

Provision of Information Communication Technology in National Libraries of ASEAN Countries

Xia Lixin and Kay Thi Aye

College of Information Management, Central China Normal University, Wuhan, China
Email: xialx@mail.ccnu.edu.cn, makay73@gmail.com

Abstract—Libraries are starting of using Information Communication Technologies (ICTs) for library automation and then introducing digital library services. In the developing countries, such as ASEAN countries, except Singapore, other countries are still trying and developing the digital library application. With the invention of ICT, libraries now use various types of technologies to aid the services they render. Everyday new technologies advances affect the way information is handled in libraries and information centers. With regard the present conditions of using ICT based library services and activities by the national libraries in ASEAN countries and ICTs to the development of digital library environment are revealed that according to the topics of interest and need identified by the institution or library level.

Index Terms—ASEAN, national library, Information Communication Technology (ICT), digital library

I. INTRODUCTION

The Association of South East Asian Nations or ASEAN, was established on 8 August 1967 through Bangkok Declaration. The member states of ASEAN consist of ten countries: Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. The major objective of ASEAN is to accelerate economic, socio-cultural, technological and administrative cooperation of all member states, promote peace and security in the ASEAN region and enhance cooperation between ASEAN and other international organization. The slogan of ASEAN was One Vision, One Identity, One Community.

The National Library has a major role in collecting and preserving nation's intellectual heritage. Revolution in Information Communication Technology (ICT) in the past couple of decades had drastic and far-reaching impacts on all aspects of human life. The internet has added a new dimension to information technology giving birth to such rich concepts as digital libraries, etc. Therefore, national library has taken several steps to preserve this heritage as well as to increase the accessibility and awareness of these records.

Digital libraries are being created today for diverse communities and in different fields. Information and Communication Technology (ICT) is the basic building blocks of a digital library. ICT present on an opportunity to provide value-added information services and access to a wide variety of digital-based information to their clients. The digital library is not a single entry and such it is linked to the resources of many such collections. Upgrading Information Technology (IT) is vital and should be accorded high priority by each country.

II. PURPOSE OF THE STUDY

The purpose of the study is to compare the status of ICTs in national libraries of ASEAN with regard to their condition of using ICT based library services and activities and ICTs to the development of digital library environment. The study was also guided by the following specific objectives:

1. To explore the current ICTs status and plans of national libraries of ASEAN countries.
2. To find out the problems hindering ICT adopting in the surveyed libraries.
3. To investigate the effects of using ICTs in creating digital library and to promote library services and activities in ASEAN countries.

A. Research Questions

This research aims at answering the following questions:

1. What are the usefulness of ICTs in national libraries of ASEAN countries?
2. What are the services offered by the surveyed national libraries?
3. Are there effects of using ICT in promote the library services?
4. What are the opportunities and challenges of using ICTs in libraries of ASEAN countries?

B. The Method of Study

Information for this paper was used quantitative as well as qualitative research methods including questionnaire with the aim to get data. E-mail questionnaire was the approach used in this study

because of the selected library from national libraries of ASEAN countries and also the researcher is not unable to personally interview with the surveyed libraries. Questionnaire was designed on the purpose of study and a review of literature relevant all aspects of digital librarianship including library automation, the existing collection, services, ICT facilities, electronic and digital resources, local content, electronic resources, finances, management and training, and future plans. Materials are written about the historical background of the surveyed national libraries secondary sources of information from journal articles, conference papers, books and websites. Relevant literatures were also collected and consulted through internet browsing.

The literature reviewed to develop on understanding of the subject and data gathering instruments. A semi-structured questionnaire was prepared to gather information about the selected (9) national libraries of ASEAN countries. Questionnaire send to the Directors/Heads of the selected national libraries.

Data was collected from target groups through e-mail was also used to follow up the participants. Researcher thought the National Library has a major role in collecting and preserving nation's intellectual heritage. Therefore, National Library has taken several steps to preserve this heritage as well as to increase the accessibility and awareness of these records. In the past this has meant collecting and preserving print and other physical objects while National Library will continue supplement with the precision of electronic access to the collection. Moreover, there is a lack of research on ICT status of national libraries in ASEAN countries.

The study has both practical and theoretical significance because ICTs are widely accepted to be an important catalyst for socio-economic development. Having selected a method for undertaking this type of research factors specific to develop in national libraries system are addressed.

C. Data Collection

Carrying out an Email survey is not without problems. The survey aimed to investigate the ICT status of National Libraries in ASEAN, so data was requested from Directors/Heads of national libraries in ASEAN countries. Where the mail addresses of National Library's Directors/Heads were known, questionnaires were sent directly.

It is believed that having formal cover letter from the National Library of Myanmar where the study is taken place would increase the response rate, therefore, a signed cover letter from the director of National Library of Myanmar was issued. In the letter the brief information about the study program, purpose of this research was presented.

The focus of this research is on the status of ICT on national libraries in ASEAN. As the research became qualitative rather than quantitative to provide the data and institutional setting are six national libraries of ASEAN. The data collection and analysis methods are often reviewed and modified. The initial approach decided for this study was to analyst the comparative of the data from

national libraries. In this research the raw figures were converted to percentages and tabulated. The responses were analyzed according to their relevance to the research questions.

D. Data Analysis

Initially, the intention was to distribute surveys to the nine countries in ASEAN member countries chosen for the study, taking a quantitative approach. Of the 10 questionnaires sent out to national libraries of ASEAN countries, two national libraries (main and branch) from one country, excluding Singapore. 6 completed questionnaires were returned, giving an overall response rate of 60 %. Returns came from the 5 of the 9 countries surveyed, it was into various questions 1-17. National Library of Brunei, Cambodia, Indonesia, and Malaysia are not included.

E. Response Rate

After the data collection was completed, the researcher received a total of 6 responses (National Libraries) from the (5) countries at ASEAN member countries. The approximate rate was 60%. Actually the respondents are six Directors from national libraries, because two respondents were from National library of Myanmar. Since 2010, the National Library of Myanmar has been established as two branches: Yangon and Naypyi Taw.

TABLE I. NAME OF RESPONDENTS LIBRARIES

S/N	Country	Name of Libraries
1	Laos	National Library of Laos (NLL)
2	Myanmar	National Library of Myanmar (Yangon) NLM (Y)
3	Myanmar	National Library of Myanmar (Naypyi Taw) NLM (N)
4	Philippines	National Library of Philippines (NLP)
5	Thailand	National Library of Thailand (NLT)
6	Viet Nam	National Library of Viet Nam (NLV)

III. FINDINGS

A. Library Profile and Staff Categories

The first national library was established in 1887 (the National Library of Philippines) and the last was established in 2010 (the National Library of Myanmar/Naypyi Taw). In terms of collection, the National Library of Thailand has the largest collection of approximately 2,933,466 items.

From the survey, It's interesting to note that the number of professional staff working at national library of Viet Nam and Laos are full percentage of total staff number. National library of Philippines employed the paraprofessional staffs.

It is another point to notice is that 4 out of 6 national libraries in this study still have some staffs who have never attended library training course as seen in table 3, the information about the national libraries and manpower strength: number of library staff that all of the

professional staff, para-professional, and non-professional staff.

Ref. [1] (American Library Association, 2006) According to the finding researcher would classify staffs into three categories-professional, paraprofessional and non-professional. These categories do not match with the categories classified by other library authorities. For instance, ALA (American Library Association), refers a professional librarian to library staff who possesses a master’s degree in LIS whereas there is no satisfactory or agreed upon terminology for library staffs who do not have a master’s degree in library and information studies. These staffs are referred to, and refer to themselves, as support staff, paraprofessionals, library technicians, library assistants and associates, para-librarians. They are also referred to as “clerks” (American Library Association, 2006). Therefore, researcher will use the categories in table 3 in the rest of my report.

TABLE II. PROFILE THE SURVEY LIBRARIES

S/N	Name of Library	Year of Establish	Year of Inception ICT	Total Collection
1	NLL	1956	1999	638,236
2	NLM (Y)	1952	2002	603,664
3	NLM (N)	2010	2013	197,841
4	NLP	1887	2003	2,581,329
5	NLT	1905	1974	2,933,466
6	NLV	1917	1986	2,221,056

TABLE III. THE PERCENTAGE OF STAFF CATEGORIES

Libraries	Professional		Para-Professional		Non-Professional		Total
	No.	%	No.	%	No.	%	
NLL	39	100%	0	0.00%	0	0.00%	39
NLM(Y)	40	62%	0	0.00%	26	39%	66
NLM (N)	14.	44%	0	0.00%	18	56%	32
NLP	48	32.65%	29	19.73%	70	47.62%	147
NLT	86	74.88%	0	0.00%	29	25.22%	115
NLV	176	100%	0	0.00%	0	0.00%	176

-Professional: Staff with Diploma, Bachelor or degree in LIS or related fields.

-Paraprofessional: Staff with certificate course in LIS or staff with degree in other fields but have been trained in librarianship and are mainly engaged with the main functions of the library.

-Non-professional: Staff with diploma or degree in other fields and have never been trained in librarianship.

As indicated in table to note the number of professional librarians are working at the National

Library of Viet Nam more than other surveyed national library.

B. Library Automation

From the survey, library automation began around 1986s’ and 3 libraries (50%) were fully automated their functions and 3 libraries (50%) were still in the process of automating needs to be completed their core activities. National Libraries of Vietnam, Philippines and Thailand are most of their functions has been automated. National Libraries of Laos and Myanmar are started late the automation and still needs to be complete.

The acquisition, organization and circulation by electronic means of library materials are a primary feature of a digital library. This is accomplished by use if a specialized library management system or software, with modules for cataloguing, acquisition, loans, serials, OPAC, etc.

TABLE IV. APPLY THE LIBRARY AUTOMATION IN THEIR LIBRARY

S/N	Apply the library Automation	No. of Libraries
1	Automation completed	50% (3)
2	Still needs to be complete Automation	50% (3)
3	Not-yet started any automation	0.00% (0)

TABLE V. LIBRARY AUTOMATION SYSTEMS CURRENTLY IN USE

Name of System Software	Name of Libraries	Date First Used
PMB (Pour Ma Bibliotheque)	NL-Laos	2008
Solib e-Library Management System	NL-Myanmar (Y)	2010
National Library Management System	NL-Myanmar (N)	2013
Koha	NL-Philippines	1990s
Horizon	NL-Thailand	1991
Ilib	NL-Viet Nam	1986

The library automation began in the early 1986s. However, the majority of libraries have been completed the process. The National Library of Viet Nam started the process of automation in 1986 within the other respondent libraries which became completed automation in 2009. National Library of Philippines began automation in 1990s and completed in 2003 and National Library of Thailand started the automation process in 1991 and the most of the functions has been automated. The National Library of Laos and Myanmar (Y/N) started late the automation and still needs to be completed and the national library of Myanmar most began with cataloguing and circulation, but have neither finished that nor moved onwards to other processes. Only the National Library of Philippines, National Library of Thailand, and

National Library of Vietnam are fully automated their library's functions. All Libraries use a variety of different systems in library management as shown in table.

Libraries asked about their plan to automate or upgrade need the areas in coming three years. According to the result; the National Library of Laos needs to automate the areas on all of the book collections (Vietnamese, Korean, Indochina etc.). The National Library of Myanmar (Yangon) have plan to extend the membership programmes, barcode labeling and reporting for library collections and users and also National Library of Myanmar (Nay Pyitaw) needs to take automate in every library functions. National Library of Philippines have plan on the areas of possibly application for copyright/ ISBN/ ISSN/ ISMN. Plan of the National Library of Thailand to automate in an Inventory and Single search. National Library of Vietnam needs to take the plan of automate in Digital Library, digital preservation, and for future information.

C. Library Services in Survey Libraries

The majority of the category of library services that has been developed in these areas. 33.33% of libraries offer the library services that are Instant Message Reference service, lending service and current awareness. 66.67% of libraries offer their users with these areas that are Internet services, Web-based searching of the library catalogue and other databases and services for children. 83.33% of the respondent's libraries offer the reader service and Web-based distribution enquiry. 100% of libraries provide their users with bibliography service, reprography, library webpage and OPAC services. The returns indicated the most of the national libraries have a long way to develop that many libraries had already taken their library services.

D. ICT Facilities and Infrastructure

An adequate ICT infrastructure with a sufficient number of networked and Internet connected workstations is essential if a library is to offer access to e-resources and develop e-services. The number of computers provided both for users and staffs by each surveyed libraries. National Library of Viet Nam has the highest numbers of computers among the surveyed libraries i.e. 250 computers. Out of 250 computers, 100 computers for user and 150 computers for staffs both have internet connection. The National Library of Laos has low number of computers. All surveyed libraries are able to use internet connection. Most of the surveyed libraries are available the other computer equipment such as scanner modern printers, routers, camera, projector, TV, and tablet etc.

All survey libraries maintain databases using some kind of software technologies. The National Library of Laos uses PMB Access Databases, National Library of Myanmar (Nay Pyitaw) uses Library Management System, and National Library of Philippines uses the Koha. The National Library of Thailand maintaining databases by use programmers to maintain the database and National Library of Viet Nam uses Oracle.

The proportion of the computers are well provided for both public and staff use. The proportion of library computers connected to the Internet is available. 83.33% of libraries have 75% or over of their computers connected to the internet. Only one 16.67% of libraries has 50% over the number of computers with internet connection. Of the libraries which answered questions on the nature of Internet connectivity 14, about 2 stated that connectivity was poor (slow speeds infringe on the usefulness of connectivity). As shown in table 7, the method of connection used and the ratings given by the libraries. Wireless are currently the most popular method of connectivity and DSL, Cable modern and also used the connectivity with national libraries in ASEAN countries.

TABLE VI. COMPUTER EQUIPMENT AND ACCESS

Computers	% (no.) of libraries available with computers:	
	In working order	Internet-connected
100%	33.33% (2)	33.33% (2)
75%-99%	0% (0)	50% (3)
50%-74%	0% (0)	16.67% (1)
1%-49%	66.66% (4)	-
0%	-	-

TABLE VII. STATUS OF INTERNET CONNECTIVITY

	Good % (no)	Adequate % (no)	Poor % (no)	Total % (no)
Dial-up	0% (0)	16.67% (1)	0% (0)	16.67% (1)
DSL	33.33% (2)	33.33% (2)	0% (0)	66.66% (4)
Cable modern	16.67% (1)	33.33% (2)	16.67% (1)	66.66% (4)
Wireless	33.33% (2)	33.33% (2)	16.67% (1)	83.33% (5)
Totals	83.33% (5)	116.66% (7)	33.34% (2)	

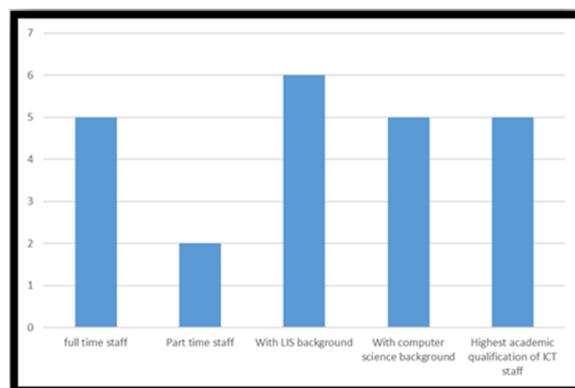


Figure 1. ICT support staff in each library

The majority of the libraries 100% (6) as well as ICT support staffs are working with LIS background with their library functions. Of the libraries which answered the full time ICT support staff, with LIS background and highest academic qualification of ICT staff are 83.33% (5) out of 6 libraries and highest academic levels staffs with Bachelor and Master degree. 33.33% (2) out of 6 libraries employed the part time ICT support staff. With regard the distribution of libraries based on the ICT staff profile that would be needed to handle the automation and assist users in meeting their information needs effectively. All the respondents answered questions on the library offer continuous ICT training to its staff is needed. Figure 1 illustrates the figures.

E. Budget

Researcher received the budget information from four national libraries with their local currency. Researcher convert the local currency in US dollar. National Library of Viet Nam and National Library of Myanmar (Naypyi Taw) did not mention the budget information.

TABLE VIII. FINANCE/BUDGET

Name of libraries	2013	2014	2015
NLL	Approx. 9000 \$	Approx. 10,200 \$	Approx. 120,000 \$
NLM (Y)	Approx. 5,120 \$	Approx. 9,600 \$	Approx. 13,600 \$
NLM (N)	-	-	-
NLP	Approx. 4,032,881 \$	Approx. 5,353,990 \$	-
NLT	Approx. 557,000 \$	Approx. 711,038 \$	Approx. 527,061 \$
NLV	-	-	-

F. Electronic Resources

Three Libraries did not mention about the acquisition of e-resources from obtaining funded programmes, (National

TABLE IX. ELECTRONIC AND DIGITAL RESOURCES

Primary method of acquisition	% (no.) of libraries
Funded programme and free	16.67% (1)
Budget from government	16.67% (1)
None	16.67% (1)
No data provide	50% (3)

Library of Laos/ Myanmar/ Thailand). National Library of Philippines received their e-resources from library budget from government. National Library Viet Nam received the e-resources from signing an annual service contract with an IT supplier in Viet Nam. The

returns indicated that most national libraries have a long way to go in developing e-services.

Provision of e-books is a different matter. Libraries were asked about what e-services they offer access for their user. Three survey national libraries access to e-resources services very well (Philippines, Thailand, and Vietnam). The National Library of Laos no access to e-journals/books services but offers access to CD-ROMs, began offering access in 2007 and National Library of Myanmar access to only old newspapers e-resources.

The National Library of Thailand mentioned its e-books services offers access on D-Library: National Digital Content of National Library of Thailand and started offering access in 2014. National Library of Viet Nam stated about the e-resources offers at online addresses and e- resources began offering access in 2003.

National Library of Philippines mentioned the library offers access e-resources that are EBSCO, Academic One File, Proquest, and Science Directory Which Green FILE of EBSCO offers well-researched information covering all aspects of human impact to the environment. Its collection of scholarly, government and general-interest titles includes content on global warming green building, poll and EBSCO's Library, Information Science & Technology Abstracts (LISTA) indexes more than 500 core journals, more than 50 priority journals, and 125 selective journals; plus, books, research reports and proceedings. NLP's Open Science Directory contains journals and journals in special programs for developing countries and e-resources offering access started in 2003.

G. Social Networking Tools in Library

Social Networking tools is a platform where users are both consumers and producers of online content. With these tools, librarians can constantly evaluate and update content to meet the changing needs of users. Various Social Networking tools are used for collaboration and sharing of ideas and its becoming an integral part library services. These networking sites to meet the information needs of the users include; such as

TABLE X. SOCIAL NETWORKING TOOLS IN SURVEY LIBRARY

S/N	Options	% (no.) of libraries
1	Facebook	100% (6)
2	Linkedin	16.67% (1)
3	Twitter	50% (3)
4	Youtube	33.33% (2)
5	Google Plus	16.67% (1)
6	Flicker	16.67% (1)

-Facebook: Facebook was a feature that encouraged people to write message about the person in the profile. But over time, people started writing creative testimonials back, creating a form of conservation. Librarians can also interact with users to know their information need. Libraries try to link some of these specialized library applications to Facebook.

-Twitter: A micro blogging application, to keep staff and patrons updated on daily activities, like frequently updated collections.

-Youtube: Events such as important highlights of conference and workshop and lectures are disseminated via the Youtube.

-Flicker: Librarians can use this tool to share and distribute new images of library collection.

The various social networking sites use in their collaboration and sharing of ideas and its becoming an integral part of library services. Various social networking sites to meet the information needs of the users. Libraries were asked about their library using the social networking, the most of the libraries 100% (6) used the Facebook to give the information news for their users. Twitter is used in 50% (3) out of (6) libraries, Youtube is used in 33.33% (2) out of libraries and each 16.67% (1) out of (6) libraries used the social tools of the LinkedIn, Flicker and Google plus.

H. Barriers to ICT in Library

The barriers to ICTs in the surveyed libraries that are relating to implementing for the varied of digital development among the libraries. Of the libraries which answered questions on the barriers to ICT in their libraries, 83.33% (5) out (6) of libraries faced that they had lack of budget for ICT, lack of ICT skills with LIS professionals and adequate hardware/ software support to maintain ICT services by ICT staff are also needed. 16.67% (4) out of (6) libraries were felt to be particularly lacking in supporting by government, difficult to recruit qualified new LIS professionals needed to provide proper initiatives. 50% (3) out of (6) libraries were faced in resistance of change internal staffs and need to develop with international cooperation in LIS fields. Only 33.33% (2) out of (6) libraries have the barriers an absence of strong, dynamic Library Association in the country

I. Digital Library Initiative

Using ICT libraries are creating digital libraries, that is libraries where some or all of the holdings are available in electronic form, and the services of the library are also made available electronically. There are several factors of digital library projects or initiatives being implemented by survey National Libraries. According to the result, the National Library of Laos, Philippines and Thailand did not provide the information of the year of digitization started. The National Library of Myanmar started digitization in 2010-2011 and the National Library of Viet Nam started digitization in 2012. All national libraries are currently digitized library collections are books, newspapers and others are depended on the criteria to select items for digitization according to their library.

All survey libraries answered that they do not have a national law for digitization. Libraries were asked the used of digitization project is in-housed or outsources; both in-housed and outsources was used by the National Library of Laos. National Library of Thailand did not give the answer. Other three national Libraries (Myanmar,

Philippines, Viet Nam) mentioned in-housed for their project.

Libraries were asked about the problems faced while digitizing and brief about their digitization project;

The National Library of Laos stated the documents are ancient is their problems and the brief of the project is "Digital Library of Lao Manuscripts (DLLM) have been digitized from the microfilm collection made during the Preservation of Lao Manuscripts Programme, access to digital images of almost 12,000 palm-leaf".

The National Library of Myanmar indicated a lot of problems faced in digitizing there are;

- Lack of experience (of implementing Company and the Library)
- Lack of knowledge on how to treat rare books and old publications (of Company staffs)
- Inadequate equipment's for scanning (Of Company)
- Lack of specific and well function equipment (Of Company)
- Lack of e-book transforming software
- Lack of ICT staffs (of Library)
- Inadequate period of project

"The brief of (NLM) digitization project is: the project started in 2010-2011 fiscal year in order to preserve the rare and old collections of the National Library. It was one-year project and the function was performed by the Company. The prior collection is about 1000 volumes of rare publications published before 1900. Second priority is newspaper collections of before 1980. End of the project, the prioritized collections were scanned but about 1500 volumes were transformed to PDF files. The rest are in image file which are now being stored in hard disks and gradually transformed to PDF".

National Library of the Philippines indicated the problems faced in digitizing which lack of directives and explained the brief digitization project; "they start with the manuscripts that are accesses frequently".

The National Library of Thailand faced the problem while digitizing their project with lack of budget. The NLT stated the information on digital library initiatives "policy is not clear" the National Library of Thailand began work building a digital library system in July, 2014.

The National Library of Vietnam faced the problem on digitization project is Copyright. The NLV explained about the brief projects/digital library initiatives; there are projects including:

- Developing the electronic/digital library system at the National Library of Viet Nam (2001)
- Advanced the electronic/digital library system at the National Library of Viet Nam and 61 provincial/city libraries: (2003)
- Improving the capacity of IT application on electronic/digital library at NLV and public library system (2005)
- Expanding and upgrading the electronic/digital library system in NLV and the public library system (2006)
- Strengthening the capacity of automation at the National Library of Viet Nam (2007, 2009)

-Strengthening the capacity of Digital Library and Digital Preservation at the National Library of Viet Nam (2012)

J. Future Plans

Libraries were asked about their future plans and the areas where they needed. If these plans were to come to fruition, and the responses are recorded. While most national libraries have the mandate, under the legal deposit laws, to collect and preserve all publications produced within the country, most existing deposit laws only cover printed-based materials. Yet there are so many documents being generated and distributed primarily in digital formats which are not being collected or deposited at the libraries.

National Library of Laos was established a new library law in 2012. The Laos Government's policy is to develop the human resources and library infrastructure in order to promote information literacy within the country and quality services in the library sectors. Without adequate funding to improve the library to a standardized level of national culture heritage and provision of information so that to establish plans for future of NLL, there are: i) Seeking for fund raising ii) Develop Human Resources iii) Update Information.

National Library of Myanmar as a government institution, library has gained annual funding for the functions. National Library of Myanmar does not have a library law. By the Printers and Publishers Registration Act (1959) which was amended in 1962, the NLM has become a depository library. By this law NLM receive one copy of each publication published in Myanmar through Registration office. In NLM, a lot of the collection has digitized, but they are needed to transfer e-book format. Since 2010-20111 fiscal year, NLM conducts the Post Graduate Diploma on Library Management course with the purpose of disseminating the knowledge and experience of current development of the library and information centers to younger generation. Apart from that, the National Library of Myanmar is now taking part in leading role of the Myanmar Library Association, the international relation with other national libraries and library associations of the Asia region is now performed by the NLM. The above of the mentions are also related to establish the plans for NLM, there are:

- To enact the National Library Law in order to acquire local publications including e-resources for preservation
- To undertake the editing and transforming the scanned collections to e-books
- To expand the services to membership program
- To provide training courses on specific subjects of library and information
- To enhance reading promotion activities for children and young adults
- To organize seminars and discussions on various library and information sector

The NLP's plans need to carry on create a universal database + consortium to access Philippine Cultural materials through library portal. The Philippine e-library project is a collaboration or consortium project of five

government agencies, Philippine e-library was organized and formally launched in 2005. Funded through the e-Government of the Philippine Government, hoped to provide for the information needs of all sectors of society in a convenient, affordable, and efficient way of delivery. The National Library of Philippine is the Project Management Office (PMO) with the Director as the project manager. There are six project components: i) Network ii) Portal System iii) Digitization iv) Collection Development v) Training vi) Business Systems.

The National Library of Philippines Digital Library (DL) as a portal that will provide selected digitized collections of NLP rare materials that chronicle the country's rich cultural heritage. It will also provide information about the different foreign materials acquired by NLP which is scholarly in nature. As a national library, DL could also be in charge of management and long-term preservation for all the digital information resources collected and to be collected in the future.

D-library is a project for digital library of the National Library of Thailand. D-library began work building a digital-library system for collection, preservation and dissemination of cultural heritage that National Library of Thailand available in digital from online on the website. For users to access digital collections easily and quickly, National Library of Thailand built the digital library system using Omeka, an open source collection management system. Nowadays, the National Library of Thailand have one branch in Bangkok and 11 branches in the provinces. Next steps of the future work of D- library of NLT, there are:

- i) More digital content
 - Prints and photographs
 - Films
 - Sound recordings
 - Digital content for 11 branches
- ii) Streaming Video-in D-Library
- iii) Developing Mobile Access to Digital Collections
- iv) Applying "Transcribe": an open source software for transcribing ancient documents

National Library of Viet Nam not given the library future plans. All the libraries, even those that were comparatively advanced in their use of e-resources, stressed the need for continued support, both financial and in the provision of expertise. To fulfil our provision of digital information services, we need more financial resources and then specialized areas and digitization were also highlighted.

IV. DISCUSSION

A. Different Needs

A hypothesis underlying this survey was that national libraries in ASEAN countries have progressed towards establishing digital services at different speeds and levels. This hypothesis was confirmed by the findings of this survey.

The number of libraries that can make effective use of the e-resources that are now generally available to them. 100 percent of libraries provide computers access for users with internet connection. One (16.67 %) out of 6

libraries available less than 75% of the computers are internet connected. Another (16.67%) 3 out of 6 libraries available (75-99%) of the computers are internet connected. (33.33%) 2 out of 6 libraries available greater than 100% of the computers are internet connected.

Only one libraries consider its internet is poor-generally the slow speeds infringe on the usefulness of connecting. Five (83.33%) out of 6 libraries consider their internet connectivity to be adequate-acceptable speeds or above in speed good quick and reliability.

Three libraries (National Libraries of Philippines, Thailand, and Viet Nam) are moving towards the establishment of digital library services. National Libraries of Laos and Myanmar are trying to establishment of e-services. Most of the libraries have developed a Web-based OPAC, three libraries offer access searching all e-resources and have started e-content delivery. These recorded are not perfect availability of ICT facilities and need to offer continuous ICT training to staffs. It is indicative that three national libraries of Philippines, Thailand, and Viet Nam felt that is worth recording as an achievement that they had managed to provide their libraries with a level of provision of ICT. Two national libraries of Laos and Myanmar included the need to extend automation and the provision of ICT facilities to their library management and activities.

Libraries which have fully automated systems or are well on the way to full automation of library processes and procedures are also those libraries that have started but not completed library automation have, in general, not moved successfully onwards into other areas. As a result of findings, only three libraries considered themselves fully automated.

National Libraries in ASEAN countries therefore have different needs and ambitions; difference among member countries of ASEAN such as languages, education, literacy rates, telecommunication structure, and library development it is necessary to investigate the differences of the provision of ICT development in the library system, especially in the national libraries of these countries.

B. Funding

In developing countries, most of the national libraries rely from the governmental funds, they are unable to provide adequate funds. Without this prerequisite, raising sufficient funds to provide and promote e-resources and services and provision of ICT facilities are difficulty to work. The most critical faced by South East Asian libraries is securing funding for both their operations and for development. It has not been easy for libraries in the region to persuade their government to provide more funding for new libraries, new services, for digitization and for developing better digital access to collections. In some of the countries, significant work is done with the kind of sponsorship of partners, especially the NGOs and embassies who have stepped into help with new projects.

C. Library Education and Training of Library Staffs

Professional training in librarianship has not been sufficiently addressed. Most countries in Asia have their

own library schools training at the undergraduate and postgraduate levels. Ideally library schools should also be taking a lead in providing continuing education, through workshop and seminars, so increasing the sustainability of programmes that are at present externally led. Libraries need capacity buildings as it relates to human resources development and to the institution, to enable the staff to use and manage ICTs and the library to plan and implement sustainable ICT projects. ICT offer libraries an opportunity to develop and deliver online capacity building programmes targeting their staff to enable them to user or implement innovation use of the ICTs in the libraries. The training of human resources is very important to have knowledge and skills in order anticipate the fast development of environment, especially the change of ICT library and digital library as well.

The national library should have a strong administration structure, and qualified staff, prepared to lead libraries throughout the country into an expanded role for libraries. Lack of retention of trained library staff was considered an equal challenge to that of lack of funding.

Although, the staff should have a large vision in which the national library should play the role of developing Human Resources through the collections and facilities. Libraries should become knowledge centers supporting the population through staff with appropriate skills and access to information. As a result of finding, that there are necessary for the development of library education and training of library staff: "technology, economy growth, government support with funding and relevant training on concerning about the subjects" from within the library information industry.

D. Library Service Development in National Libraries of ASEAN Countries

Ref. [2] (H. Zarei, & Z. Abazari, 2010) Modern ICT tools, especially the internet and Web-based technologies, now provide libraries with an opportunity to offer library users, including; provision of Web access to OPACs, electronic document delivery, and networked information resources, delivery of information to users' desktops, online instructions, and online reader advisory services. Recently the most library software system now included Web-based interface to OPACs. National Libraries of ASEAN member countries are providing access to Web-based OPACs.

Ref. [3] (Kanok-on Sakdodate, 2014) National library of Thailand has been linked databases into internet system. Users can use IPAC (Internet Public Access Catalogue) and who stay at any places of the country or of the world can access NLT databases via www.nlt.go.th. The information searching can use OPAC at the library, library network and internet. In 2013, the Fine Art Department received some budget from the government to provide the WIFI network over the space of NLT. The users who walk in the NLT could access to World Wide Web with free WIFI. Provides e-services website to the public via <http://www.nlt.go.th/e-service> in 2013. It is international services for registration International

Standard Book Number (ISBN), International Standard Serial Number (ISSN). Cataloguing in Publication (CIP) and printing Notice Services as required by Press Act A.D. 2007 to publishers which their publishing and printing are locating in Thailand.

Ref. [4] (Antonio. M. Santos, 2012) National library of Philippines provides the Web OPAC service and e-reserve service. Philippines e-library can access www.elib.gov.ph. In the present Philippine e-Lib Kiosk space of the information Common may be divided into many different areas, which include; Integrated Learning Center, Laptop Zone, Access Help Center, Multiplex and Multimedia Zone etc.

Ref. [5] (Mya Oo, 2014) The National library of Myanmar website has been developed in 2007 (<http://www.nlm.gov.mm/>), catalogues of library collections can access as online catalogue through NLM Website. And then 2013-2014 Fiscal year. NLM has been installed ELIB (Electronic Library on Web) software which is Web-based library automation system, can set up internet and allow accessing library online, that intending for all users to access the information on the NLM's collection.

Ref. [6] (Bui Thi Thuy, 2014) National library of Viet Nam has stopped maintaining traditional card catalogue system. All bibliographic data is daily updated on online database. Users can do searching through OPAC at Reference Division of the NLV or at the links; Books bibliography, Digital Collection, Han-Nom Collection, etc.

Ref. [7] (Boukhay Phenghachanh, 2013) The National library of Laos also has a computer network catalogue for finding books (OPAC). The Online Public Access Catalogue is one of the Library's computerized system that provides the facility for users to search library resources. NLL are two unique and rare collections; the first is the collection of 2,000 traditional manuscripts (mostly palm-leaf), and the second is the Indochina collection of 3,000 volumes, both of which have been catalogued and digitized and will be available via the internet at www.laomanuscript.net. This digital library now has 12,000 records. The website is opened to the public but NLL are still continuing with their expert team to revise and update the data.

E Effects of Using ICT in Creating Digital Library

Ref. [8] (Ngian Lek Choh, 2013) Using ICTs, librarians are creating digital libraries, that is libraries where some or all of the holdings are available in electronic form, and the services of the library are also made available electronically-frequently over the internet so that users can access them remotely. In ASEAN member countries, except Singapore other countries are still trying and developing the digital library application. Digitization and digital libraries are more common with new changing environment in libraries.

The National Library of Laos has incepted the ICT in 1999. In 2007, National Library of Laos began a three-year project to digitize over 1,000 rolls of microfilm copies of manuscripts from throughout the country and to make its national literacy heritage freely available via the

internet. The Digital Library of Laos manuscript (DLLM) web application was officially launched in Vientiane in 2010 and can be viewed at <http://www.laomanuscripts.net>. The Laos Government policy is to develop the human resources and library infrastructure in order to promote information literacy within the country and quality services in the library sectors. Telecommunication facilities remain very limited in the Lao PDR and are further restricted by their high cost. And then NLL has an extremely limited national budget to work with and have no financial support for research and data collection. The ICT development has been slow. The NLL has received a number of computers from different donors. Internet access is available but infrastructure is weak and telecommunications are expensive and vulnerable. The NLL has been offering access to e-resources in 2007. In 2009 the national library of Laos inaugurated a website.

the National Library of Myanmar has been established as two branches; (NLM/Yangon) and (NLM/Naypyi Taw). NLM (Naypyi Taw) which is the main library of national level. The NLM(Yangon) has incepted the ICT in 2002 which is making effort to change the library an electronic library. NLM (Naypyi Taw) has incepted the ICT in 2013. The digitization project of National Library of Myanmar started in 2010-2011 fiscal year in order to preserve the rare and old collections of NLM. Myanmar collections has been digitized for e-books resources, now there are over 7,000 e-books are ready to read in NLM, arranged by the ALFA e-books management software. The number of computers have internet access and can offer user services by both NLM. Myanmar is now rapidly building the information infrastructure needed for its citizens to participate in the reform process and compete in the global marketplace and Myanmar Libraries are also need more financial assistant to purchase online databases which are expensive. They do not yet have the adequate infrastructure or secure funding needed to fulfill their roles as community information hubs. Most of the libraries, a few of them are able to incorporate digital tools into their system.

The National Library of Philippines has incepted the ICT in 2003. NLP e-library was organized and formally launched in 2005. As the first public electronic library in the country. ICT infrastructure of the NLP has the number of computers and includes the scanners, NAS storage, servers, printers and Wi-Fi access points etc. National library of Philippines has proposed in the 1999 budget for the digitization project and which is projected for implementation in 2000 and operational by the year 2001-2002. Digital Library Service Division (DLSD) of NLP have two sections; i) Digital Library Technical Section ii) Digital Library Service Section. NLP could provide digital library and information services for users both in virtual space NLP website <http://web.nlp.gov.ph/nlp/> and physical user space (Information Common).

Ref. [9] (Wilawan Sapphansaen, 2012) The National Library of Thailand has incepted the ICT in 1974. The NLT has started the digitized for database services are

rare books, Thai traditional books and non-books material e.g., microfilm and music since 2001. Digital collection will be available online via the international so that citizens who live far away in different parts of the country can access the knowledge of NLT collections National Library of Thailand's digital plan to set up the digital library in 2011. In July, 2014 NLT began work building a digital library system (D-Library) for collection, preservation and dissemination of cultural heritage that NLT available in digital form online on the website. at present, the digitization project is going well

The National Library of Viet Nam incepted the ICT in 1986. NLV owns more than 2.5 million documents, digital source produces nearly 5 million document pages equivalent 33,500 document titles. Most of these digitized documents are and have been opened to the user for free online access at <http://www.dl.nlv.gov.vn/> <http://www.dl.nlv.gov.vn/> NLV's facilities have been constantly invested through library activities capacity building such as; Developing the electronic/digital library system at the National Library of Viet Nam (2001), Advanced the electronic/digital library system at the building at the NLV and 61 provincial/city libraries (2003).Improving the capacity of IT application on electronic/digital library at NLV and public library system (2005), Expanding and upgrading the electronic/digital library system in NLV and public system (2006), Strengthening the capacity of automation at the NLV (2007/2009), Strengthening the capacity of Digital Library and Digital Preservation at the NLV (2012).

F. Connectivity to ICT Infrastructure Development in ASEAN

Ref. [10] (World Economic Forum) According to the Global Competitiveness Report 2013-2014 of the World Economic Forum, conducted a survey among ASEAN business executives on the quality of overall infrastructure in the ASEAN. Among the factors surveyed include the overall quality of roads, railroads, seaports, airports and electricity supply. These are major physical infrastructure required among ASEAN countries to prepare them for the 2015 integration.

Issues and challenges deliberately culled from the ASEAN connectivity and ASEAN Masterplan 2015 are among those which libraries and ICT services will face in relation to the ASEAN 2015 integration.

Ref. [11] (Jr Briccio M. Mercred, 2015) Issues and challenges that libraries and librarians will face in relation to connectivity and ICT infrastructure development in ASEAN, where in the short, medium. Long-term are;

- Intellectual Property Rights (IPR)- establishment of an IPR office in each country is a must as this will determine which properties are covered. Once this has been established, a coordinating agency at the regional level with take care of its implementation across the region.

The ASEAN Intellectual Property Rights Action Plan 2011-2015, identifies countries responsible for the project or activity that the country will be responsible for

the IPR areas: libraries in each ASEAN country may seize the opportunity in the IPR areas.

Librarians can also lead in a lot of other challenging tasks under each of these categories;

- Information Infrastructure
- Implementation of ICT measures
- Initiative on ASEAN Integration (IAI)
- Connectivity
- Physical connectivity
- Institutional connectivity -Institutional connectivity
- People-to-people connectivity

TABLE XI. ASEAN IPR IDENTIFIED AREAS

Area	Country
Patent Administration	Malaysia
Trademark Administration	Philippines, Brunei
Industrial Design Administration	Vietnam, Philippines
Copyright and Creatives	Thailand
Patent Information	Philippines, Cambodia
Traditional Knowledge, Traditional Culture Expressions, Genetic Resources	Indonesia
Geographic Indication	Thailand, Vietnam
Innovation, Technology Transfer, IP Commercialization	ASEC
Office Infrastructure Modernization/Automation, Quality Management	Philippines, Vietnam
Plant Variety Protection	Vietnam
IP Education, awareness, Marketing	Thailand, ASEC
IP Enforcement	Philippines

Ref. [12] [13] (Technology Research Project Cooperate, c2014) There are still a number of issues and challenges that need to be hurdled in order to arrive at the goals of ICT and connectivity. According to ASEAN briefing, April 24, 2014, most of the libraries in ASEAN related the internet speed and network connection are also to connectivity the varying Internet speed in ASEAN countries, that are also related concern on network readiness to connectivity by analyzing test data between March 7, 2014 and April 5, 2014, that the various Internet speeds in ASEAN countries. According to the results, the average global internet speed is 17.5 mbps and the ASEAN average internet speed at 12.4, Singapore registers 61.0 mbps, Singapore still leads all. Fig. 2 illustrates the figures.

The closest ASEAN country is Thailand at 17.7 mbps, while the lowest is the Philippines at 3.6 mbps. If this is the infrastructure of ASEAN at the country level, so as to draw conclude that it is a need for country level bodies which understand the requirements of the institution or library level. And Libraries were also made available

electronically-frequently over the internet to interconnect using this speed, then library services might be disadvantages to certain extent. As adequate ICT infrastructure with sufficient number of networked and internet connected workstations is essential if a library is to offer access to e-resources and develop e-services.

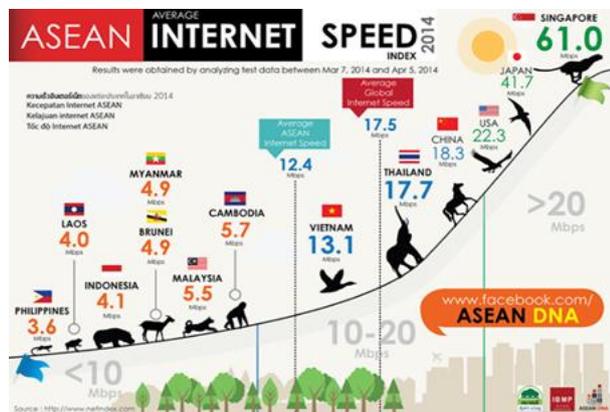


Figure 2. ASEAN Internet speed

G. Resource Sharing and Library Cooperation

The developing ICTs infrastructures in library are to promote library services in order to develop the human resources and information literacy within a region in ASEAN and quality services in the library sectors. With the increasing use of internet and electronic resources, digital libraries are now on emerging platforms for cooperation.

Libraries have a long history of cooperating and sharing resources, especially in the creation of union catalogues or sharing bibliographic records, which also help in locating materials for interlibrary lending. Library cooperation and resource sharing in the network environment of libraries in ASEAN countries are very complicated. New digitization technology, automation technology are higher requirements for the quality and ability of the librarians and libraries.

At the present time, some of the national libraries in ASEAN have not attained these basic levels and other are struggling to maintain them. Libraries which have full automated systems or are well on the way to full automation of library processes and procedures are also those which have the best levels of ICT facilities, trained staff and e-services. Full and effective use of e-resources and e-services depends on all national libraries in ASEAN and all libraries within a regional networks acquiring and maintaining the basic building blocks of a digital library automation of library systems, sufficient ICT facilities (computers, networks) and adequate connectivity.

Ref. [14] (Fe Angela M. Verzosa, 2014) According to Fe Angela, a number of collaborative projects developed from bilateral and multilateral undertaking have been attributed to Congress of South East Asia Librarians (CONSAL's) involvement, mostly in the areas of documentation, cooperative indexing, and bibliographic access. However, there is one digital initiative, funded by ASEAN-COCI involving 350 rare books from the

collection of the institute of Southeast East Asian Studies. Still under CONSAL initiative, nine ASEAN countries were given digitization machines to provide digital contents to their national imprints and facilities e-book-sharing across ASEAN countries through a regional gateway. Several barriers have been cited too, such as rivalry and competition, mistrust and politics and different institutional priorities and indifferent institutional administrators, unequal development and so on.

V. SUGGESTIONS

The libraries should have a policy of support in the provision of access to information resources and services, budgeting for management and promotional activity/project support and development of digital content, the environment of libraries cooperation between libraries in the region and quality assurance compliance with the quality support services of ASEAN community.

A. New Skills and Knowledge Required

ICTs have transformed the nature of library services, activities and human resource management over a period of time. In modern ICT based library services, the information professional handle various types of activities in relation to the use of computers and other new information technologies. Librarians are now needed to possess additional skills and expertise, more so in the use of modern ICTs, automated information services, electronic publishing, digital information management and knowledge management. Professional training in librarianship has not been sufficient addressed. Ideally library schools should also be taking a lead in providing continuing education, through workshops and seminars. Different libraries have different needs, training have given at the institutional level was also required.

B. External Support and Funding

At the same time, libraries are at very different stages of digital development with very different needs with a lack of institutional funds being a major challenge to the future development of digital libraries. There is a need for country level bodies which understand the requirements of libraries and which can drive forward digital development. This could be within government or become a role of country consortia. Most of the national libraries in ASEAN countries rely on the governmental funding; they are unable to offer adequate funds to the libraries. As local and international development organizations and funding should offer to libraries in the developing countries for make them available for all.

C. Library Cooperation

The cooperation among digital libraries in ASEAN should be facilitates and support by the National Library and National Librarians Association of the respective countries. The Congress of Southeast Asian Librarians (CONSAL) as the regional association can take part in the activities of cooperation. The intent of cooperation is to share of the strengths not to avoid the weakness. Due

to the fast development of information communication and technology particularly in digital technologies, the sharing of knowledge and the exchanging of experiences must be maintenance by regular communication and continuing professional development. It is possible only consortia that could carry out this cooperation and counseling role.

VI. CONCLUSION

The promotion of library cooperation in the fields of documentation, bibliographic access, digitization, open access scholarly publishing and related activities would enhance today the networking and linkage capabilities among libraries in developing countries. Most of the national libraries in ASEAN countries are connected to social network and all the national libraries in the world should increase their presence in the social networking sites and should attract the new type of users. Librarians can and should educate patrons on the use of these social networking tools to adopt to new ways of accessing, communicating and sharing knowledge.

A better understanding of the digital environment is essential for the establishment of digital library frameworks that respects fundamental legal principles enshrined in institutional regulatory frameworks, and balance access with privacy, right to knowledge with economic rights. Libraries in ASEAN countries are making the innovative use of information technology will be promoting the development and growth of digital library environment.

ACKNOWLEDGEMENT

The authors of this paper gratefully acknowledge the support received from the Directors and Heads of the National Libraries from ASEAN countries for their kind and valuable support in gathering information. This work was supported in part by the key project of the National Social Science Program Fund: Research on Knowledge Discovery of Internet Resource base on Multi-Dimensional Aggregation (13 and ZD 183).

REFERENCES

- [1] American Library Association. (2006). Terminology doe Library Support Staff. [Online]. Available: <http://www.ala.org/ala/educationcareers/education/3recongressonpro/terminologylibrary.cfm>

- [2] H. Zarei and Z. Abazari, "A study of web-based services offered by Asian national libraries," *The Electronic Library*, vol. 29, no. 6, pp. 541-850, 2010.
- [3] K-on. Sakdadata, "National library of Thailand annual report," presented at the 22nd Conference of Directors of National Libraries in Asia and Oceania (CDNLAO), February 27, 2014.
- [4] A. M. Santos, "Digital library services division in the national library of Philippines: Towards resource sharing in the ASEAN," presented at the Asian Libraries: Resource Sharing Cooperation and Development, 2012 China-ASEAN Cultural Forum, Sept 10-14, 2012, pp. 25-32.
- [5] M. Oo, "National library of Myanmar annual report," presented at the 22nd Conference of Directors of National Libraries in Asia and Oceania (CDNLAO), February 27, 2014.
- [6] B. T. Thuy, "National library of Vietnam annual report," presented at the 22nd Conference of Directors of National Libraries in Asia and Oceania, February 25-28, 2014.
- [7] B. Phengphachanh, "Lao PDR. country report," presented at the 21th Conference of Directors of National Libraries in Asia and Oceania (CDNLAO), March 25-29, 2013.
- [8] N. L. Choh, "Libraries in Southeast Asia: A force for social development," submitted at the IFLA WLIC, August 16, 2013.
- [9] W. Sapphansaen, "Resource sharing: Collection in the national library of Thailand," presented at the Asian Libraries: Resource Sharing Cooperation and Development, China-ASEAN Cultural Forum, pp. 59-64, Sept 10-14, 2012.
- [10] World Economic Forum. (2012). Business-in-Asia.com ICT in Asia. [Online]. Available: <http://www.business-in-asia.com/ict/asia-ICT.html>
- [11] Jr. Briccio and M. Mercred, "Infrastructure and connectivity in the ASEAN 2015 integration: Issues and challenges for libraries and ICT Services," presented at the General Conference Congress of Southeast Asian Librarians (CONSAL) xvi, Bangkok-Thailand, pp. 1-19, 2015.
- [12] Technology Research Project Cooperate. (c2014). The ASEAN ICT Masterplan 2015. [Online]. Available: <http://trpc.biz/the-asean-ict-masterplan-2015/>
- [13] ASEAN Best and Worst in ICT. (June 2, 2015). IT/Technology [Online]. Available: <http://aseanforum.asia/category/industry/technology>
- [14] F. A. M. Verzosa, "The future of library cooperation in Southeast Asia," presented at the Libraries: Gateways to Information and Knowledge in the digital age, ALIC Conference, 2004.

Xia Lixin, PhD, Professor was born in China. He is a dean of College of Information Management at Central China Normal University, Wuhan, China. His specializes areas are computer information organization and retrieval, competitive intelligence, and digital library.

Kay Thi Aye was born in Myanmar. She received her master's degree in Library and Information Studies from Yangon University, Myanmar. Since, 2013, she is studying her doctor's degree of Library Science in the College of Information Management at Central China Normal University, Wuhan in China. She has been working as a librarian in the National Library of Myanmar. Her researcher areas are digital library and ICTs in Library.