there are free systems such as CDS/ISIS and low cost systems such as Book Mark, the literature suggested that schools with the smaller budgets are finding it

difficult to fund automation. As Baggett (1992) put it, "The initial cost (relevant hardware and creating a database of catalogue records) as well as the continuing cost are a problem for the media specialist. It might be necessary for these schools to seek additional funding from alternative non-tax sources." However, according to Cycle (2000), systems such as Book Mark, AGAMA, and FILMS show that school library automation need not be an expensive exercise that is beyond the financial capabilities of small schools.

2.6 Retrospective Conversion

Initially, the retrospective conversion, or the entering of all the records of the current collection into an electronic format that is readable by the computer, is the biggest challenge faced by the librarians or media specialist. Khalid (1998) states "Retrospective conversion is a main hindrance in automating a library catalogue". If there were no funds available to hire the retrospective conversion done for the school library, then the librarian has to enter all of the records into the computer herself. Literature indicated that this process can take months, if done undisturbed, as most libraries have thousands of records that need to be entered. Scott (1996) as noted by Meckler (2001), states that some even took a year or more than a year to make convert the library from no automation to what is considered automation. Thus, Meckler (2001) suggests that if it is at all financially possible to have the conversion done by an outside source, it should be considered. However, for East Asian collections such as Chinese collection, Wu (1993) states that scarcity of vendors able to do East Asian retrospective conversion has made the market less competitive. This may be one of the factors

contributing to higher pricing for East Asian retrospective conversion than for non-East Asian retrospective conversion. The unit cost for East Asian retrospective conversion is almost three times higher than for a non-East Asian retrospective conversion record.

Caffarella (1996) wrote: "the key to an efficient retrospective conversion is to match the International Standard Book Number (ISBN) and the Library of Congress Card Number (LCCN) of the holding against a master file of MARC records." Meckler (2001) found that most librarians do not have the time to do this and still maintain a regular schedule of library hours for their students. With regards to this, Paxton (1995) states that many teacher librarians may not even be aware that MARC is playing a part in their library catalogue let alone what the term means.

Meckler's (2001) study found that 75.5% of the public school libraries in Ohio that were automated had their retrospective conversion done by an outside paid source. A total of 77.8% respondents said that a vendor performed their retrospective conversion and 24.3% said that the librarian perform it. During the conversion, 19.4% of the libraries were closed.

Regarding the record standards, Meckler's (2001) study shows that 72.9% responded that they used the MARC records. A total of 70.3 % used the MARC records provided by outside sources. A large majority, 80.7% of the librarians indicated that they created their own original cataloguing for materials when needed.

2.7 Library Automation Surveys

There are various surveys undertaken by researchers to investigate the status of school library automation especially in terms of the functions automated. For example, Miller and Shontz (1989) conducted a survey of media centres in the United States. In the survey, they found that only 6% of the schools automated their catalogue, 29% plans to automate their catalogue, 21% have automated the circulation system, 42% plan to automate circulation, 8% had on-line database usage and 4% had CD-Rom technology. Baggett's (1992) survey that investigates secondary schools media centres in Georgia shows that 9.4% respondents automated circulation only, 1.5% had only catalogue, 37.3% had both an automated catalogue and circulation system. A total of 14.3% had online database being used and 33.8% were using CD-ROM. A total of 38.1% had not automated their libraries yet. Keable, Williams, and Inkster (1993) conducted a study of 200 randomly selected Minnesota school library media centres to determine their direction taken towards automation. They found that library specialists automated circulation systems first, then the catalogue, and finally the reference services. Only a few libraries were automated all at the same time because of the cost involved. Several years later, Caffarella (1996) found that "most schools start the automation process with a circulation control system because it is easily understood and appears to require a relatively small investment". In 2001, Meckler conducted a survey based on a similar one conducted in Georgia, to collect data regarding the degree and nature of automation in public school in Ohio. Meckler also found that the automated circulation system was the first part of the library functions to be automated, with 95.9%. Catalogue came in second with a very closed 95.2%.

Besides individual researcher, institution such as Quality Education Data, an education research firm (1995) that provides information about America's schools, together with Nichols Advanced, the provider of two library automation systems, surveyed 17,880 public school districts in the United States. A total of 21% or 3,722 library services coordinators responded. The result shows that almost half of school library media centres are fully automated, including both circulation and cataloguing. Major impediments to automation are cost, lack of equipment, and lack of time. A survey conducted by Hong Kong Teacher-Librarians' Association (1999) shows that in 1999, 68% of the Hong Kong secondary school libraries had automated their library functions.

In relation to the automation options, Vernon (1996) conducted a survey that investigates the automation options available to libraries with Hebrew and Arabic script collections. It also examines the automation decisions that different libraries worldwide have made about automating such collections, particularly considering how their choices relate to overall prioritisation and needs assessment at the institution. A library may choose to romanise the cataloguing data, to use non-Roman script cataloguing, or to implement combinations of both. Standards and case studies are provided for each.

Brown (1996) reviews library automation efforts in West Virginia. Topics include information equity and rural areas, library systems and resource sharing, state-wide connectivity, a higher education telecommuting network that has expanded to include elementary and secondary school libraries, multi type library cooperation and staff training, and academic library projects.

Howrey (1990) surveys school librarians in 37 states to reveal the extent of existing automation and resource sharing in their libraries. The research aimed to identify current national programs of interest to Illinois School Library Media Association (ISLMA), identify current automation programs within Illinois library systems, and define automation options available to ISLMA. It is discovered that several pre-existing programs in Illinois--ILLINET Online, various system databases, Chicago Schools Project Inform--offer a good foundation for expanding access to school holdings. In addition, data are gathered on the wide variety of vendor technologies and product costs.

On the basis of this research, recommendations were made to the ISLMA which include the continued promotion of resource sharing and SILO (Serials of Illinois Libraries Online), developing awareness of telecommunications technology, utilization of the research material and statistical data collected by the survey, development of state wide guidelines for school automation, and the continuation of more grant-funded proposals and projects. This study is funded by the Library Services and Construction Act (LSCA) to enable the ISLMA to plan the automation of the state's school libraries.

With regards to the training, Meckler's survey (2001) shows that only 12.9% of the respondents had no computer training of the program to be used prior to beginning the automation of their library. A total of 45% of the schools had vendor training sessions, either on site or at the vendor's location and 30% learned how to perform their automation procedures from other staff members who had been trained by the vendor. A total of 27.1% had training from other staff that had learned the procedures on their own. Khalid (1995) indicates that Pakistani librarians are not trained in library automation: the country's library schools do not prepare their students for this challenge.

To assist media specialists, the directory edited by Bettie (1990) allows media specialists in regional areas of Oklahoma to share their experiences in computer applications for libraries. The first of two sections lists schools using computers for circulation, computerized catalogues, library management, CD-ROM, laser disk programs, and online information systems. Schools are listed according to the 11 automation regions that correspond to the Oklahoma Telecommunications Interlibrary System, and within that listing, under the category of computer use. The name of the software used is listed for each school. It is noted that the sharing of information on the use of computers in libraries has provided state decision-makers with valuable input.

2.8 School Library Automation: Malaysian Scenario

Literature related to school library automation was relatively scarce in the Malaysian scenario if compared to other types of libraries such as the academic and public libraries. As mentioned earlier in this chapter, one of the possible reasons is that Malaysian school libraries started to conduct library automation fairly late if compared to the larger libraries. Most of the researches concerning library automation or technology application in libraries focus on larger libraries such as academic, public or special libraries. To date, only a survey of school library automation has been conducted at the national level by the Educational Technology Division, MOE (2001). However, Independent Chinese secondary schools are not included in the survey. Yong's study (1997) was the first and the only effort thus far conducted to investigate the current status of the Malaysian Chinese school libraries. The survey investigated the status of

library services, collections, management as well as library automation in Malaysian Chinese primary and secondary schools.

Besides Yong's study, studies regarding library automation in Malaysia are by Raja Abdullah & Nor Aziah (1992), Rosyati, (1995), Teh, (1996) and an unpublished survey conducted by ETD, MOE (2002). Other literature such as by Chan (2002) and the more recent papers generally describe the development of library information system and the potentials of it being used in Malaysian school libraries (Zainab & Abdullah, 2002; Abdullah et.al, 2002).

Among the studies, Rosyati's case study (1995) is very useful to teacher librarians who are planning to automate their school libraries. The study focuses on the four stages during implementation phase of the automation project, i.e. during data transcription, data verification, data entry and technical reprocessing of the collections of the school library. The results of the study show that there were ten areas of main problems during the implementation phase of the automation. The study also identifies the most difficult area during the various stage of implementation phase of the project undertaken by the teacher librarians.

The survey conducted by ETD, MOE which is more current, is somehow quite similar to this research, that is on the status of the school library automation in government schools. However, the survey does not include ICSS. Thus, the only literature available regarding school library and library automation is Yong's study (1997). However, Yong's study shows that the involvement of ICSS in library automation in 1997 was still in the initial stage.

Yong's (1997) survey, which is the pioneer survey on the current status of resource centres in Malaysian Chinese Schools, gives a brief but overall picture regarding the status of the Chinese schools libraries in Malaysia. The study shows that only seven out of forty-three (16.28%) responded secondary schools (ICSS) automated their schools library. All the seven schools had automated their cataloguing and classification. Five of them automated circulation, three automated indexing and two automated OPAC systems. Two of the most popular software being used are dBase and Clipper.

The advent of the advanced telecommunication and information technology has opened the opportunity to transform the existing school libraries into the Electronic Resource Centre beginning 1995. A pilot project Electronic Resource Centre (ERC) which is named Rangkaian Munsyi was established in 1996. Findings by Kasbon (2001) indicated that the percentage of students' computer literacy, and Internet consciousness, as well as awareness towards computer and IT has increased tremendously with the use of ICT technologies in school libraries. As ERC has been adopted as one of the key features of the smart school in Malayia, more efforts on school library automation were initiated by individual schools. This was reported by Chan (2002) in her writing on the development of information literacy in the Malaysian smart schools which gives a better picture towards the Smart school concept to promote computer and information literacy.

2.9 Summary

The study of the literature indicates that library professional is continuing to stress the

importance of computer use in school libraries. The literature also indicates that library automation, though expensive, is being implemented. There are also evidence that locally developed systems or CDS / ISIS are the alternative for schools especially those small libraries with constrain budget.

Examining the literature on school library automation revealed that till date there has been no comprehensive research done on its status in Malaysia. So far, there is only one survey of the status of school library automation have been conducted at national level. However, the survey does not include ICSS as its population. In addition, the study did not mention the school type. For the most part, the literature regarding school libraries automation is limited almost entirely to studies on its development, services, collection and management.

The study of the literature in this chapter consist of descriptions of automation activities in individual libraries: the majority continues to be of the "what we did, how we did it, do it, or plan to do it" type. According to Khalid (1996), publications of this sort are obviously appropriate and needed, but it would be helpful if researcher went beyond reporting or describing what was done and how, and also reported why.

The next chapter presents the methodology employed in the study.

CHAPTER III

METHODOLOGY

The purpose of this research is to determine the current status of library automation in Malaysian Chinese secondary schools. Specifically, the objectives of this study are to identify ICSS and NTSS (C) that have automated their library functions, and to determine the extent of library automation in terms of:

a) the functions automated
b) the systems used
c) the choice of automation
d) the retrospective conversion done
e) the usage by the school community

Hence, this study attempts to answer the following specific questions that formed the focus of the research:

1. What is the status of library automation in Malaysian Chinese secondary schools? This involves finding out the number of school libraries that have automated and not automated their library functions.
2. What are the library functions that have been automated?
3. What is the system used by the school library?
4. Has the system met its overall requirement?
5. What are the processes involved in automating the library?
6. What are the other areas that computers are being used in the library?

This chapter describes the methodology used to conduct the study. Specifically, the chapter is divided into seven sections: (i) Research design; (ii) Population and sample; (iii) The instrument; (iv) Pilot test / Pre-testing; (v) Data collection; (vi) Distribution and return of questionnaires; and (vii) Treatment of data.

3.1 Research Design

This is a quantitative and descriptive study, which employs a survey research method. Survey is conducted to collect data regarding the present status of the library automation in ICSS and NTSS (C) as well as the baseline and demographic data. For data collecting, the primary instrument used is mailed questionnaire. Besides, telephone interviews and personal interviews are carried out to gather supporting evidence.

The study essentially involved the following steps, some of which were carried out concurrently with others:

1. Reviewing the literature to obtain an overview of the library automation generally and school library automation specifically; to examine guidelines and similar research studies that used questionnaire; to establish suggested variables and items; and to gain a better understanding of the many facts and problems at hand.
2. Conceptualising the research problems; and preparing a preliminary list of research questions.
3. Developing the survey instrument, i.e. the questionnaire.

4. Obtaining the support and approval from the Ministry of Education (MOE), followed by the approval from the 14 state Education Departments to conduct the survey in NTSS (C) throughout Malaysia.
5. Getting the Malaysia Secondary School List, 2003 (*Senarai Nama Sekolah Menengah di Malaysia, 2003*) from MOE.
6. Selecting the samples of the study.
7. Pilot testing / distributing the questionnaires to the selected schools by mail as a try-out of items; follow-up the samples via phone calls and phone interviews and made necessary revisions on some of the items.
8. Distributing the revised questionnaire to the rest of the samples.
9. Conducting follow-up mailing and phone calling to the non-responding samples by the initial deadline.
10. Collecting data and checking the data for comprehensibility, reliability and usability.
11. Analysing and interpreting the results by coding the responses, tabulating the data and performing appropriate statistical computation.

3.2 Population and Sample

The population chosen for this study was all Malaysian Chinese Secondary Schools, which comprise 60 ICSS and 76 NTSS(C) throughout the country (see Appendix E). Since the population size is not very large and is manageable, the entire population is included in this study.

3.3 The Instrument

The literature was reviewed to examine guidelines and similar research studies that used questionnaire to gain information on library automation; and to establish suggested variables and items. The variables and items constructed in the questionnaire (see Appendix D) were based on relevant literature and previously used questionnaires, such as Automation and Its Funding in the Library Media Centers in Secondary Schools in Georgia: A Survey (Baggett, 1992), The Degree and Nature to which Public School Libraries are Automated: A Survey of Public School Libraries in Ohio (Meckler, 2001), Survey on The Status of Hong Kong Secondary School Libraries Automation and Computerization (Hong Kong Teacher-Librarians' Association, 1999), *Tinjauan Pengautomasian PSS Peringkat Negeri: Tahun 2001* (Survey on The Status of Library Automation on State Level: 2001) (MOE, 2001), Facing the Library Media Challenge of the Nineties: A Survey of Automation in Minnesota Schools (Keable, et al., 1993), School Partners in ILLINET. Automation Options for School Library Resource Sharing in Illinois. Final report [and] Partners in ILLINET. Special Report (Howrey, 1990), and The Current Status of Resource Centres in Malaysian Chinese Schools (Yong, 1997).

This study made use of an 8-page questionnaire as the data collecting technique. The questionnaire was divided into 12 parts, with 45 questions, both open and close-ended. The questions dealt with (i) background information, (ii) cataloguing and classification, (iii) library collections, (iv) the use of SRC, (v) resource sharing, (vi) library automation, (vii) library system, (viii) funding, (ix) staff training, (x) processes involved in library automation, (xi) retrospective conversion, (xii) others. Part (vi) to part (xii) that consist of 26 questions formed the focus of the study, whereas the information gathered from

part (i) to part (v), which consist of 19 questions, were important in that they identified the individual in term of classifying variables for the analysis. An additional question was constructed at the end of the Malay and English questionnaires, as a tool to gather additional data in analysis the history background of NTSS (C).

In order to enhance the consistency of response across respondents, and to reduce the answering time of respondents, closed ended items were constructed to form most of the questions of the questionnaire. An additional item, i.e. "other" was purposely added in most of the questions in order to allow the respondent more freedom to respond, and to obtain additional relevant information that were not included in the items.

Instructions were given to guide respondents how to answer the questions. Besides instructions, a deadline for the questionnaire's return was specified, and the respondents were assured that the study was interested in the overall responses of the group and the individual responses will not be singled out.

The questionnaire was originally drafted in English and translated into Malay and Chinese versions by the researcher and verified by peoples who are proficient in both Bahasa Malaysia and Chinese languages. The English version was submitted to MOE to obtain the support and consent from the body for surveying government schools, i.e. the NTSS (C). Since the ICSS are private schools, researcher was free to conduct the study without any approval from the MOE. The Malay version was specifically translated for NTSS (C) because the medium of instruction is Malay, whereas the Chinese version was specifically translated for the ICSS because most of the ICSS use Chinese language as their medium of instruction. For those ICSS that used English as

their medium of instruction, they are able to understand Chinese very well. Thus, all the ICSS used the same version of questionnaire, i.e. the Chinese version.

In addition to the questionnaire, a cover letter from the researcher and the faculty introducing the respondents to the study's general purpose and to stress the importance of each person's response were drafted. Besides the cover letters, approval letter from MOE and state Education Departments, and a stamped, self-addressed envelope for the return of the survey instrument were attached in every mailed questionnaire.

3.4 Pilot Test / Pre-Testing

In order to identify misunderstandings, ambiguities, useless or inadequate items, and at the same time to get additional items from respondents, the questionnaire was sent to a few selected schools in Selangor and Federal Territory of Kuala Lumpur. Besides, the biggest and most famous ICSS, i.e. Foon Yew High School, Johor was also selected to be involved in the pilot run. Foon Yew High School was selected because it is known to the researcher that some of the ICSSs are using the library system developed by Foon Yew High School. Thus, responses from Foon Yew are considered important.

Ten sets of questionnaire were sent to the selected schools on 3 April 2003. Eight sets of the questionnaire were returned before and on the deadline, i.e. 17 April 2003. Two of the non-respond schools claimed that they did not receive any document from the researcher during the follow-up calls were made. Data from the eight responding schools were tabulated, analysed and included in the actual survey.

Upon their feedback, necessary modifications and revisions were made in part I and III of the questionnaire and the cover letter in Chinese.

3.5 Data Collection

Upon necessary revisions, the actual questionnaire was distributed to the schools on 25 April 2003. Respondents were given four weeks to complete the questionnaire. Since the schools term holiday fall on 27 May 2003, a reminder letter was sent to those schools, which had not yet responded after the third week. By the initial deadline, that is 21 May 2003, the researcher received approximately 50% returns. In order to increase the response rate, researcher started to call those who had not responded. Follow up calls had been made until 26 May 2003. Returns were then coded for analysis and self-check purpose.

Telephone interviews and personal interviews were carried out after receiving the questionnaires as some of the information provided need clarification, and at the same time to gather supporting data.

3.6 Distribution and Return of Questionnaires

One hundred and thirty six sets of questionnaire were sent out. A total of 60 were sent to ICSS and 76 were sent to NTSS (C), throughout the country. A total of 89 (65.4%)

respondents returned the questionnaires, of which 56 (73.7%) were from NTSS (C) and 33 (55.0%) were from ICSS. All questionnaires were usable; no questionnaire was rejected even though some parts of the questionnaire were not answered. Some of the omitted information that was important to the survey was added by the researcher much later based on phone calls interview. However, the researcher did not call upon the respondent if the omitted information were part from the demographic and background information such as the number of title of the non-print materials in their library collections.

3.7 Treatment of Data

The data collected using the procedure described in the previous section was entered on to a Statistical Package for Social Sciences (SPSS) version 10.0 for Windows and statistically analysed to obtain frequency counts, percentages and means. The results obtained are presented in narrative and tabular form in the next chapter.

3.8 Summary

This chapter described the methodology used to conduct the study. The study employed a survey research method to collect data regarding the present status of the library automation in ICSS and NTSS (C) as well as the basic and demographic information.

This chapter discussed the steps taken prior to constructing the research instrument and steps after the instrument had been constructed, pre-tested and revised. The data reported in this study were based on the 89 usable returned questionnaires, of which 56 (73.7%) were from NTSS (C) and 33 (55.0%) were from ICSS. The questionnaire consisted of 12 parts, and there were 45 open-ended and closed ended questions. The data collected were analysed and reported using appropriate statistics including frequency counts, percentage and means using SPSS version 10.0 for windows.

The next chapter presents the data analysis for this study.

CHAPTER IV

RESULTS AND DATA ANALYSIS

The aim of this study was to determine the current status of library automation in Malaysian Chinese secondary schools. In particular, the objectives of this study were to identify NTSS (C) and ICSS, which have automated their library functions, and to determine the extent of library automation in terms of:

a) The functions automated
b) The library systems used
c) The choice of library automation
d) The retrospective conversion done
e) The usage by the school community

The following specific research questions were addressed in the study:

1. What is the status of library automation in Malaysian Chinese secondary school? This involves finding out the number of school libraries that have automated and not automated their library functions.
2. What are the library functions that have been automated?
3. What is the system used by the school library?
4. Has the system met its overall requirement?
5. What are the processes involved in automating the library functions?
6. What are the other areas that computers are being used in the library?

This chapter presents and analyses the results obtained from the questionnaires returned.

Data was first tabulated on Statistical Package for Social Sciences (SPSS) version 10.0 spreadsheet and the responses were then analysed. The chapter presents the results of the study in the following sections:

a.) Overview of the school libraries involved

b.) The status of library automation

c.) Library automation processes involved

d.) System evaluation

e.) Other areas of library automation.

Finally, an overview of this chapter is presented in the summary.

4.1 Overview of the School Libraries Involved

Part I to part V of the questionnaire investigated the background of the school libraries involved in this study. This section presents the overview of the school libraries involved in terms of the classification systems used for the Chinese and non-Chinese collections, the size of library collection, lessons or subjects conducted in libraries, usage of the libraries' collections by students, availability of Internet connection in libraries and school libraries' homepage on the Internet, as well as collaboration with other school libraries.

4.1.1 Classification Systems Used for Chinese Collections

Table 5 presents the classification systems used in NTSS (C) and ICSS libraries to manage their Chinese collections. Only 5.4% of the responding NTSS (C) libraries use

New Classification Scheme for Chinese Library (NCS), whereas the majority of the ICSS libraries (63.6%) use NCS to organise their Chinese collections. The majority (85.7%) of the responding NTSS (C) libraries use Dewey Decimal Classification (DDC), while 24.2% of the ICSS libraries used DDC. This shows that NTSS (C) in general use DDC and ICSS libraries use NCS to classify their Chinese collections.

Besides NCS and DDC, 8.9% of the NTSS (C) libraries and 12.1% of the ICSS libraries stated that they use other classification systems to manage their Chinese collections.

Table 5

Classification System Used for Chinese Collections

Classification System	NTSS (C) n=56		ICSS n=33		Total n=89	
	No.	%	No.	%	No.	%
New Classification Scheme for Chinese Library	3	5.4	21	63.6	24	27.0
Dewey Decimal Classification	48	85.7	8	24.2	56	62.9
Others	5	8.9	4	12.1	9	10.1

4.1.2 Classification Systems Used for Non-Chinese Collections

The classification systems used in the Chinese secondary school libraries for non-Chinese collections, for example resources in Bahasa Malaysia and English language are shown in Table 6. The result shows that none of the responding NTSS (C) libraries

use Library of Congress (LC) classification system, and only 6.1% of the ICSS libraries employed LC.

However, almost all (96.4%) NTSS (C) libraries and slightly more than half (54.5%) of the ICSS libraries employ DDC for their non-Chinese collections. Only 3.6% of the NTSS (C) libraries reported they use system other than DDC or LC, without indicating the type of classification used. For ICSS libraries, 39.4% responded that they use other or their own systems.

Table 6

Classification System Used for Non-Chinese Collections in Libraries

Classification System	NTSS (C) n=56		ICSS n=33		Total n=89	
	No.	%	No.	%	No.	%
Dewey Decimal Classification	54	96.4	18	54.5	72	80.9
Library of Congress	--	--	2	6.1	2	2.2
Others	2	3.6	13	39.4	15	16.9

4.1.3 The Size of Library Collection

Table 7 shows the size of Chinese and non-Chinese collections in NTSS (C) and ICSS libraries. Eighty respondents responded to the question on the size of Chinese collections while 79 respondents answered the question on non-Chinese collections.

For Chinese collections, the majority of the NTSS (C) libraries (67.9%) have less than 5,000 books in their libraries, whereas the majority of the ICSS libraries (60.7%) have more than 10,000 Chinese collections.

For non-Chinese collections, 50.0% of the NTSS (C) libraries have more than 10,000 and 39.3% have 10,000 or less than 10,000 books. On the other hand, 36.4% of the ICSS libraries have more than 10,000 and 51.6% have 10,000 or less than 10,000 non-Chinese books.

Table 7

Chinese and Non-Chinese Collections in School Libraries by School Type

No. of Items		Chinese Collections			Non Chinese Collections		
		NTSS (C) n=56	ICSS n=33	Total n=89	NTSS (C) n=56	ICSS n=33	Total n=89
< 5000	No.	38	6	44	8	12	20
	%	67.9	18.2	49.4	14.3	36.4	22.5
5001-10000	No.	7	4	11	14	5	19
	%	12.5	12.1	12.4	25.0	15.2	21.3
10001-20000	No.	3	10	13	21	10	31
	%	5.4	30.3	14.6	37.5	30.3	34.8
20001-30000	No.	1	5	6	6	2	8
	%	1.8	15.2	6.7	10.7	6.1	9.0
> 30000	No.	1	5	6	1	--	1
	%	1.8	15.2	6.7	1.8	--	1.1
No Answer	No.	6	3	9	6	4	10
	%	10.7	9.1	10.1	10.7	12.1	11.3

4.1.4 Non-Print Collection in School Libraries

Table 8 shows the non-print collections in Chinese secondary school libraries. A total of 53.6% of the NTSS (C) libraries have more than nine titles, whereas 57.6% of the ICSS libraries have less than 10 titles of non-print collections.

The no answer rate for the question is relatively high, that is 25.0% for NTSS (C) libraries and 21.2% for ICSS libraries.

Table 8

Non-Print Collections in Libraries

No. of Titles	NTSS (C) n=56		ICSS n=33		Total n=89	
	No.	%	No.	%	No.	%
< 10	12	21.4	19	57.6	31	34.8
10-20	4	7.1	--	--	4	4.5
21-50	10	17.9	1	3.0	11	12.4
51-200	7	12.5	3	9.1	10	11.2
> 200	9	16.1	3	9.1	12	13.5
No Answer	14	25.0	7	21.2	21	23.6

4.1.5 Lessons or Subjects Conducted in Libraries

When asked whether the school libraries conduct any lessons or subjects in the library, 54 (60.7%) respondents answered “no” and 34 (38.2%) respondents answered “yes”.

One respondent did not answer this question. According to the respondents, lessons or subjects conducted are languages, science, information technology and 'library class.'

4.1.6 Library Usage by Students

Table 9 presents the usage of the library and library collections by students. The question concerning the uses of the library collections by students could be answered with more than one choice.

The results indicated that in general, the library is highly used for reference work (85.4%), followed by leisure reading (70.8%), project works and the school reading programme (57.3% respectively). When compared by school type, the results indicated a similar pattern (Table 9) for ICSS. Students at NTSS (C) highly use the libraries for the school reading programme, which is a "compulsory school library activity", required for schools under the MOE. However, this is not so in ICSS.

Table 9

Library Usage

Activities Conducted in Libraries	NTSS (C) n=56		ICSS n=33		Total n=89	
	No.	%	No.	%	No.	%
Doing Project Works	32	57.1	19	57.6	51	57.3
Leisure Reading	38	67.9	25	75.8	63	70.8
Reference	48	85.7	28	84.8	76	85.4
School Reading Program	39	69.6	12	36.4	51	57.3
Others	3	5.4	--	--	3	3.4

4.1.7 Internet Connection in Library

A total of 88 respondents answered the question on the availability of an Internet connection in the library. A total of 23.2% of the NTSS (C) and 33.3% of the ICSS libraries reported that their school libraries are not equipped with computers. On the other hand, 41.1% of the NTSS (C) libraries and 27.3% of the ICSS libraries indicated that their libraries' computers are not connected to the Internet. Only 36.0% of the responding libraries indicated that their computers are connected to the Internet. (Table 10)

The findings indicate that although many school libraries are equipped with computers (72.0%), the Internet connectivity is quite low.

Table 10

Availability of Internet Connection in Libraries

Internet Connectivity	NTSS (C) n=56		ICSS n=33		Total n=89	
	No.	%	No.	%	%	No.
Yes	20	35.7	12	36.4	32	36.0
No	23	41.1	9	27.3	32	36.0
No Computer	13	23.2	11	33.3	24	27.0
No Answer	--	--	1	3.0	1	1.1

4.1.8 Homepage on the Internet

A total of 43.8% schools reported having the school homepage on the Internet, and only 3.4% have the school library homepage only. Five schools (5.6%) have both the school and library homepage. Nearly half of the respondents (46.1%) reported that they do not have either the school's or the library's homepage on the Internet. (Table 11)

Table 11

Homepage on the Internet

Homepage	NTSS (C) n=56		ICSS n=33		Total n=89	
	No.	%	No.	%	No.	%
School only	21	37.5	18	54.5	39	43.8
Library only	2	3.6	1	3.0	3	3.4
Both School & Library	4	7.1	1	3.0	5	5.6
Don't Have	29	51.8	12	36.4	41	46.1
No Answer	--	--	1	3.0	1	1.1

4.1.9 Collaboration with Other Libraries

The question concerning the collaboration with other libraries generate the following responses: only 14.3% of the NTSS (C) school libraries and 3.0% of the ICSS school libraries collaborated with other libraries in whatever forms such as resource sharing,

cataloguing, interlibrary loan, doing projects, etc. A high majority (87.6%) indicated that they do not collaborate with others schools in whatever forms. (Table 12)

Table 12

Collaboration with Other Libraries

Collaborate	NTSS (C) n=56		ICSS n=33		Total n=89	
	No.	%	No.	%	No.	%
Yes	8	14.3	1	3.0	9	10.1
No	47	83.9	31	93.9	78	87.6
No Answer	1	1.8	1	3.0	2	2.2

4.2 The Status of Library Automation

This section addresses research question one to research question three, that is: a) What is the status of library automation in Malaysia secondary schools?; b) What are the library functions being automated?; and c) What is the system used?

The survey results show that 39 (43.8%) school libraries have automated their library functions, whereas 50 (56.2%) have not done so till end of March 2003. When compared by school type, 22 (39.3%) NTSS (C) and 17 (51.5%) ICSS libraries constitute the libraries that have been automated. This result shows that the percentage of the ICSS libraries that have implemented library automation has increased 35.2% since Yong's survey on *The Current Status of Resource Centres In Malaysian Chinese Schools* in 1997. (Yong, 1997)

Table 13 presents the results of research question 1 on the status of library automation among Chinese secondary schools.

Table 13

The Status of Library Automation

Status	NTSS (C) n=56		ICSS n=33		Total n=89	
	No.	%	No.	%	No.	%
Automated	22	39.3	17	51.5	39	43.8
Not Automated yet	34	60.7	16	48.5	50	56.2

Question 21 in the survey questionnaire further investigated the year of the school library automation began. Although the first government secondary school in Malaysia started library automation through SISPUKOM-SUTERA in 1993 (Rosyati, 1995), none of the responding NTSS (C) libraries (which are also government schools) were involved in any automation work during that period (1990-1994). However, three ICSS libraries independently started library automation during that time. As more government secondary school libraries started to adopt library automation during 1995-1999 under the Rangkaian Munsyi project, three NTSS (C) and eight ICSS libraries were joining the bandwagon. The result also shows that the majority of the school libraries actively involved in library automation starting the year 2000. A total of 66.7% of the sample reported that their library automation project had taken place from 2000 till the end of March 2003. This indicated that the rapid growth of the use of computers in school libraries is quite recent, and in parallel with the establishment of Smart Schools. Table

14 presents the year when the school libraries started to automate. However, two school libraries responded that they were not aware when the automation work took place because they were not the librarian or the person in charge of the library at that point of time.

Table 14

Year Library Automation Started

Year	NTSS (C) n=22		ICSS n=17		Total N=39	
	No.	%	No.	%	No.	%
1990-1994	0	0	3	17.6	3	7.7
1995-1999	3	13.6	5	29.4	8	20.5
2000-2003	18	81.8	8	47.1	26	66.7
No Answer	1	4.5	1	5.9	2	5.1

From Table 14, it is clear that a) ICSS libraries started library automation earlier than NTSS (C); and b) the implementation of library automation in NTSS (C) libraries is relatively much more rapid than ICSS libraries starting 2000. When further delved into the question (with the respondents), the researcher found out that government support was the contributing factor to the increase in the number of the NTSS (C) libraries in implementing library automation work since that year. Although some of the libraries did not receive any funding or grant from the government, the government (state education departments) had also assisted in the procurement of library systems by giving the schools lists of recommended library software, and ICT training for the school or teacher librarians.

Question 22 sought to answer research question 2, that is what are the library functions that have been automated? The results are presented in Table 15a and 15b. Respondents are allowed to choose more than one library functions.

Table 15a

Library Functions Automated

Functions	NTSS (C) n=22		ICSS n=17		Total N=39	
	No.	%	No.	%	No.	%
Circulation	17	77.3	17	100.0	34	87.2
Cataloguing	16	72.7	14	82.3	30	76.9
Acquisition	13	59.1	--	--	13	33.3
OPAC	6	27.3	14	82.3	20	51.3
Serial Control	2	9.1	--	--	2	5.1

Circulation ranks the highest, with 34 (87.2%) out of 39 school libraries automating this function, followed by cataloguing (30; 76.9%), information retrieval or OPAC (20; 51.3%), acquisition (13; 33.3%) and serial control (2; 5.1%). Meckler's (2001) study also shows that circulation was ranked highest as the library function to have been automated and cataloguing came in second. However, the percentage of these two functions in Meckler's study was very much closed to each other, that is 95.9% for circulation and 95.2% for cataloguing, indicating that nearly all libraries in the study automated both circulation and cataloguing.

It is obvious from the figures that the majority of the libraries cannot afford to automate

all the library functions at once. When compared by school type, out of the 22 automated NTSS (C) libraries, 17 (77.3%) stated that they have automated circulation, 16 (72.7%) automating cataloguing and 13 (59.1%) automating acquisition. Only six NTSS (C) have OPAC. It is interesting to note that two NTSS (C) have a serial control module to manage their magazines collection. On the other hand, all 17 (100%) automated ICSS reported that their libraries have circulation module; followed by 14 (82.3%) reported having cataloguing and OPAC module respectively. The survey results show that none of ICSS libraries have acquisition or serial control modules.

The data were further analysed to determine the combinations of library functions automated. Out of 39 automated libraries, 27 (69.2%) have automated three or more than three of the library functions, only 2 (5.1%) had automated two of the library functions, and 10 (25.7%) had automated only one of the library functions currently. Table 15b presents the findings.

The results show that some of the libraries that have automated circulation function do not automate cataloguing in addition to its circulation; some have cataloguing, acquisition or other modules but do not have OPAC module.

To ascertain the reasons of doing so, the researcher attempted to investigate further and contacted the librarians that responded "automating circulation only". The researcher found that these libraries only develop a very simple catalogue data in a form of an electronic database. They said that they do not treat this as their cataloguing function being automated. Some responded that they only key in books call number when they first automated their circulation function, and the "more detail and complete" catalogue

data entry job is done continuously. So, these libraries said they do not have cataloguing module. Regarding OPAC module, some respondents said that their libraries do not have computer for students to search for the library collections, that is why they indicated that they do not own an OPAC module. As the result, they did not tick OPAC as their answer.

Table 15b

Combinations of Library Functions Automated

Functions	NTSS (C) n=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
Circulation only	4	18.2	3	17.7	7	17.9
Cataloguing only	1	4.5	--	--	1	2.7
Acquisition only	2	9.1	--	--	2	5.1
Acquisition & Cataloguing	2	9.1	--	--	2	5.1
Circulation, Cataloguing & Acquisition	7	31.8	--	--	7	17.9
Circulation, Cataloguing & OPAC	4	18.2	14	82.3	18	46.2
Circulation, Acquisition, Cataloguing & OPAC, Serial Control	2	9.1	--		2	5.1

In response to the question of library systems being used, the study found that systems varied when compared by school type. It can be said that the popular systems used by the NTSS (C) libraries are not used by the ICSS. Pustakawan, developed by Multiple Portfolio Sdn. Bhd. is the most popular system use by the NTSS (C) libraries (10; 45.5%), followed by SPPSS and SPPSP (2; 9.1% respectively). This finding is somehow different from the survey results conducted by ETD, MOE in 2001 (unpublished) where the survey revealed that SPPSS was the most popular library software being used in

government secondary schools, followed by SPPSP and only then Pustakawan. As expected for the ICSS libraries, none of them use Pustakawan, SPPSS or SPPSP. The reason given was that these systems do not support Chinese characters. The majority (17 out of 39) of the automated school libraries reported that they use other systems such as Uni Sumber, Dynabook Library Management, E-Library, Novel-Magic Runtime, Library System, Dos-based, Yi Tian, Ju Ruan and SLS. A library reported that his/her school developed the system in-house using programming tools such as VB, ASP, and SQL. Only systems such as Uni Sumber, Dynabook Library Management, E-Library, Novel-Magic Runtime and Library System were bought from library system vendors whereas others listed in Table 16b were developed by the libraries. Table 16a and 16b present the types of library systems used by the respondents.

Table 16a

Library Systems Being Used

Library System	NTSS (C) n=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
SPPSS	2	9.1	--	--	2	5.1
Pustakawan	10	45.5	--	--	10	25.6
Microsoft Access	--	--	3	17.6	3	7.7
SPPSP	2	9.1	--	--	2	5.1
Dbase	1	4.5	4	23.5	5	12.8
Others	7	31.8	10	58.8	17	43.6

Table 16b

Library Systems Being Used under "Others"

Other System Being Used	NTSS (C) n=7		ICSS n=10		Total n=17	
	No.	%	No.	%	No.	%
Uni Sumber	1	14.3	--	--	1	5.9
Dynabook	--	--	1	10.0	1	5.9
Library Management	1	14.3	--	--	1	5.9
E-Library	1	14.3	--	--	1	5.9
Novel-Magic Runtime	--	--	1	10.0	1	5.9
Library System	1	14.3	--	--	1	5.9
Dos	--	--	1	10.0	1	5.9
Yi Tian	--	--	1	10.0	1	5.9
Ju Ruan	--	--	1	10.0	1	5.9
No Mention	1	14.3	2	20.0	3	17.6
Own System	1	14.3	2	20.0	3	17.6
SLS	1	14.3	--	--	1	5.9
VB,ASP,SQL	--	--	1	10.0	1	5.9

When further analysed, it is found that 18 (81.8%) NTSS (C) libraries and only two (11.8%) ICSS libraries (Dynabook and Novel-Magic Runtime) use turnkey systems developed locally. On the other hand, only three (13.6%) of the NTSS (C) libraries and 13 (76.5%) of the ICSS libraries use system developed in-house (using Dbase or Microsoft Access) or by other libraries (e.g. Ju Ruan and Yi Tian). In other words, these school libraries obtained the system free of charge.

The reasons for choosing the library systems were also determined. In respond to the question, automated NTSS (C) libraries gave several reasons (in ranked order) such as "the management's decision", followed by "free of charge", "economic/affordable", "recommended by the MOE", "popular/used by others" and "provision of good technical support by vendor". The question generates the following responses in ranked order from the automated ICSS libraries: "management decision", "free of charge", "economic / affordable". None of the ICSS automated libraries answered "recommended by MOE", "popular / being used by other libraries" or "good technical support". The findings revealed that the school management's decision is the most important factor in determining the type of system procured by the school libraries. Table 17 presents the respondents' reasons for choosing the library systems.

Table 17

Reasons for Choosing the Library System

Reasons	NTSS (C) n=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
Recommended by the JPN/MOE	3	13.6	--	--	3	7.7
Popular / Used by other libraries	1	4.5	--	--	1	2.6
Economic / Affordable	3	13.6	2	11.8	5	12.8
Good Technical Support	1	4.5	--	--	1	2.6
Management's Decision	6	27.3	8	47.1	14	35.9
Free of Charge	5	22.7	4	23.5	9	23.1
Others	3	13.6	3	17.6	6	15.4

Systems developed in-house, by the library or other libraries as a gift or donation are considered as "free of charge" by the respondents. According to the respondents, they received lists of library system recommended by the State Education Department (JPN), however the lists differ from one JPN to another. The only library that indicated "good technical support" as the main reason for choosing the systems noted in the questionnaire that the vendor provide immediate response and feedback when problems arise. The respondent also wrote that the library seldom face problems with the system.

After further analysis, it is found that all the six (27.3%) NTSS (C) libraries that stated "management decision" as the reason for choosing the system, decided to purchase the systems (Pustakawan, Uni Sumber, and Library Management). However, all the eight (47.1%) ICSS libraries that also stated "management decision" use systems that are free of charge. This may indicate that the decision made by the school management from these eight ICSS was that "to get a free system available", and if this is so, the most popular reason for choosing a library system among ICSS school libraries is that because the system is "free of charge".

Finally, this section also investigates the approximate cost of the library system and the approximate cost of the hardware for the library automation project. The figures for system and hardware cost are presented in Table 18 and 19 respectively.

Table 18 indicates that 11 (28.2%) school libraries obtained the systems free, 10 (25.7%) school libraries spent not more that RM 3,000 on the library system, two (5.1%) school libraries spent between RM 3,000 to RM5,000, 3 (7.7%) school libraries spent between RM 5,000 to RM 10,000, and another two (5.1%) schools spent RM 10,000 to

RM20,000. A total of 11 libraries responded that they were not sure about the cost of the system and it is significant to note that this number answering "not sure" is fairly high. It can be summarized from Table 18 that most of the automated NTSS (C) libraries (9; 40.9%) spent approximately less than RM3,000.00 for the library system, while five (22.7%) others obtained the systems free. As for automated ICSS libraries , six (35.3%) reported using free system. The highest cost reported was RM20,000. The number of libraries spending more than RM10,000 for a system is very much low. It is probable that either the schools do not have big budget for libraries or they are not willing to invest in a more expensive system for the libraries.

Table 18

The Approximate Cost of the Library System

Cost	NTSS (C) n=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
Free of Charge	5	22.7	6	35.3	11	28.2
< RM3000	9	40.9	1	5.9	10	25.7
RM3000-RM5000	1	4.5	1	5.9	2	5.1
> RM5000, < RM10000	2	9.1	1	5.9	3	7.7
> RM10000, < RM20000	2	9.1	--	--	2	5.1
Uncertain	3	13.6	8	47.0	11	28.2

Regarding the hardware cost, a total of 11 (28.2%) of the automated libraries responded that they spent approximately between RM5, 000 to RM15,000 on library automation work. The highest hardware cost reported is more than RM25,000 but less than

RM35,000. Only 4 (10.2%) school libraries reported spending this amount for hardware. The percentage of answering "not sure" is fairly high, i.e. five (22.7%) from NTSS (C) libraries and seven (41.7%) from ICSS libraries. Among the reasons given were that they were "not involved in the automation project" and they "do not have access to any documentation regarding the project as it was conducted many years ago".

Table 19

The Approximate Cost of the Hardware

Cost	NTSS (C) N=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
< RM5000	6	27.3	3	17.6	9	23.1
RM5000-M15000	6	27.3	5	29.4	11	28.2
>RM15000, < RM25000	3	13.6	--	--	3	7.7
>RM25000, < RM35000	2	9.1	2	11.8	4	10.2
Uncertain	5	22.7	7	41.2	12	30.8

4.3 Systems Evaluation

This section covers research question four, that is: Has the system met its overall requirement? It presents the areas of library systems in terms of a) the fulfilment of the requirement; b) recommendation of the systems; and c) the problems faced during the implementation of library automation.

In respond to the question concerning whether the library system has met its overall requirement, 25 (64.7%) responded "yes", and the rest (14; 35.9%) of the automated libraries answered "no". When compared by school type, it is found that the majority (16; 72.7%) of the NTSS (C) libraries and 9 (52.9%) of the automated ICSS libraries are satisfied with their existing systems (Table 20).

Table 20

Fulfilment of the System Requirement

Met Its Overall Requirement	NTSS (C) n=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
Yes	16	72.7	9	52.9	25	64.1
No	6	27.3	8	47.1	14	35.9

When further investigated, it is interestingly to note that only 17 (43.6%) automated libraries stated that they would recommend their existing systems to other libraries. A total of nine (40.9%) automated NTSS (C) libraries and 10 (58.8%) automated ICSS libraries constitute the libraries that do not intend to recommend their system to other libraries. The common reason given is "other libraries should try other and better system newly launched". Three of the automated libraries did not answer this question. (Table 21)

Table 21

Recommendation to Other School Libraries

Recommend to Others	NTSS (C) n=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
Yes	12	54.5	5	29.4	17	43.6
No	9	40.9	10	58.8	19	48.7
No Answer	1	4.5	2	11.8	3	7.7

Question 24 in the survey questionnaire set to investigate the problems faced during the implementation of library automation. Respondents are allowed to choose more than one answer. Two automated ICSS libraries did not respond to this question. Table 22 presents the problems faced by the Chinese Secondary Schools during the implementation of library automation.

Table 22

Problems Faced During the Implementation of Library Automation

Problems	NTSS (C) n=22		ICSS N=17		Total n=39	
	No.	%	No.	%	No.	%
Funding	7	31.8	5	29.4	12	30.8
Lack of Reference Resources	12	54.5	9	52.9	21	53.8
Limited Options	8	36.4	4	23.5	12	30.8
Others	7	31.8	4	23.5	11	28.2
No Answer	--	--	2	11.8	2	5.1

The question generates the following responses: 21 (53.8%) automated libraries stated "lack of reference sources"; 12 (30.8 %) responded they do not have enough money or fund; another 12 (30.8%) stated that the options of choosing the Chinese program are limited because most of the vendors do not provide Chinese program; and 11 (28.2%) stated "other problems" without giving any further explanation. None of the respondents responded to the answer of "no support from administration". When compared by school type, "lack of reference sources" ranks the highest (12; 54.5%), followed by "limited option" (8; 36.4%) and "funding" by the NTSS (C) libraries. The ranked order for the automated ICSS libraries is as follows: "lack of reference sources" (21; 53.8%), "funding" and "limited option" (12; 30.8% respectively).

It is obvious that teacher librarians or school library personnel face problems in getting information regarding library automation work either from people or printed resources.

4.4 Library Automation Processes Involved

This section addresses research question five, that is: What are the processes involved in automating the library? It presents the processes involved in terms of a) the type of processes; b) staff training; c) retrospective conversion; and d) funding.

Question 38 sought to answer the types of processes involved. Out of 39 respondents, 38 respondents responded to this question. Respondents are allowed to choose more than one answer.

Table 23

Processes Involved in Library Automation

Processes	NTSS (C) n=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
Staff Training	18	81.8	9	52.9	28	71.8
System Selection	9	40.9	4	23.5	13	33.3
Vendor Selection	2	9.1	4	23.5	6	15.4
Seeking Third Party Opinion	6	27.3	3	17.6	9	23.1
Form A Committee	8	36.4	3	17.6	11	28.2
Retrospective Conversion	4	18.2	13	76.5	17	43.6
Others	3	13.6	3	17.6	6	15.4
No Answer	--	--	1	5.9	1	2.6

Table 23 indicated that the top three processes involved are staff training (28; 71.8%), retrospective conversion (17; 43.6%) and system selection (13; 33.3%). When compared by school type, staff training (18; 81.8%) ranked the highest by the automated NTSS (C) libraries, followed by system selection (9; 40.9%) and forming a committee (8; 36.4%). On the other hand, the top three processes involved in ICSS libraries are retrospective conversion (13; 76.5%), staff training (9; 52.9%), system and vendor selection (4; 23.5% respectively). Responses from the six (15.4%) libraries that stated other types of processes involved, includes communicating with schools' computer teacher, communicating with school software programmer, visiting other school libraries that have been automated and forming a student librarian committee.

Question 37 in the survey questionnaire intended to investigate the type of staff training prior to automation. The data is shown in Table 24.

Table 24

Staff Training Prior to Automation: Types of Training

Type Of Training	NTSS (C) n=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
Instruction by Vendor	11	50.0	2	11.8	13	33.3
Instruction by Library Staff Trained by Vendor	1	4.5	1	5.9	2	5.1
Instruction by Library Staff Learned Their Own	4	18.2	5	29.4	9	23.1
No Training	4	18.2	7	41.2	11	28.2
Others	2	9.1	1	5.9	3	7.7
No Answer	--	--	1	5.9	1	2.6

The survey results show that 13 (33.3%) automated libraries are trained in the form of "instruction by vendor"; 11 (28.2%) libraries have never gone through any type of training prior to the library automation; nine (23.1%) libraries stated "instruction by library staff who have learned the processes on their own"; three (7.7%) libraries reported they received training from other sources such as ETD (MOE), computer teacher and private colleges; and two (5.1%) libraries received training from other staff trained by the vendor. One library did not respond to this question. When compared by school type, 11 (50.0%) of the automated NTSS (C) libraries and only two (11.8%) automated ICSS libraries go through vendor training sessions. Four (18.2%) automated NTSS (C) libraries and seven (41.2%) automated ICSS libraries do not go through any training prior to library automation.

When further analysed, it is found that, prior to library automation:

a) quite a number of libraries do not had any form of training session, especially automated ICSS libraries;
b) not all automated NTSS (C) libraries that used turnkey systems go through training conducted by vendors. Only two ICSS libraries that used turnkey systems have gone through vendor training session;
c) perhaps due to the in-house systems being used, it contributes to the relatively high rate of the responses on "instruction by those who learned on their own" and "no training at all".

Question 36 further investigated the staff training during the previous five years. Twenty-eight (71.8%) automated libraries reported that they have gone through some kind of training; 10 (25.6%) automated libraries stated "no"; and one did not respond to the question. When compared by school type, 17 (77.3%) automated NTSS (C) stated that they go through training in the form of short-term courses, workshop and training conducted by either ETD (MOE), or PKG (Pusat Kegiatan Guru); whereas, 11 (64.7%) automated ICSS libraries reported that they go through training conducted by Southern College, a Chinese private college.

Questions 39-41 sought to get a clearer picture on retrospective conversion work. From Table 23, it is interesting to note that retrospective conversion was ranked low. As mentioned earlier, after further investigation made, the researcher found that a) quite a number of the respondents do not treat "simple data entry" or "still in the process of data entry" as retrospective conversion or cataloguing work; b) some responded that they do not understand the term "retrospective conversion".

Question 40 intended to investigate whether the retrospective conversion work is outsourced. The survey result shows that out of 39 automated libraries, only one (2.6%) library reported that the job was outsourced. When further asked about their opinion about the most practical way to do the retrospective conversion, 25 (64.1%) automated libraries chose "better to be done by library staff/student librarian". The reasons given are a)"they know the work better"; and b)"cheap, low cost". Only 8 (20.5%) automated libraries stated "commercial services" and two (5.1%) libraries stated, "volunteers". Four (10.3%) libraries choose "others" without further explanation. (Table 25)

Table 25

The Most Practical Way for Retrospective Conversion

The Most Practical Way	NTSS (C) N=22		ICSS N=17		Total N=39	
	No.	%	No.	%	No.	%
Commercial Services	6	27.3	2	11.8	8	20.5
Library Staff/Student	15	68.2	10	58.8	25	64.1
Volunteer	--	--	2	11.8	2	5.1
Others	1	4.5	3	17.6	4	10.3

Besides retrospective conversion, a question concerning the importance of full MARC records in implementing library automation was asked. In respond to the question, 17 (43.6%) automated libraries said that in their opinion, MARC record is important; 11 (28.2%) libraries are not sure or have no comment whether MARC record is important or not; 10 (25.6%) libraries stated that they do not know anything about MARC record; and only one (2.6%) library said MARC record is not important. Table 26 presents the

opinion towards the importance of MARC records in implementing library automation work.

Table 26

Importance of Full MARC Records in Implementing Library Automation

Importance of Full MARC Records	NTSS (C) n=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
Yes	8	36.4	9	52.9	17	43.6
No	1	4.5	--	--	1	2.6
Not Sure / No Comment	5	22.7	6	35.3	11	28.2
Don't Know	8	36.4	2	11.8	10	25.6

Questions 33-35 are related to the funding of the automation work. Question 33 investigates the source the libraries obtain their automation fund. The question generates the following responses in ranked order: "others", "public donation", "government grant", "PIBG" (Parents and Teachers Association), and "corporate donation". When compared by school type, "government grant" ranked the highest from NTSS (C) libraries, whereas as expected, none of the private ICSS reported that they received any government grant. However, most of the automated ICSS libraries responded that they managed to collect library automation fund via other sources (9; 52.9%), which includes fund from school, school welfare division and Dong Zong; and public donation (7; 41.2%). Three of the responding automated libraries did not respond to the question. The results are presented in Table 27a.

Table 27a

Funding

From	NTSS (C) n=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
Government Grant	9	40.9	--	--	9	23.1
PIBG	5	22.7	1	5.9	6	15.4
Public Donation	4	18.2	7	41.2	11	28.2
Corporate Donation	--	--	2	11.8	2	5.1
Others	5	22.7	9	52.9	14	35.9
No Answer	2	9.1	1	5.9	3	7.7

Question 34 further investigated the form of the public and corporate donations. Out of the 13 libraries that had received public or corporate donations; 8 (61.5%) reported that they received cash; three (23.1%) stated library system; one (7.7%) stated free renovation and others form of donations respectively. The figures are shown in Table 27b.

Table 27b

The Form of the Public and Corporate Donations

Form	NTSS (C) n=4		ICSS n=9		Total n=13	
	No.	%	No.	%	No.	%
Cash	2	50.0	6	66.7	8	61.5
Library System	1	25.0	2	22.2	3	23.1
Renovation	--	--	1	11.1	1	7.7
Others	1	25.0	--	--	1	7.7

In respond to question 35 that is, “In your opinion, what is the most practical way to secure enough funds to meet the total automation cost?”, 17 (43.6%) automated libraries stated “government grant”; 10 (25.6%) stated library budget; five (12.8%) stated fund raising; and three (7.7%) stated others. Four respondents did not answer this question. Respondents are allowed to choose more than one answer. When compared by school type, only 11 (50.0%) automated NTSS (C) libraries and six (35.3%) automated ICSS libraries think that government grant is the most practical way to secure their automated fund.

Finally, the section presents the findings on the time taken in completing the automation work. From Table 28, it is known that the majority of the automated libraries (20; 51.3%) took more than 10 months to complete the automation work, with four (10.3%) taking more than two years. Only seven (17.9%) automated libraries responded that they spent five to ten months in order to complete the automation work; and four (10.3%) (all from NTSS (C) libraries) stated that they managed to complete the task within five months time, that is the shortest time taken among all respondents. Eight (20.5%) respondents stated “others”. The reasons given for taking more than two years include “lack of manpower”, “too busy”, “no experience”, and “automation work can only be done during school year end break. Once school re-open, everything has to be stopped and re-continue the next school year end break ”

Table 28

Time Taken in Completing the Automation Works

Time Taken	NTSS (C) n=22		ICSS n=17		Total n=39	
	No.	%	No.	%	No.	%
< 5 Months	4	18.2	--	--	4	10.3
5-10 Months	2	9.1	5	29.4	7	17.9
> 10 Months, < 2 years	10	45.5	6	35.3	16	41.0
≥ 2 Years	1	4.5	3	17.6	4	10.3
Others	5	22.7	3	17.6	8	20.5

4.5 Other Areas of Library Automation

This section covers research question six, that is, "What are the other areas that computers are being used in the library?" Besides computer usage, the other areas being presented in this section includes a) the future plan in libraries automation; b) the opinion towards the important factors in a library's automation process; c) the opinion towards important factors to consider when choosing a library system; d) the opinion towards the most important module for each individual library. The survey results collected in this section are mainly from the 50 non-automated libraries (a-d), except for the part that investigated the computer usage.

Firstly, this section presents the main use of library's computers in the Chinese Secondary libraries. One library did not respond to the question.

It is found that more than half of the responding school libraries, that is 48 (53.9%) libraries either do not allow their students to use the libraries' computers or there was no computer for students to use in the school libraries. Out of the 48 libraries, 24 do not have even a single unit computer in their library. A total of 21 (23.6%) libraries reported that students use library computers to do school project works; 20 (22.5%) use computers to surf for Internet; 16 (18.0%) use computers to search for library collections, and 9 (10.1%) use computers for other purposes. Table 29 presents the findings.

Table 29

Main Use of the Library Computer

Activities	NTSS (C) n=56		ICSS n=33		Total n=89	
	No.	%	No.	%	No.	%
Doing Project Works	15	26.8	6	18.2	21	23.6
Online	13	23.2	7	21.2	20	22.5
OPAC / Search For Library Collections	9	16.1	7	21.2	16	18.0
Not Allowed/No Computer To Use	29	51.8	19	57.6	48	53.9
Others	7	12.5	2	6.1	9	10.1

In respond to the question concerning their future plan of automation, 39 (78.0%) non-automated libraries stated that they plan to automate in the future, whereas 11 (22.0%) respondents said "no". (Table 30a) When compared by school type, almost all 32 (94.1%) non-automated NTSS (C) libraries and only seven (43.8%) non-automated ICSS libraries stated that they planned to automate their library functions in the future.

Table 30a

Non-Automated Libraries: Plan to Automate

Plan To Automate	NTSS (C) n=34		ICSS n=16		Total n=50	
	No.	%	No.	%	No.	%
Yes	32	94.1	7	43.8	39	78.0
No	2	5.9	9	56.3	11	22.0

When further investigated, it is found that 17 (43.6%) respondents are not sure when their libraries plan to automate the library functions; 11 (28.2%) stated next year; six (15.4%) stated next five years; and five (12.8%) stated this year (2003). When compared by school type, the researcher found that ten (31.3%) NTSS (C) libraries plans to automate next year; five (15.6%) stated this year (2003); three (9.4%) stated next five years; and 14 (43.8%) stated not sure. While three (42.9%) ICSS libraries plans to automate next five years, another three (42.9%) are not sure about when to automate and one (14.3%) stated this year (2003). Table 30b presents the findings.

Table 30b

Non-Automated Libraries: the Time Where Libraries Plan to Automate

When	NTSS (C) n=32		ICSS n=7		Total n=39	
	No.	%	No.	%	No.	%
Next Year	10	31.3	1	14.3	11	28.2
Next 5 Years	3	9.4	3	42.9	6	15.4
Not Sure	14	43.8	3	42.9	17	43.6
This Year	5	15.6	--	--	5	12.8

Table 30a indicated that 11 (22.0%) respondents do not plan to automate their library functions in the future. When further investigated, out of the 11 libraries, five (45.5%) reported that they do not plan because their libraries do not need an automation system. When further analysed, it is found that these libraries have a small size of library collections and students enrolment, that is library collections range from 1,000 to 5,000 items and students' enrolment range from 100 to 250. Another 5 (45.5%) libraries stated that the reason of not planning to automate is because they do not have enough money. The only one (9.1%) library, which indicated "other reason", stated "since their old system broken down, they do not have any intention to automate the library functions in the near future". None of the respondents stated "no support from administration". Table 30c shows the reasons of libraries not planning to automate the library functions.

Table 30c

Non-Automated Libraries: Reasons for Not Plan to Automate

Reasons	NTSS (C) n=2		ICSS N=9		Total n=11	
	No.	%	No.	%	No.	%
Not Enough Money	1	50.0	4	44.4	5	45.5
No Support from Administration	--	--	--	--	--	--
No Need	--	--	5	55.6	5	45.5
Others	1	50.0	--	--	1	9.1

Question 43 surveyed the opinion of the non-automated librarians towards the important factors in a library automation process. Four libraries did not respond to this question. Respondents were asked to rank the factors in order, from 1 to 7 according to their

priority. Table 31 shows the most important factor, in ranked order, in a library automation process indicated by the respondents.

Table 31

Non-Automated Libraries: Important Factors in Library's Automation Process

Factors	NTSS (C) n=34		ICSS n=16		Total N=50	
	No.	%	No.	%	No.	%
Management Decision	15	44.1	4	25.0	19	38.0
System Cost	8	23.6	4	25.0	12	24.0
Staff with Computer Knowledge	2	5.9	3	18.7	5	10.0
Hardware/Software Maintenance	4	11.8	--	--	4	8.0
No Answer	2	5.9	2	12.5	4	8.0
Vendor Selection	1	2.9	2	12.5	3	6.0
Retrospective Conversion	1	2.9	1	6.3	2	4.0
Staff Training	1	2.9	--	--	1	2.0

The top three factors ranked as the most important factors are "management decision", "system cost", and "staff with computer knowledge". When compared by school type, "management decision" (15; 44.1%) is ranked the highest, followed by "system cost" (8; 23.6%), and "hardware/software maintenance" (4; 11.8%) from non-automated NTSS (C) libraries. For non-automated ICSS libraries, "system cost" and "management decision" (4; 25.0% respectively) ranked highest, followed by "staff with computer knowledge" (3; 18.7%).

Table 32 presents the most important factor to consider when choosing a library system. Forty-five non-automated libraries responded to the question. The top three factors ranked as the most important factors are "demonstration/on site visit" (17; 34.0%), followed by "consultant's recommendation" (13; 26.0%), and "colleague's recommendation" (12; 24.0%). When compared by school type, "consultant's recommendation" (11; 32.4%) is ranked the highest, followed by "colleague's recommendation" (10; 29.4%) and "demonstration / on site visit" (8; 23.5%) from non-automated NTSS (C) libraries. For non-automated ICSS libraries, "demonstration / on site visit" (9; 56.3%) ranked highest, followed by "colleague's recommendation" and "consultant's recommendation"(2; 12.5% respectively).

Table 32

Non-Automated Libraries: Important Factors to Consider When Choosing a Library System

Factors	NTSS (C) n=34		ICSS n=16		Total n=50	
	No.	%	No.	%	No.	%
Demonstration / On Site Visit	8	23.5	9	56.3	17	34.0
Consultant's Recommendation	11	32.4	2	12.5	13	26.0
Colleague's Recommendation	10	29.4	2	12.5	12	24.0
No Answer	3	8.8	2	12.5	5	10.0
Vendor Size And Performance	2	5.9	1	6.2	3	6.0

Finally, Table 33 presents the non-automated libraries' opinions towards the most important module for each individual library. Five libraries did not respond to the question, and 15 responses that gave more than one answer were rejected.

The survey shows that 18 (36.0%) non-automated libraries reported that cataloguing is the most important module. Only 6 (12.0%) libraries said that they would consider circulation first if they were to automate their library functions. Acquisition and OPAC are ranked as the most important module by only 3 (6.0% respectively) libraries.

Table 33

Non-Automated Libraries: The Most Important Module For Library

Module	NTSS (C) n=34		ICSS n=16		Total N=50	
	No.	%	No.	%	No.	%
Circulation	5	14.7	1	6.3	6	12.0
Cataloguing	11	32.4	7	43.8	18	36.0
Acquisition	2	5.9	1	6.3	3	6.0
OPAC	3	8.8	--	--	3	6.0
Answer Rejected	9	26.5	6	37.5	15	30.0
No Answer	4	11.8	1	6.3	5	10.0

4.6 Summary

Chapter 4 has presented an analysis and discussion of the results of the study.

Firstly, the study found that the automation status in responding NTSS (C) libraries is fairly low, with only 22 (39.3%) reported that their libraries are currently automated. Although ICSS has a higher percentage of automated libraries, with 17 (51.5%) libraries being automated, the status of the library automation in Malaysian Chinese secondary schools as a whole still has room for improvement.

Secondly, it was found that circulation is the highest function automated in Malaysian Chinese secondary schools, followed by cataloguing. For both the NTSS (C) libraries (17; 77.3%) and the ICSS libraries (17; 100%), circulation ranked the highest. For NTSS (C) libraries, the second highest function being automated is cataloguing (16; 72.7%); followed by acquisition (13; 59.1%). The second highest function being automated in ICSS libraries is cataloguing (14; 82.3%) or OPAC (14; 82.3%). None of the ICSS libraries automate acquisition and serial control. The survey results also show that the majority of the libraries (27; 69.2%) have automated three or more than three library functions.

For those non-automated libraries, the study found that from their perspective, cataloguing is the most important module for their own library. Interestingly, this finding is different from the survey results where more NTSS (C) and ICSS libraries automate the circulation rather than cataloguing, although they felt that the latter is more important.

Thirdly, the study found that the popular systems used vary when compared by school type. The popular system used by NTSS (C) libraries, i.e. Pustakawan, is not used by ICSS libraries. The majority of the ICSS libraries used in-house systems such as Dbase,

Microsoft Access, Dos-based, Yi Tian and Ju Ruan. This finding is different with the finding of the survey done by ETD, MOE in 2001 where SPPSS, SPPSP and Pustakawan were the top three systems being used by Malaysian secondary school (government secondary schools) libraries. None of the automated ICSS libraries used the top three software because the systems "do not support" Chinese character.

Although the majority (16; 72.7%) of the NTSS (C) libraries and nine (52.9%) ICSS libraries are satisfied with the systems used, the study found that only 12 (54.5%) NTSS (C) libraries and five (29.4%) ICSS libraries stated that they would recommend their existing systems to other libraries. Non-automated libraries are advised to try newly launched systems, which in their opinion might be of better quality.

The study found that there are various processes involved in library automation. The top three processes involved in ranked order are staff training, retrospective conversion and system selection. When compared by school type, it is found that NTSS (C) libraries emphasise more on staff training followed by system selection and forming a committee. ICSS libraries emphasise more on retrospective conversion, followed by staff training, and system and vendor selection. For those non-automated libraries, both NTSS (C) libraries and ICSS libraries thought that management decision is the most important factor in making the library automation a reality.

When asked about choosing a library system, the views vary when compared by school type. Non-automated NTSS (C) libraries rank consultant's recommendation as the most important factor to consider, followed by colleague's recommendations and demonstration or on site visit. Vice versa, non-automated ICSS libraries believe

demonstration or on site visit is the most important factor, then only consultant's and colleague's recommendation.

Lastly, the study found that 48 out of 89 (53.9%) of the responding libraries do not either allow students to use libraries' computers or provide computers for students to use in libraries. A total of 46.1% school libraries allow their computers be used by students. The students mainly use the computers to do project works, to search online, search OPAC or search for library collections and for other purposes.

The next chapter presents the summary, conclusion and recommendations of the study.

CHAPTER V

SUMMARY, CONCLUSIONS AND R ECOMMENDATONS

Chapter 5 presents a summary of the findings, followed by conclusions drawn from the study and possible implications based on the findings. It concludes with a discussion on directions for further research.

5.1 Summary of the Study

It is significant that in those countries where school libraries are well established there is a relatively steady flow of research on school library automation. The earlier studies on school libraries in Malaysia focused on its development, services, collection and management. Not much has been said about the status of automation especially in Malaysian Chinese Secondary Schools.

The aim of this study was to determine the current status of library automation in Malaysian Chinese secondary schools. Hence, this study attempted to answer the following specific questions:

1. What is the status of library automation in Malaysian Chinese secondary schools? This involves finding out the number of school libraries that have automated and not automated their library functions.
2. What are the library functions that have been automated?
3. What is the system used by the school library?

4. Has the system met its overall requirement?
5. What are the processes involved in automating the library?
6. What are the other areas that computers are being used in the library?

Besides contributing information about the current status of the school libraries automation in the ICSS and NTSS (C), the study serves a purpose of providing a basis for comparison of automation with libraries in Malaysian National secondary schools. It is hoped that the study could also provide preliminary information for policy makers to identify what needs to be done as far as library automation is concerned; assist non-automated schools in the process of choosing, planning and implementing their library automation, which includes which systems to chose or what is the available software in the market.

This study employed a survey research method. The survey was conducted to collect data regarding the present status of the school libraries' automation in ICSS and NTSS (C) as well as the basic and demographic information. For data collecting, the primarily instrument was the mailed questionnaire. Besides, telephone interviews and personal interviews were carried out to gather supporting evidence.

An 8-page questionnaire, that was divided into 12 parts, with 45 questions (plus an additional question constructed at the end of the Malay and English questionnaires, as a tool to gather additional data in analysis the history background of NTSS) both open-ended and close-ended was mailed to the libraries from all the 60 ICSS and all the 76 NTSS throughout the country. Questionnaires were returned from 33 (55.0%) ICSS and 56 (73.7%) NTSS (C).

The findings of the study, based on the returned questionnaires, are summarised in the following section.

5.2 Summary of Findings

5.2.1 Background Information

a.) The Size of the Library Collections and Classification System Used

As anticipated, NTSS (C) libraries have more non-Chinese books and ICSS libraries have more Chinese books. Half of the NTSS (C) have more than 10,000 non-Chinese books and the majority of the ICSS libraries have more than 10,000 Chinese books. Due to the difference of languages in book collections, most of the schools used two difference classification systems to organise their libraries collections, namely Dewey Decimal Classification (DDC) and the New Chinese Scheme for the Chinese Libraries (NCS). NTSS (C) in general use DDC (85.7%) and ICSS libraries used NCS (62.9%) to classify their Chinese collections. For non-Chinese collections, almost all (96.4%) NTSS (C) and slightly more than half (54.5%) employ DDC. Other systems being used include their own systems and Library of Congress (LC) classification system.

b.) Computer in Library

The majority (76.0%) of the school libraries in the study are equipped with computer. However, the Internet connectivity is quite low (36.0%). And, nearly half of the libraries responded that they do not have either the school or library homepage. Besides, more than half (53.9%) of the libraries either do not allowed their students to use the library

computers or there was no specific computer for students to use in library. For school libraries where students are allowed to use the computers, students mainly use it to do their school project works, followed by online surfing and search for library collections.

c.) Collaboration with Other Libraries

The school libraries do not collaborate much with other libraries in whatever forms such as resource sharing, cataloguing, interlibrary loan and doing projects. A high majority (87.6%) indicated that they do not collaborate with others schools in whatever forms.

5.2.2 The Status of Library Automation

The Malaysian Chinese secondary school libraries only start to adopt library automation during the 1990s and actively involved in library automation starting the year 2000. Till end of March, there are only 43.8% responded libraries implementing library automation. The status in responding NTSS(C) libraries is fairly low, with only 39.3 %. Although ICSS has a higher percentage, the status of the library automation in Malaysian Chinese secondary schools as a whole, still has room for improvement, and consider as not so "advanced" if compared with information technologically advanced countries such as Japan, Canada and United Kingdom. No matter how, the implementation of library automation in Malaysian Chinese secondary school is encouraging and increasing yearly since mid-1990s.

For those non-automated libraries, a total of 78.0% do plan to automate their libraries functions. However, some of the small size libraries and libraries with no money or fund do not plan to automate their libraries functions in future.

Circulation (87.2%) is the function mostly automated in Malaysian Chinese secondary schools, followed by cataloguing (76.9%). However, it is interesting to note that, from their perspective, non-automated libraries ranked cataloguing, instead of circulation as the most important module for their own libraries. Although majority of the automated libraries cannot afford to automate all the library functions at once, most of them (69.2%) have automated three or more than three library functions currently.

The last few years have seen some important and useful initiatives in the development of library automation software, especially by the ICSS libraries**.** The systems being used by NTSS (C) and ICSS vary very much. The top three systems used in NTSS (C) are Pustakawan, SPPSS and SPPSP. However, none of the ICSS use those three turnkey systems because they do not support Chinese character much. Majority of the ICSS are using "free system" developed in-house (using Dbase or Microsoft Access) or by other libraries' in-house systems. The numbers of ICSS libraries that use turnkey systems developed locally are very much low.

Management's decision is the most important factor in determining the type of systems procured by the school libraries. Besides, the libraries preferred very much the economical systems and "free systems". Systems recommended by MOE are also being considered much by the government secondary schools, that is the NTSS (C) libraries but not the independent secondary schools, that is the ICSS libraries.

The cost for implementing the automation work range from "FOC" to below RM20,000 for the systems and from less than RM5,000 to less than RM35,000 for the hardware. Most of them spent less than RM3,000 in obtaining library system, and below RM15,000 in obtaining the hardware. It is probable that the schools do not have big budget for libraries or they do not willing to invest in a more expensive system.

5.2.3 System Evaluation

The majority (64.1%) of the libraries are satisfied with their existing systems. However, non-automated libraries are advised to try newly launched systems, which in their opinion might be of a better quality.

The main problems faced by the teacher librarians or school library personal during the implementation of library automation are problems in getting information regarding library automation work either from people or printed resources; followed by limited fund and limited options for Chinese systems.

5.2.4 Library Automation Processes Involved

There are various processes involved in library automation. The top three processes involved are staff training (71.8%), retrospective conversion (43.6%) and system selection (33.3%). In terms of staff training prior to library automation, perhaps due to

the in-house systems being used, it contributes to the relatively high rate of responses on "instruction by those who learned on their own" and "no training at all". The most common training prior to library automation is instruction by vendor. During the previous five years, most of the teacher librarians or library personnel have gone through some kind of training in the forms of short-term courses, workshop and training conducted by ETD (MOE) or PKG (for NTSS(C)) and by Southern College (for ICSS).

Retrospective conversion was not ranked very high because quite some libraries do not treat "simple data entry" or "still in the process of data entry" as retrospective conversion or cataloguing work. Some not even understand the term "retrospective conversion". Almost all of the automated libraries do the retrospective conversion work without outsourcing the job. More than half (53.8%) of the libraries are not sure or have no comment about the importance of full MARC record; or do not know what Full MARC record is about.

More than half (58.9%) of the automated libraries spent five months to less than two years time to complete their school library automation works. The shortest time taken is less than five months (10.3%) and the longest time taken is more than two years (10.3%).

It is obvious that government aided schools, NTSS(C) have more sources in obtaining their library automation fund especially from the government. Whereas, ICSS need to depend on money via fund raising activities or library own fund or school fund such as PIBG. That is probably why relatively more NTSS(C) libraries use turnkey systems and only a few ICSS libraries use turnkey systems.

5.2.5 Important Factors to Consider When Choosing A Library System

When asked to rank the most important factors to consider when choosing a library system, it is interesting to note that most non-automated NTSS (C) school libraries prefer to rely on people's recommendations whereas the ICSS libraries prefer to see and evaluate the system on their own.

5.3 Conclusions and Implications from the Study

This section discusses the conclusions drawn from the findings, and implications that arise.

In conclusion, it might be stated that, the implementation of library automation in Malaysian Chinese secondary schools though is encouraging and increasingly yearly, it still has room for improvement. In this survey, though most of the automated libraries are satisfied with the software they use, yet there are still problems to be solved.

Firstly, the majority of the Malaysian Chinese secondary school libraries are still being managed in "conventional" manner and more development is needed. Till end of March 2003, there are still 24% responded libraries not equipped with a single unit of computer. Moreover, more than half of the libraries that are equipped with computer either do not allowed their students to use the library computers or there was no specific computer for students to use in library. This indicates that majority of the schools treat library automation simply as a more effective way of managing their library collections rather

than creating a better awareness of IT utilization. To nurture an "information rich society", much effort is still needed. Ideally, the foundation of information literacy must be laid in the schools, particularly centered on the school libraries. School libraries today are no longer traditional reading rooms and study halls; they are evolving to become facilitators of information services and gateways to the wider information world. (Singh, 1996).

Secondly, there are still libraries that do not have a broader view towards library automation. They view library automation as "no need for them currently and in future" due to their very small size of collections and school populations. As mentioned earlier in the study, Clyde (2000) states that the argument regarding automation would benefit large libraries rather than small libraries seemed mostly to be made on the grounds of cost and the time required to implement the system: automation of larger school libraries would be cost effective and result in efficiencies. Clyde does not see how a school library that is not automated can perform its job as a school resource and information centre, nor can Clyde see how it could deliver an information skills program for the 21st century, particularly when there are low-cost systems available for those small and very small libraries, which would be cost effective and result in efficiencies. In fact, school libraries can utilize the free CDS-ISIS software, developed for UNESCO especially for developing countries.

However, it is interesting to note that, although many authors are "promoting" CDS-ISIS, listing out the benefits of using CDS-ISIS, and emphasising that CDS-ISIS is especially good for small libraries with limited fund, this study found that none of the Malaysian Chinese secondary school libraries use CDS-ISIS for their non-Chinese

collections. Thus, the researcher suggests that the National Library should promote and have more training sessions for teacher librarians in order to assist them in using CDS-ISIS. The Ministry of Education and Dong Jiao Zong can also play the same role in assisting the government aided NTSS (C) and private ICSS teacher librarians respectively.

Another interesting point to note is that, instead of automation fund, there are more teacher librarians who indicate that the main problem faced by them is getting information regarding library automation work either from people or printed resources. In addition, there is a lack of relevant directory such as local software directory to assist teacher librarians. Since automation works involved both the theoretical and practical parts, teacher librarians need to share others experiences especially local school libraries experiences. Unfortunately, the school libraries do not collaborate much as far as library works and projects are concerned. Thus, useful reference materials or a resource person is urgently needed in assisting the schools what needs to be done as far as library automation is concerned.

Further, this study found that some of the school libraries do not keep good records or keeping records using their own system. That is why some of them can't even provide the figure of their library collections, software and also hardware costs. Besides, the quality of cataloguing in many schools is questionable. (Abdullah et. al. 2002) Thus, the Ministry of Education and Dong Jiao Zong could play their parts in assisting the school libraries by urging them to use a standard system, to help them to compile or at least keep a record of each individual automated library in order to let non-automated

libraries to share their experiences. Besides, the two bodies could also publish useful handbooks, guidelines or local software directory as printed reference materials. They could also be the "advisor or consultant" for those who want to automate, to migrate to another system or to upgrade their library software.

The findings and statistic of the study could also provide preliminary information for policy makers to identify what needs to be done as far as library automation is concerned. The data provided or findings could also assist non-automated schools in the process of choosing, planning and implementing their library automation. This includes which systems to chose or what is the available software in the market.

This study shows that although management's decision is the most important factor in determining the type of systems procured by the school libraries, in fact, the key factor is still the costs of the system. It is significant that majority of the school libraries only received a small budget in implementing the library automation. With regards to the IFLA/UNESCO School Library Manifesto (2000), "school libraries must have adequate and sustained funding for trained staff, materials, technologies and facilities". Thus, the school authorities and teacher librarians should ensure that libraries receive their fair share of the school's financial resources in order to develop their libraries in terms of facilities, staffing, collections, services and information technology.

5.4 Suggestions for Further Research

As a result of the observations made in this study, the researcher would like to recommend a few suggestions for further research. Firstly, more studies need to be conducted on the school library automation in Chinese secondary schools. Since this is a preliminary study, a more in-depth analysis of selected areas of library automation such as library system, information technology facilities and utilization, staff training, funding, retrospective conversion, MARC records, planning for automation, problems faced and the ways of solving the problems, etc. needs to be done.

The focus of the follow-up studies should also be given in secondary analysis of the data, especially to look for relationships among variables. This study, being a preliminary one, is providing general knowledge about the current status of the Chinese secondary school libraries automation. The relationships between variable is needed for further studies.

Besides, the researcher feels that it is important to conduct similar types of surveys from time to time in order to know the status of the school library automation in Malaysia. Apart from the Chinese secondary schools, various types of primary schools include Chinese, Tamil and national-types primary schools should also be surveyed in order to provide a comparative picture, as well as a more comprehensive picture of smaller scale libraries, that is school libraries in the country.

5.5 Summary

This chapter has presented the summary of the study and the findings, followed by conclusions drawn from the study and possible implications based on the findings. This chapter concluded with a discussion on directions for further research that could point the ways to school library development in the future. It is hoped that the Ministry of Education, Chinese organisations, the Chinese community, and the schools themselves will pay more attention and put in more efforts towards the development of school libraries so as to ensure a better future for the nation and towards creating a knowledge society.

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