

CHAPTER 6

FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

6.1 Introduction

This chapter consists of the final discussions based on results of the data analysis that were derived from Chapter 4 and 5. Key findings were discussed, followed by suggestions and recommendations that would put the objectives of the study in place. Finally, conclusions were made to wrap up the study.

The main purpose of the study was to explore the extent of library automation, online services and digital library initiatives that had been done, including the problems faced in progressing to a greater height. The study also wished to explore and solicit the perceived conditions for digital library future growth. Library automation in Malaysia which had a head start 30 years ago with the *MALMARC* Project had slowly given way to the development of electronic and subsequently digital library. As the research had unfolded, it seemed that digital library initiatives were developing and progressing. The hybrid type of digital library which was prevalent was a manifestation of the readiness of Malaysian libraries to move forward towards providing more digital library services. Such a progress was an indicator that digital library concept was permeating into the Malaysian scene. Cyber Corner, IT Corner or Internet Corner was common in some libraries. Web OPAC was rampant and catalog cabinets had been mostly replaced even though not yet in total. Online services were on the rise, with e-journals and e-books taking shape in library's databases, albeit many of which were being subscribed. Central to digital activities was the widespread development of websites/homepages and

information surrogating was done particularly focusing on organizational internal publications, along with digitization projects that were planned and executed, mostly independently at various scales and levels. Even though print materials were still dominating but this new breed of Malaysian libraries was a trend that would transform and mould the future of Malaysian libraries.

The need for this study arose because studies on digital library initiatives in Malaysia at national level had not been done despite the fact that digital library initiatives had been extensively taking shaped worldwide. Library of Congress through the *American Memory Project* had digitized 9 million items as of June 2007; Britons may visit their museum virtually through <http://www.24hourmuseum.org.uk/> ; Australia had demonstrated the concept of virtual reunification of e-resources through *World Treasures* <http://www.nla.gov.au/worldtreasures/thml> ; New Zealand had contributed to world's digital library development through the *Greenstone* software; India, China and the United States were collaboratively working on the *Million Book Project*; and in April 2009 saw the launching of the *World Digital Library* (www.worlddigitallibrary.com), collaboratively initiated by the Library of Congress with few other international bodies.

Therefore what this research had found reflected a gap that existed between Malaysian digital library initiatives with other countries, specifically those that had been covered in the literature review. Since this research had been designed to be explorative, the digital library developments worldwide might be used as a benchmark to know where we were. These might be emulated and served as guidelines for future undertakings. Therefore the need to study the local scenario was even more felt. Thus the findings

below were discussed in tandem with the objectives of the study that had been identified earlier.

6.2 Summary of Findings from the Questionnaire

6.2.1 Research question a): What was the background information of heads of libraries?

Malaysian libraries were headed by people with a wide range of educational background, from the professional, semi professional and non-professional groups, reflecting mixed grades and qualifications, ranging from JUSA B to S17; from Master's level to Malaysian Certificate of Education or *Sijil Pelajaran Malaysia* (SPM) holders. In terms of experience, heads of libraries had been working for an average of 10.5 years, the most experience being state librarians, followed by special, public and academic libraries. Library managers must be able to foresee the future trends and anticipate the forthcoming development and progress. Preparing standards and acceptable working papers for digitization programs would be within the means of a higher managerial level. Thus the position, qualification and experiences of library heads do have some impact on the digital library development.

6.2.2 Research question b): What made up the library holdings/collections and what were the general problems faced. What library systems have been installed and the extent of online library services and digital library initiatives that had been introduced, including the provision of budget and training.

Monograph still formed the bulk of library holdings followed by serials, CD-ROMs collections, audio visual materials, posters, maps, photographs and microforms. There were nine major problems faced by Malaysian libraries. Top in the list was the lack of IT personnel, followed by lack of budget, lack of digital library initiatives and ICT training, under utilization of digital resources, renewal of online subscriptions, lack of suitable integrated library system, lack of library space and lack of IT facility. Given the above scenario, it could be easily understood why only a small percentage of the libraries had done some kind of digitization works and definitely print-based still dominated Malaysian libraries. Due to the lack of IT personnel, almost two-thirds of the libraries were dependent on their parent organizations IT Unit for technical support, followed by outsourcing and utilizing their own internal IT units. Other than those problems stated above, Malaysian libraries were blessed with good working attitude, higher demand for library resources, and good collaboration among librarians, steady vendor and good management support. And some libraries had already perceived themselves to be hybrid in nature, which actually was a good indicator from digital library perspective.

Only slightly more than half of the respondents had installed an integrated library system led by a locally produced *ILMU* (Integrated Library Management Utility). As mentioned in Chapter 1, it was unlikely that Malaysian libraries would venture into digitization program without first having library systems in place. The fact that some were still without one, would had some impact on the move towards digital library planning. The availability of IT facilities seemed to be modest where only half of the respondents did have Local Area Network and Wide Area Network was even much lower. Internet and Telnet access were not very encouraging because rightfully, every

library should have these facilities. It was quite surprising that there were still some libraries that did not have PCs and the number of PCs owned was still comparatively small.

As the data had revealed, only a very small percentage of the libraries had done some digital library initiatives. As for digital collaborative projects, again only a very small percentage of the respondents had some kinds of involvement with the National Library of Malaysia's national digitization programs. Information surrogates, subscriptions to online databases/e-journals and website developments seemed to be the three main activities of digital library initiatives, preferring private domain to public domain.

As part of the digital library initiatives, some services and operations were being provided online, though on a selective basis. Online circulation, web OPAC, websites services, online reservation and registration, online reference enquiries, and hypermedia/multimedia were on the increase. Other online services that had been provided were acquisition, selective dissemination of information services (SDI), self check machine, mobile Internet services, interlibrary loan and smart card. Online ordering was not encouraging as this needed to co-exist with suppliers, particularly local and government procurement that had yet to cater for e-payment. Subscription to online databases/e-journals had been one of the approaches adopted as a short cut to providing online services besides information surrogates and the development of websites. The subscriptions to foreign databases were more significant compared to local databases.

Newspaper cuttings, theses/dissertations and articles seemed to be the most popular choices for digitization works, followed by conference papers, proceedings,

booklets, pamphlets, leaflets, photo collections, newsletters, speeches, minutes of meetings and organizations' technical and special reports. The least were maps, manuscripts, patents and specifications. Looking at the choices of materials digitized which were mainly organizational internal publications, most probably to avoid any legal implications and it could be that the main aim of digitization was to preserve these materials as institutional memory. New media storage most preferred was compact disc, followed by PDF and hard disc. Others in a much smaller percentages were floppy disc, enterprise storage system, DVD, miniature mobile storage media and PC cards. Most of the libraries' digitization works had been done using libraries' own equipment, followed by outsourcing and the least was depending on their parent organization's IT Unit.

Websites/homepages contents development had become the main focus for preliminary online information services. Any printed information that could possibly be published online had been transformed into digital format. Almost all libraries reported to have put online the library general information to cater for user general information needs. Other major website contents were web OPAC, hypertext linkages with agencies within the same ministry, hypertext linkages to related websites, feedback and comment, access to online databases, new books list and access to e-books. The contents of websites in much less percentages were calendar of events, e-forms, book/article reviews, local contents databases, FAQ, suggestion page, e-document delivery service, community information database and location maps. The use of e-mail facilities had been tremendous as the main medium of communication with users.

The availability of budget was indeed important for the success of any digital library initiatives as proven from the literature review. As the research had found, the

percentage of libraries that had started digitization programs was very small and added by the fact that the lack of budget was also one of the problems faced. The amount of budget spent on digitization programs varied widely between RM25,000 – RM2 million, and those libraries having budget allocation within the million brackets was represented by a very small percentage.

The provision of ICT training had been minimal where many of the training were in the areas of application software and introduction to computers and World Wide Web. What needed most were training on developing and maintaining database management systems, operating system and content management. The librarians were trained both in-house and externally, but more than half were self-trained and those engaging external trainers were much lower. As for the duration of training, majority attended courses for an average of less than 1 week and definitely this was not sufficient.

6.2.3 Research question c): What were the digital libraries related problems and what kinds of digital library planning were in store?

The research had identified six main digital library related problems. These were staff shortage as digital projects had to be done with the number of the existing staff, absence of a digital library blueprint and National Information Infrastructure policy, digital library project was too expensive which could be due to budget constrain, lack of role model and problems related to Copyright Act clearance. Some of these problems such as staff shortage and digital library project were too expensive were on the same ground with the general library problems reported earlier i.e. lack of IT personnel and lack of budget. Whereas the need for a blueprint and National Information Infrastructure,

together with Copyright Act clearance were more of a policy matters. The lack of role model was a kind of reaffirmation of the need of some kind of guidance since digital library was actually new to many of the respondents.

Malaysian libraries were at certain level of digital library planning and some were still at the initial stage of planning. Their digital library planning seemed to be basic in nature, without any long term projects and there was no mention of collaborative efforts at national or international levels. Majority of the responses was in the process of going online, firstly through the installation of library systems with the intention of creating and providing more online services. Other plans were updating existing project, establishing knowledge portal, promoting the use of electronic media, improving ICT infrastructures, to acquire more e-resources, to ask for a budget increase, to improve staff IT competency through ICT training and to establish more linkages with other libraries including with the National Library of Malaysia.

6.2.4 Research question d): What were the library heads' opinions on Malaysian digital library development?

Majority of the respondents were very positive about digital library development and they felt that majority of users too were ready for new digital information technology. Only slightly more than half believed that the digital format would dominate the entire library scene. However, there were some who felt that printed materials would stay intact despite the rapid increase of online services. Even with the increase of online services but there had been no significant change of the collection

development policy since 2000, meaning there had been not much change in terms of the acquisition of library materials.

The need for a national digital library blueprint that would serve as guidelines was agreed upon by almost all of the respondents, just as they felt on the lack of role model. Majority of the respondents seemed to agree that Malaysian digital library initiatives vis-à-vis *MyLib* and *PERDANA* Project did reflect some degree of national digital library development. They also unanimously agreed that information professionals must embraced digital technology and not left everything to the computer science people. With respect to this, only slightly more than half did not feel threatened by the computer science professional. Some did feel threatened even though the percentage was small. And lastly, slightly more than half of the respondents did not agree that traditional libraries were on the brink of extinction, sending a message that books or print materials were here to stay. They could feel the wave of digital library was coming and that the traditional library set up would need to change accordingly in order to stay viable in the digital world. As such there were two schools of thought. One was optimistic about the new type of library which would be digital based, and that the old type would be replaced slowly. The other school of thought was optimistic about having both types, running concurrently side by side, thus the high percentage of the respondents preferring the hybrid type would suits better the Malaysian digital library environment.

6.2.5 Research question e): What were the perceived conditions for digital library future growth from Malaysian perspectives?

As indicated in Chapter 1, this would be done by means of qualitative data, through 1 of the total of 12 questions asked during the interview sessions. However from the previous Research question 5.2 (d) on the library heads' opinions on Malaysian digital library development, two points seemed to fall in place for the perceived conditions for digital library future growth. These were the need for blueprint that would serve as a guideline for digital library development in Malaysia and secondly that information professionals must embrace digital library technology and not just left everything to the computer science professionals. Therefore the respondents strongly perceived that these two conditions i.e. digital library blueprint and digital library training were of great importance for digital library future growth. The other perceived conditions for digital library future growth would be dealt with in the section that follows.

6.3 Summary of Findings from the Interviews

The following findings were based on the 10 emerging themes that had been grouped, thus answering the interview questions: Digital library planning; Barriers to digital library development; Lack of understanding on digital library concept; National support system; Human resource and digital library/ICT training; Collaboration; Digital library policy, legal framework and blueprint; ICT facilities and national information infrastructure; Increased usage of online services and sources; and Leadership. The perceived conditions for digital library future growth had been embedded accordingly within the ten themes discussed.

The national digital library planning had been under the prerogative of the *PERDANA* Service Division of the National Library of Malaysia, collaborating with

some of the Malaysian libraries through digital projects like *PERDANA* and *MyLib*. However the number of participating libraries in these projects was limited and that's why there had been some voices that the National Library of Malaysia should be considering in extending its digital library initiatives to cover as many libraries as possible. The availability of information on these projects was also minimal that they suggested a newsletter on Malaysian digital library initiatives be published. The National Library of Malaysia's main focus as far as planning was concerned were content development, digital services and Project Management Office. They had been doing information surrogates, digitizing some of the Malay manuscripts collections and undertaking born digital projects, including a project to digitize the National Union Catalog (<http://kik.pnm.my>), and working on the U-Library (Ubiquitous library) project in collaboration with Malaysia Communications and Multimedia Commission (MCMC).

Digital library planning at institutional level was done independently especially those not under the purview of the national digital library project. They were at the various levels of planning, mostly localized, ranging from preparing a digital library proposal to expanding the contents of their websites. Planning digital library to them simply meant covering three main areas i.e. subscription to e-journals/e-books, information surrogates and the development of websites. Newspaper cuttings and internal organizational publications were the main choice for information surrogates and various online services and operations had been introduced particularly those directly concerned with user services besides developing and enhancing the web site contents and services.

Digital library planners require the necessary skills and knowledge but it seemed that planning had been hindered by the lack of guidance and leadership, budget, training, staffing and technical knowhow, that to some extent they had to depend on the parents' organization's IT unit for technical support. They had some reservations about turning to the National Library of Malaysia for help because they thought that even the National Library of Malaysia was having problems of their own. Thus they had been learning from foreign digital library websites and many had been self taught. That's why they felt the need for a central agency or particularly relating to the setting up of an independent body that would act as a national digital referral center, to guide them in the planning and execution stages and to provide the much needed leadership role and insisted that libraries should be headed by professional librarians to undertake proper planning of digital library initiatives.

The basic, independent and localized digital library planning could be due to the existence of several **barriers to digital library development**. Eight barriers had been expressed and a few more problems had been expressed too under different themes which would be elaborated as the discussions proceed. These barriers were the different level of progress Malaysian libraries were in, lack of background knowledge and exposure about digital library initiatives, lack of technical expertise and budget/funding, human resource and staffing related problems including digital library training, over dependence on the National Library of Malaysia for digitization works and the absence of a central/leading agency that could provide digital library planning in a coherent whole.

Some of the other digital library key problems that had also been mentioned were lack of user license, monitoring the utilization of e-resources, the promotion of online services and a segmented library management system between state libraries. Even the national digital library project *PERDANA* also did face problems such as lack of coordination on the part of the National Library of Malaysia, lack of staff and dedicated team, budget/funding and technical expertise. It could be seen that some of the barriers were very much related to human resource in terms of expertise and training and of the need for some kinds of guidance through a central agency and monetary support. The existence of these barriers made it difficult to streamline digital library development at the national level.

As a result of lack of background knowledge and exposure about digital library initiatives mentioned earlier, there was a **lack of understanding on digital library concepts** among the respondents since digital library environment was a new phenomenon in Malaysia. As such Malaysian librarians had not given much thought for example on the matters concerning ownership, resource sharing and public domain. They were in need of guidance on how to go about developing digital library initiatives especially the technical knowhow. Due to the limited knowledge and expertise and unfamiliarity with some of the digital library jargons, their main concern with respect to digital library initiatives was more focused to provide as much online services as possible that the subscriptions to e-journals had been quite extensive, coupled with information surrogates and the development of websites.

There was a need to consolidate the necessary basic understanding of the concept of digital library development, probably through exposures and ICT training, to

make them more prepared for the digital world. The fact that many of them had been self taught indicated that they were serious about wanting to learn more about library digitization works.

The development of Malaysian digital library system depended not only on the libraries but also the mobilization of the entire community as a whole. The entire nation would need to be supportive in their respective fields so that the development would be nationwide and triggered concurrently across the country. The following items classified under the **national support system** which had been suggested by the respondents could also be considered as the perceived conditions for digital library future growth. Firstly was the need to intensify public and national awareness on the importance of digital library development. The masses need to be informed of the Malaysian digital library initiatives more aggressively in order to create the demand and to gain national support. Other components of the national support system of equally important that had been voiced out were the development of digital library research centers, the role of publishers in adopting e-publishing, the availability of external support in term of support grant from private sector and the introduction of the subject of computers at the early stage through the utilization of the schools' resource centers, in order to spur the development of IT savvy community in the long run. The need to have a leading agency in providing a coherent national digital library planning and leadership was also expressed to consolidate the entire national support system. They were also hoping for the government to play a more exertive role in digital library development and at the same time urging for an increase in budget allocation for digital projects at national and international levels.

The important aspects of **human resource and digital library / ICT training** had also been emphasized as one of the perceived conditions for digital library future growth. It was unanimously agreed that Malaysian libraries should be headed by librarians from the information professional group and nothing less. It had been high time that this be given serious consideration in time where planning for digital library initiatives was becoming more important than ever. In addition, the need and importance of ICT training, to overcome staff shortage and technical expertise, were also emphasized since digitization was something new to Malaysian libraries. So they wanted to get more exposures and attend the relevant courses in digital library field, to get the necessary skills and knowledge and to improve their technical knowhow, so that they would be less dependent on the computer science experts.

The lack of **collaboration** in pursuing national digital library initiatives especially among the national information agencies (national library, archive and museum) was seen as a problem as well as a barrier to digital library development. The absence of this kind of collaboration could slow down a truly national development growth. They expected the National Library of Malaysia to establish effective collaborative efforts by working together with the Malaysian National Archive and the National Museum. The platform for collaboration could be easily achievable through the formation of a leading agency for digital library initiatives where all these agencies could be administratively brought under one umbrella. Besides solving the problem of leadership, it also helped reduced the over dependence on the National Library of Malaysia for digital library initiatives.

Most of Malaysian libraries had been planning and doing digital library projects independently as they were no platform for them to collaborate except those under the *PERDANA* or *MyLib* programs spearheaded by the National Library of Malaysia. They wanted to see more digital library collaborations not only among the libraries but specifically between the three national information agencies mentioned above so that big national projects could go beyond the local boundary. They were also hoping for more collaborative efforts among all information professional in order to achieve a more open environment especially in terms of developing local digital contents and the willingness to truly share digital resources among all libraries.

In addition to the above suggestions, they were also suggesting that **digital library policy, legal framework and blueprint** should be first documented and were also perceived as one of the conditions for digital library future growth. The main purpose was to serve as a national referral document, giving guidelines, reference, foundation and directions with the objectives to provide a more coherent, collaborative and unified approach towards digitization works, incorporating policies on acquisition, circulation, reference service, Internet access, development of local contents, document delivery service, SDI, selection of materials for digitization, born digital materials, information surrogates and domain types.

The revision of the *National Policy on Library and Information Services*, National Library of Malaysia had also been proposed to specifically spell out digital library developmental aspects, including policy on digital library information and services, digital library policy, the adoption of digital library standards and to include establishing a legal framework for digital library development. It seemed that digital

library policy, legal framework and blueprint were of great importance to ensure consistency in digital library practice.

ICT facilities and national information infrastructure had both been described partially as problems as well as one of the perceived conditions for digital library future growth. The fact that there were some libraries without library systems and PCs was not a good indicator for digital library development. It seemed that digital library planning would automatically be next in line after the installation of library system. In fact it was due to the lack of ICT facilities and staff shortage, that there was a tendency to outsource some of the digitization works and also the high dependency on public libraries and Internet cafes for Internet access.

The establishment of IT Unit or Cyber Unit or Internet Corner or Virtual Library or Digital Library Unit was rampant, headed by either IT personnel or a librarian. The unit housed the library's PCs and was the center of all online services. Other ICT facilities available were Local Area Network, Wide Area Network, Intranet and Internet facilities, self checkout machine, digital thumb print and scanners. They were hoping that ICT and digital technology implementation, national information infrastructure, telecommunication policy, the provision and expansion of broadband facilities be given serious considerations and that Internet and Intranet costs for libraries be differentiated from commercial use.

National information infrastructure was in fact crucial for the development of digital library in Malaysia, focusing on the specific technical requirements necessary for networking and World Wide Web based library functions and services. Therefore national information infrastructure must be in placed especially broadband to facilitate

Internet access and to help boost digital library development as the quantitative finding had also revealed that 64% identified it as one of the problems faced.

Digital library and its derivative digital information had resulted in the **increased usage of online services and sources**. Online services and sources were expanding among IT savvy library users and there had been high expectations for more sophisticated library online services and the use of e-mail facilities had been tremendous. An online service through interactive web sites included digital reference, hypertext linkages, online reference tools and websites, e-journals and anything that could have been digitized (such as library newsletters, new book arrivals, booking of library facilities and announcements), paying little attention to the questions of ownership against subscriptions and collection development in view of the rise of digital information. Even though there had been an increased usage of online services and sources, but not for online acquisition due to some problems with government procurement and e-payment systems.

With the increased usage of online services and sources, information dissemination had also taken on a new course where the use of home pages / websites, knowledge portals and e-mail communications were greatly exploited, expanding and widening greatly libraries' user based, to the effect that the use of library printed brochures had declined considerably. Libraries were also creating online digital sources primarily undertaking information surrogating i.e. digitizing mainly organizations' own internal publications to avoid any legal implications. Other than information surrogating there had also been some small digitization projects that dealt directly with born digital materials.

The proliferation of online services and sources was a manifestation of the readiness of Malaysian libraries in adopting digital library concepts. Almost all the librarians interviewed were very enthusiastic and optimistic about digital library services, really in support of such developments and the introduction of digital based library services were inevitable.

The lack of central **leadership** had resulted in the planning of digital library initiatives of Malaysian libraries including at state level, being done almost independently, though at national level, it had been the prerogatives of the National Library of Malaysia. The absence of legislative power to control all types of libraries in Malaysia had resulted in the segmentation of library management system that makes collaboration difficult. The problem of leadership could have been due to the severe shortage of technical expertise as it was learned that even the National Library of Malaysia was having shortage of IT personnel. While accepting *PERDANA* Project as the national digital library program, they had expressed high hopes for the National Library of Malaysia to provide a more coherent leadership, be more focused, to lead and coordinate, consolidate, and monitoring all national digital library programs, with the introduction of a more comprehensive and playing a bigger role in initiating digital library initiatives both locally and internationally.

To help overcome the problem of leadership, collaboration and technical expertise, the respondents agreed that everyone in the information related organizations, including libraries, archives, museums and even publishers had a role to play to further support digital library development. The importance of ICT training had again been emphasized to gain technological knowhow, to enable a more

comprehensive digital library planning in the future. The government too should lead by playing a more exertive role and should be able to contribute more towards digital library development by making available more budgets, training facilities, expertise, and incorporating all these into the national economic and social master plans. The government should also be looking into the establishment of a leading agency/an independent body that would help solved the problems of leadership, collaboration and expertise. Thirty two of the respondents (89%) hinted more than once that there was such an urgent need that a committee in the form of a leading agency be created to focus solely into the matter of national digital library development.

The seriousness of the leadership problem could also be gauged from the kinds of digital library planning that they had in store. Most of these planning were very localized and basic in nature. There was even a suggestion that the *PERDANA* Service Division of the National Library of Malaysia be placed under the jurisdiction of the Malaysian Communications and Multimedia Commission (MCMC) so that it would be directly be part of the component of the National Broadband Plan of the MCMC. These consolidated the fact that Malaysian libraries were in need of a strong guidance and leadership to take them further into greater height in digital library development.

The perceived conditions for digital library future growth were apparently suggested and proposed throughout the entire interview process as the respondents were responding and answering the structured interview questions. Based on the collected data from both methods, the perceived conditions for digital library future growth were: To increase public and national awareness on digital library development; Publication of a newsletter on Digital Library Initiatives; *PERDANA* Service Division be placed

under the jurisdiction of MCMC; Establishment of an independent body on digital library development; Blueprint on digital library; Budget increase; Human resource and ICT training; Collaboration; National digital library policy and services; Copyright Act and IPR; Introduction of digital library concept through Schools' Resource Centers (PSS); Digital library research center; and lastly Publishers and e-publishing. These would form the basis for recommendations and would be elaborated in section 5.5.

6.4 Implications of the Study

The findings from this research brought the notion that digital library development in Malaysia was indeed migrating from the electronic phase but the development but was still behind compared to those digital library initiatives explored in the literature review. While foreign digital library initiatives were mostly international in nature, done collaboratively, Malaysian digital library initiatives were very much localized and done independently.

The comparison might be unfair but that was the benchmark that could be used. The literature review on digital library in Chapter 2 reflected attempts on taking digital library initiatives much higher than just information surrogates and this study purposely included some of the well known digital library projects with the intention for us to learn and emulate. The gap could be seen from comparisons done based from three factors fundamental to digital library development, as shown in Table 5.1 below.

Table 6.1 COMPARATIVE ELEMENTS BETWEEN MALAYSIAN AND FOREIGN DIGITAL LIBRARY INITIATIVES BASED ON THREE (3) FACTORS

FACTORS	FOREIGN Digital Library Initiatives	MALAYSIAN Digital Library Initiatives
Digital Library Research	Digital preservation Multi Lingual Digital Library Interoperability Collaborative digital library working environment Multi cultural digital library environment Multidisciplinary body of expertise Digital objects Repositories Data mining Digital content User interface Search engine Metadata Digital library framework Virtual access	Digital library building concept User needs Digital reference service Usage of online services Digital library in schools Effectiveness of online services
Budget	US DLI1 and 2 US\$ 68 million California DL US\$ 9 million Alabama Virtual library US\$ 53 million Harvard University Library US\$ 12 million US NARA Electronic Archive US\$ 308 million South Carolina PL US\$ 3 million Washington and Jefferson Presidential papers online US\$ 1 million MIT Library <i>Dspace</i> US\$ 1.8 million LC's WDL US\$ 3 million NLA DLIs A\$ 10 million Australian ARROW 1 & 2 A\$ 8.16 million Australian FRODO project A\$ 22 million China-US million Book Project US\$ 28.5 million UK Elib Program 1994 20 million UK Elib Program 1997 4.12 million 24hrmuseumUK 70,000 Pound Sterling Aberdeen Geo-referenced DL 1.68 million Vidyanidhi DL Rs75 lakhs CASPAR (EU's Integrated DLIs) 16 million EURO Canada's DL Task Force C\$ 2.5 million NZNL DLIs \$ 3 million NZNL National Digital Heritage Archive \$24 million Taiwan's National Digital Archive 5 year program NT 2.52 billion Singapore's 1 Project S\$ 300 million	IIDL (NLM) RM 20 million HUKM Medical DL RM 2 million UKM Main Library RM 10 million KL Memorial Library RM 57,000 from ESSO Federal Government RM 13.5 million to public libraries for facilities

Government Sponsors/ Private Funding	DARPA NASA NLM NSF IMLS LC NEH FBI AT & T REUTERS Gates Learning Foundation HP Ford Foundation Google Sun Microsystems Ministry of Education, China Australian Research Council Australian Commonwealth Dept of Education, Science and Training Australian Research Information Infrastructure Committee NSW Treasury Department for Culture, Media and Sports, UK MLA Council Department for Education and Science Art Council JISC Scottish Higher Education Funding Council Wolfson Foundation New Opportunities Fund Heritage Canada Partnership Program Canadian Heritage	HP OIC Microsoft Malaysia Lim Goh Tong Foundation Esso DAGS (Demonstrator Application Grant Scheme) , Ministry of Science, Technology and Environment.

From the above table, few conclusions could be derived. Foreign digital library initiatives had done a far more advance research, far beyond the kind of research that Malaysian libraries were doing. Their researches were at a much advance stage, mainly post digitization and technical in nature as compared to user centered in Malaysia. This factor somehow reflected the degree of digital library initiatives between Malaysia and the foreign countries. It could also be seen that the availability of budget and financial support from the governments and private funding were of extreme important for the

development of digital libraries. Both the government and the private sectors played an equally important role in making the transformation from print to digital libraries possible, an area that was extremely lacking in Malaysia. The above three factors may seemed basic but they had big implications as far as development of digital libraries were concerned. Therefore digital library research, the availability of budget and private sponsorship were some of the factors for digital library growth. The lack of public awareness that had also been voiced out had to be addressed so that the topic would gain momentum, aroused public interests and made it as a national agenda to attract the involvement of the private sectors.

As a result of the above, the next table (Table 6.2) below showed some key findings on Malaysian digital library initiatives on another three factors that were crucial to this study. These findings were from the questionnaire and also from the interview sessions. The research had unfolded the degree of Malaysian library automation that somehow reflected their level of readiness to next undertake digital library initiatives. It also shows the problems faced and the factors to accelerate its future growth. As had been mentioned earlier, the perceived conditions for digital library future growth had been solicited largely through the interview sessions.

As could be observed, there had been some convergence of findings from the two sources on all the three factors, thus consolidate the findings.

Table 6.2 MALAYSIAN DIGITAL LIBRARY INITIATIVES: SUMMARY OF KEY FINDINGS ON

THREE FACTORS

FACTORS	QUANTITATIVE DATA	QUALITATIVE DATA	INTERVIEW WITH THE DIRECTOR OF <i>PERDANA</i> SERVICE DIVISION, NLM
Extent of Library Automation and Digital Library Initiatives	<p>Online services: Circulation, Web OPAC, website services, reservation, registration, reference, hypermedia, acquisition, SDI, self check machine, mobile internet service, Inter Library Loan, smart card.</p> <p>Subscription to data bases</p> <p>Only 28% have done digitization Works</p> <p>Materials digitized: Newspaper cuttings, articles, books, thesis & dissertations, conference papers, booklets/pamphlets/leaflets, photo collection, newsletters, speeches, minutes of meetings, special reports, circulars, technical reports, archival materials, maps, patents & specifications.</p> <p>Preferred hybrid digital library</p>	<p>Online services: Homepages/websites services reference, reservation, registration, SDI, e-mail, circulation, self check machine,</p> <p>Subscription to data bases</p> <p>Materials digitized: Annual report, Organizational publications, press cuttings, special collections (specific subject), thesis & dissertation, past year examination questions</p> <p>Preferred hybrid digital library</p>	<p>600,000 pages of digital Information</p> <p>35 born digital projects</p> <p>Commissioned a private vendor to develop a search engine to be used as a gateway to coordinate digital contents</p> <p>Preferred hybrid digital library</p>
Problems Faced	<p>Lack of IT personnel Lack of budget Lack of DLIs Lack of IT training Under utilization of digital resources Renewal subscription of online data bases Lack of suitable integrated lib system Lack of library space Staff shortage Absence of a blueprint Absence of a National Information Infrastructure (NII) Too expensive Lack of role model Copyright Act Clearance</p>	<p>Staffing Lack of technical expertise Leadership Insufficient budget Lack of background knowledge Lack of training Over dependent on PNM Attitude Collaboration Time factor Monitoring the utilization of e-journals Promotion of online Services Digital ownership Expensive user license</p>	<p>Staffing Expertise Leadership Training/courses on digital library Lack of knowledge on digital library Funding ICT infrastructure Public awareness Lack of coordination Absence of a dedicated team Collaboration/cooperation Segmented library management system (between state libraries)</p>

Perceived Conditions for Digital Library Future Growth	Digital library Blueprint Digital library training	The establishment of an independent body to streamline digital library planning Blueprint National information infrastructure Budget increase Human resource & ICT training for IPs Collaboration Digital library policy Copyright act & intellectual property right Education system The establishment of digital library research center Publishers and e-publishing	Digital content development Technology implementation Human resource management Digital library process management and re-alignment Strategic partners -MCMC Legal framework for digital library development Citizens' awareness Budget increase Broadband facility ICT infrastructure ICT training Support from policy makers Standard governance Formulation of digital library policy Adoption of digital library standards
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The above findings were an eye opener for Malaysian libraries. The three factors of comparison had led to almost a similar pattern in terms of the extent of library automation and digital library initiatives, problems faced and the perceived conditions for digital library future growth. The extent of digital library initiatives had showed some elements of library automation as the head start and at the same time incorporating some basic digital library services particularly throughout the web sites/homepages services and through the subscriptions of online databases for e-journals and e-books. The main focus seemed to be digitizing internal organizations publications, most probably to avoid Copyright Act. Their readiness to become digital was substantiated by the fact that they realized the uphill tasks and the level of progress they were in and thus the preference for the hybrid type.

Whereas the problems faced were intertwined between the more library general problems and those that were digital library related problems. Those basic problems could be assumed had been circling Malaysian libraries for quite some time and those problems related to digital library must have been encountered when they were planning for such an endeavor. Again this was a sign that they were ready to venture into the digital world if not besieged by these so called digital inadequacies. At least they were in the know of such prerequisites. It seemed that average Malaysian libraries had already embraced library automation works and that they were ready to move forward venturing into digital library environment if not for the scores of problems mentioned above.

As for the perceived conditions for digital library future growth, central leadership in digital library initiatives, exposures, the establishments of a digital library independent body and research center, blueprint, collaboration, budget increase, publishers and e-publishing, digital content development, legal framework for digital library development, citizens' awareness, broadband facility and ICT infrastructure, ICT training, support from policy makers, standard governance, formulation of digital library policy and adoption of digital library standards were much needed. Voices from the library community had been heard and had generated the much needed information to fill in the vacuum on Malaysian digital library literature especially on the problems faced and the perceived conditions for digital library future growth.

6.5 Recommendations

6.5.1 Introduction

Digital library development requires every sector – the government and non government bodies, and the community to collaborate in promoting its creation and usage. Basic infrastructure for connectivity and interoperability, including funding, human resource, training, digital library policies and leadership must be in place to support more digitization projects. Digital library research and extensive knowledge and technical expertise were important to help coordinate and consolidate efforts toward the planning, organizing, establishing, creating and servicing of digital library development for the country.

The possibility of extending digital library programs to as many libraries as possible should be the National Library of Malaysia's main agenda, strengthening its national digital library planning in terms of human resource management, citizens' awareness, digital library process management and re-alignment, legal framework for digital library development, standard governance, formulation of digital library policies and adoption of digital library standards. Other contributing factors of similar importance were budget, libraries participation and collaboration of the national information agencies, more digital library programs, ICT training, exposures, the creation of a digital library blueprint and the consolidation of the national information infrastructure.

The promotion on the use of digital resources should be emphasized to tackle the problem of under utilization of digital resources. Libraries' newspapers collections had been extensively digitized but Malaysian libraries should go beyond this because we had in abundance many historical and cultural artifacts that could be digitized. While the

provision of fast online services through the subscription of online databases was welcomed but in the long run Malaysian libraries should be looking into the digitization and preservation of the local contents, available from the rich Malaysian historical and cultural heritage.

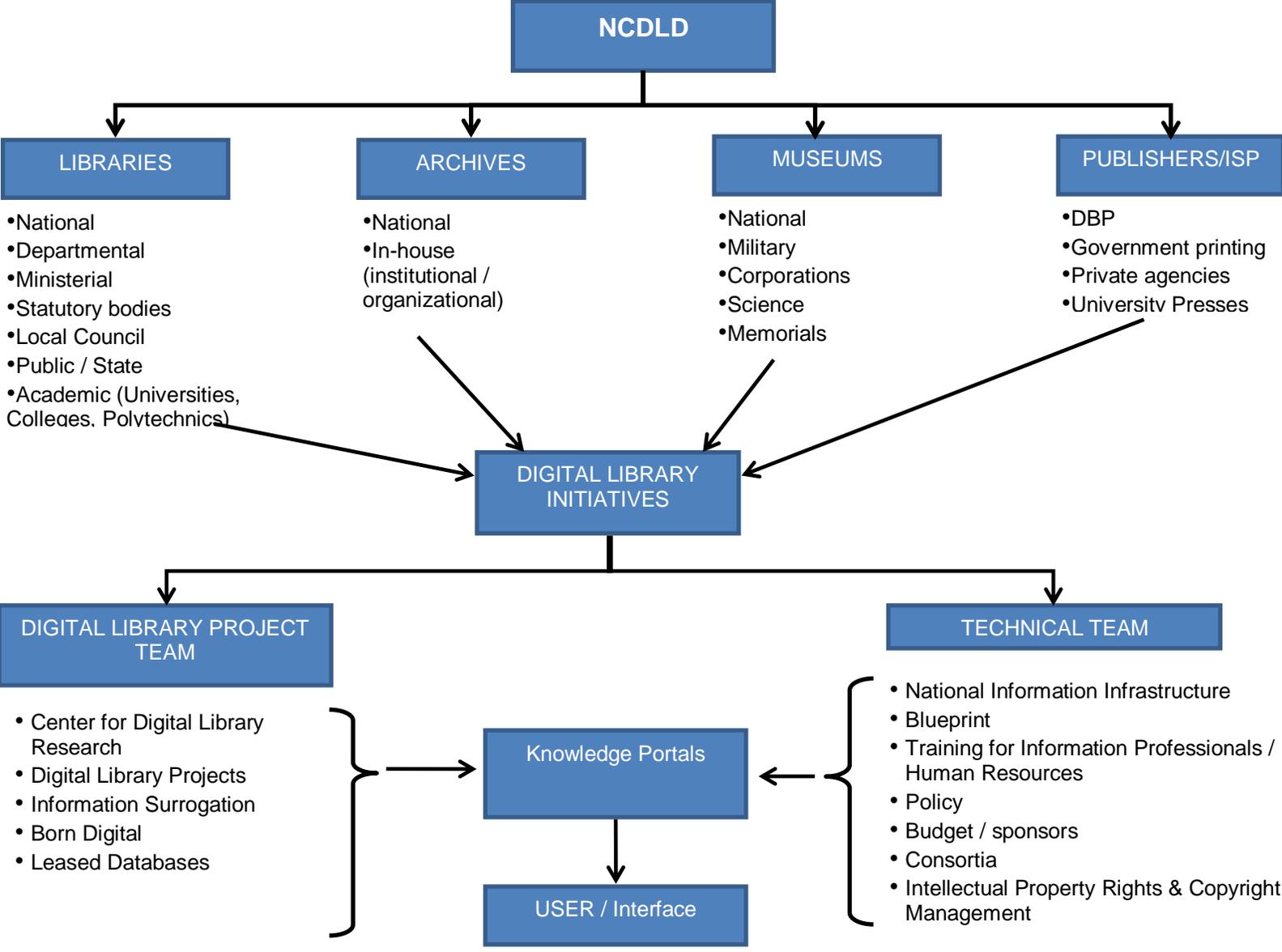
The digital library development worldwide had somehow enforced Malaysian librarians to change their course of actions into becoming more receptive to the provision of online and digital services. Libraries were no longer playing the role as intermediaries as they were no longer the one stop information center that they used to be. The disintermediation of function must be dealt with seriously in the context of digital library perspective; otherwise libraries position would be at stake. Malaysian libraries had already a head start with library automation and had started some small digitization projects. They were ready to some extent and with proper impetus the opportunity was there for them to move forward, migrating in full force from electronic to digital. Therefore based on the collected survey data, and consolidated by the qualitative data particularly on the perceived conditions for digital library future growth, where there had been some convergence of findings, therefore these were the **recommendations proposed:**

6.5.2 The Formation of an Independent Body or Central Agency for National Digital Library Planning.

For the purpose of discussions, the independent body would be named The National Commission on Digital Library Development (NCDLD). The framework was proposed and created based on the elements that had been put forward, suggested and

thought of by the interviewees (32 respondents or 89%) on the basis of functionalities, relevancy, expertise, collaboration and cooperation that could contribute to the whole spectrum of digital library development in Malaysia. All the points that had been voiced out had been collapsed into the proposed digital library framework for Malaysian libraries to help tackled the problem of collaboration, of the need to enable a more central digital library effort, focused and coordinated planning be developed, based on strategic alliance with information related agencies and other organizations as shown in Figure 6.1 below.

The proposed NCDLD would bring the related information organizations under one roof to spearhead and organize digital library initiatives through the formation of two separate dedicated digital library teams, handling digital library projects and technical aspects. The division of teams with clear functions of activities would be streamlined in the production of knowledge portals. The National Library Malaysia had been doing this to some extent but due to some constraints such as human resource, expertise, budget and time factor as it was also involved in the provision of public library services, so the existence of a central body would help accelerate the digital library development at a much faster and in a proper, guided and planned manner, in a much wider scale. The outcome of the proposed framework that had resulted from the discussions with the interviewees and had gone through the process of member checking however had not been validated. It remains as the proposed framework that carries the whole ideas in a diagrammatic form where all the suggestions and ideas that they thought could accelerate digital library development had been collapsed and put together, and presented as a coherent whole.



6.5.3 Blueprint for Digital Library

The absence of a digital library blueprint (71%) and of the need of a blueprint from opinions of heads of libraries (95%) and similarly, the creation of a digital library blueprint was proposed by 81% or 29 respondents of the interviewees, therefore it had been recommended that a blueprint for digital library should be created that would serve as a common guideline for libraries that planned to digitize. It might contain the following propositions:

- a) The definition and elements of a digital library by Malaysian standards.
- b) The procedures for information surrogates, including some of the best practices in terms of materials selection, methods of surrogating, selection of storage media and a choice between public and private domain.
- c) The creation of local digital contents if they wish to qualify under the categorization of a digital library.
- d) The availability and range of online services that is operational.
- e) Elements for success such as management support, technical expertise, collaboration, global access, resource sharing and budget requirement.

6.5.4 National Information Infrastructure (NII)

The absence of NII (64%) had been identified as one of the problems faced and similarly this had also been proposed by 28 interviewees or 78%, therefore it had been recommended that the creation of a national information infrastructure be given a priority, emphasizing on the provision of broadband facility. This factor should also be able to help solve the problems of ICT infrastructure of LAN (48%), Intranet (41%),

Internet (22%), WAN (22%), Telnet (12%), Extranet (6%), and the number of PCs owned whereby only 5% had more than 100PCs.

6.5.5 Budget Increase

The lack of budget (63%), digitization works were too expensive (60%) and the renewal subscriptions of online databases (56%) had been identified as the problems faced by Malaysian libraries. For digitization budget, 56% had less than RM100, 000 and only 5% had more than RM 2million. In the digital library planning, 7% had planned to ask for a budget increase. Based on the above and similarly as proposed by 28 respondents or 78%, therefore it had been recommended that there should be a budget increase to help facilitate digitization works and to enable other related factors/conditions for future growth be implemented as well such as the establishment of a digital library research center, training of professional librarians and the purchase of scanners and any other hardware and software that would be needed. The provision of budget for digitization works should be in tandem with digital library planning, acquisition of suitable infrastructure, the provision of online services and operations and also budget for maintenance purposes.

6.5.6 Human Resource and ICT Training for Professional Librarians

Human resource management and leadership for digital libraries were indeed perceived as important conditions for future growth. Lack of IT personnel 64%, staff shortage 74%, lack of digital library initiatives 60%, wide variations of library heads from JUSA B to S27, 56% were dependent on IT units of parents organization for

technical support and the absence of a dedicated team were not good indicators. In addition, training was also scarce whereby only 42% had in house and external trainers and 70% had training for less than 1 week. On top of these, threat by computer people 40% and that librarian must embrace ICT 96% and similarly as proposed by 25 respondents or 69%, therefore it had been recommended that libraries should be headed by the professional librarians and ICT training for the professional librarians be intensified. Human resource development through proper training had been perceived as important to support digital library technology implementation.

6.5.7 Collaboration: Libraries, archives and museum

The development of digital libraries saw the need for collaboration among information centers becoming more important than ever. This had been one of the features of digital library initiatives to provide the platform for resource sharing and virtual reunification of digital resources as exemplified in the west. In Malaysia this was severely lacking. As a result only 11% was involved with the National Library of Malaysia' national digital library initiatives. Similarly only 29% had done digitization works, mostly independently and in the digital library planning, 4% planned to establish more linkages and cooperation. This had also been proposed as one of the perceived conditions for digital library future growth by 22 respondents or 61% of the interviewees. Therefore collaboration in digital library initiatives, particularly among the national information agencies vis-à-vis the National Library of Malaysia, the National Archive of Malaysia and the National Museum of Malaysia be given serious consideration and had been strongly recommended.

6.5.8 National Digital Library Policy and Services

Digital library policy and services was as important as the creation of a digital library blueprint as both were to be used as a form of guidance to streamline all activities that relates to digital libraries. There should be digital library policy on acquisition, born digital materials, information surrogates, reference service, domain types and anything that would serve as national standard guidelines. As an example there had been no change in the collection development policy (70%) and only 12% flashed the digitized materials onto public domain, 54% flashed selected materials only and 33% did not. If only there was a policy regarding this matter, then resource sharing would remain minimal in Malaysian digital libraries perspective. Therefore based on the above and as proposed by 22 respondents or 61%, it had been recommended that the formulation of a national digital library policy and services be drafted to supplement the blueprint on digital library proposed earlier.

6.5.9 Copyright and Intellectual Property Right

Malaysian digitization efforts were mainly through information surrogates and in terms of materials digitized, they were most internal organizational publications that did not require clearance of the copyright act. It could be seen that newspaper cuttings was the most widely digitized material, followed by theses/dissertations, books, articles, conference papers, proceedings, booklets, photo collections, newsletters, speeches, minutes of meeting, special reports, circulars, occasional papers, technical reports and archival materials. Copyright act clearance (51%) had been identified as one of the problems faced and the fact that only 29% had done digitization works could possibly

partly due to this problem. Therefore, based on the above and as proposed by 21 respondents or 58% of the interviewees, it had been recommended that legal framework for digital library development including the revision and amendments to the copyright act be done to ease digitization works and to include the legal deposit of born digital materials.

6.5.10 Introduction of e-learning at Early Stage

Digital resources of the digital libraries would be fully utilized by IT savvy communities. As such it had been proposed that for the purpose of long term planning and in capitalizing the fact that the government had introduced Smart School Concept under the Multimedia Super Corridor program, so it was about the introduction of e-learning at early age and utilizing the schools' resource centers to the fullest. Twenty respondents or 56% proposed this point as one of the perceived conditions for digital library future growth. Therefore it had been recommended that e-learning should start from primary school to help consolidate digital library awareness and demand in the long run.

6.5.11 Establishment of a Digital Library Research Center

A senior librarian from the National Library of Malaysia made a comment that no one was championing the digital library development in Malaysia. Coupled with the lack of IT personnel (64%) and lack of digital library initiatives (60%), and as proposed by 19 respondents or 53%, it had been therefore recommended that a digital library

research center be established within any organizations (preferably a university offering a Library Science course) that possess the necessary technical expertise. This was crucial because a research center could bring a pool of expertise and conduct research that might see the production of many digital library initiatives or prototypes or digital library model, to help boost digital library development.

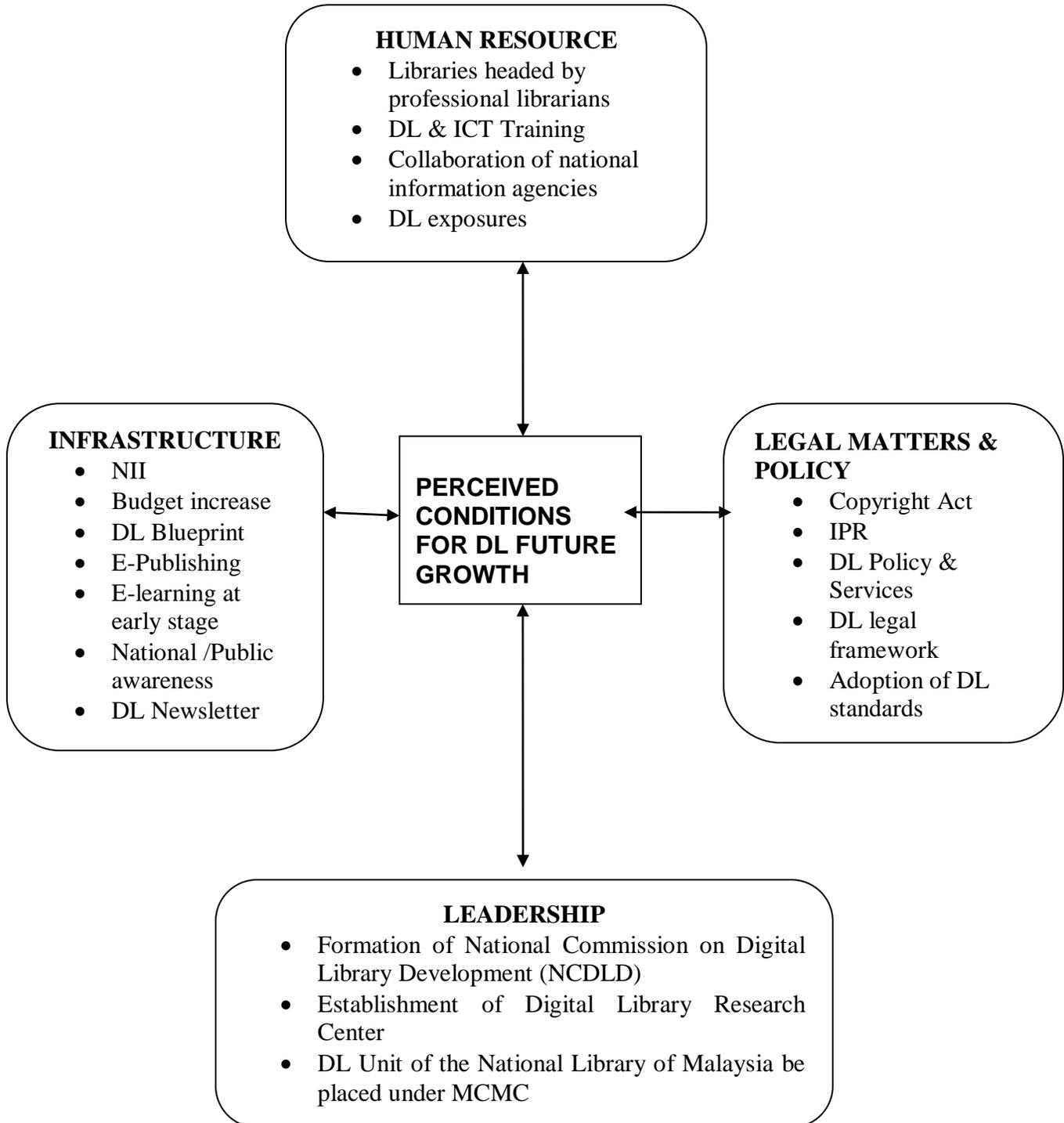
6.5.12 Publishers and e-publishing

E-publishing had been synonymous with e-books and e-journals, the two important components of digital libraries. The presence of these two elements had been associated with libraries' most popular online services and had resulted in the increase of online subscription of commercial databases to the extent that libraries now provide access to materials that they do not own. Digital materials form the basis for digital library services where universal and remote access had been fundamental to virtual service. Based on the above factors and as proposed by 17 respondents or 47%, it had been therefore recommended that Malaysian publishers should consider seriously adopting e-publishing to support and spearhead further digital library development in Malaysia.

To conclude, the above recommendations were proposed based on the background scenario of Malaysian digital library developments, plus the perceived conditions for future growth that had been suggested by the respondents during the interview sessions. Please refer to Figure 5.2 below for the draft model of the recommendations.

With the right incentives and directions, the potential was there for Malaysian libraries to move forward from electronic to digital libraries. The transformation that they had undergone showed that they were ready to some extent. The field work and the interview sessions had enabled the researcher to see and understand better the status of the selected libraries at the ground level. Talking to the library personnel in charge had consolidated the researcher's perception as to the actual development and problems that these libraries were facing in their attempts to bring changes to the Malaysian library scenario. They were positive about digital library prospects. Given the right assistance, input and impetus, Malaysian libraries might achieve the same directions of digital library development as their western counterparts.

Figure 6.2: Draft Model of Recommendations



6.6 Limitations of the Study

The researcher realized that the topic on digital library development in Malaysia was still new (2004), that libraries were still experimenting at the idea and was doing small scale digitization works mainly pertaining to information surrogates of internal organizational publications and subscribing to e-resources, particularly e-journals and developing their websites/homepages where online and digital services were mostly rendered. But looking at the world's digital library trends and the enormous digital library projects that were taking shape in the west, the researcher strongly felt that there was a need to know where we stood despite the strings of limitations that awaited the research.

The first limitation was the sample for this study. *Directory of Libraries in Malaysia (2002)*. Kuala Lumpur: National Library of Malaysia listed a total of 1353 libraries but only 354 libraries were furnished with addresses and official names of library heads. So questionnaires were sent to these 354 libraries only, irrespective of types. Upon checking with the Research Division of the National Library of Malaysia that was responsible in the compilation of that directory, they had published whatever information that was supplied to them by their respondents. It would be difficult to send questionnaires without the libraries' addresses. The researcher was left with no choice and would have to use it since this was the only official directory available from an authoritative body. The researcher had no control over the respondents in terms of representativeness by library types.

At this point of time, Malaysian libraries were just about to embark on digital library initiatives and with minimum digital library knowledge, many were still

prospecting about the installation of library systems before really turning their attention to digitization. Circled with the scores of library problems identified in the research, digital library was not something that would generate a lot of responses or feedbacks or discussions. They were still on the lookout and contemplating the next move and they were to some extent depending on the National Library of Malaysia for inclusion in the national digital library projects, especially those libraries under the Common User Scheme. For other libraries with some little extra budget and with some little expertise, they had started venturing slowly into digitization works, information surrogates, subscribing to e-journals and developing extensively their websites or homepages. These were some of the information that the researcher had gathered during the preliminary fieldwork when the research had just began. These had somehow influenced the development of the questionnaire and research framework, limiting the coverage on digital library initiatives.

The fieldwork had enabled the researcher to see the actual level of progress with respect to digital library initiatives and their readiness to go for it. It was gathered that they were still linking digital library initiatives to library automation and believed that digital library initiatives would come automatically after library automation. That was partly the reason why the researcher had to include some aspects of library automation in the research. Therefore the research might not reflect the actual digital library development but rather their readiness to move one step ahead.

As far as Malaysia was concerned, there had not been any study at national level on such a topic. There had not been much information even on the national digital library projects of *PERDANA* or *MyLib*. The review paper of *PERDANA* was also not

made public. Published literature on digital library initiatives and digitization projects in Malaysia were hard to come by. Most of the published digital library research found was on a more specific area/topic such as digital reference, usage of internet resources in libraries, electronic information in schools and those research that were more of technical in nature relating to digital architecture, systems design and interoperability, information retrieval system and digital repositories. Therefore the literature review was not able to capture as much on the topic at hand from local sources but alternatively had explored the traits and developments from western sources that could well be the contributing factors for world digital library development. Thus there was a high degree of reliance on primary data, specifically those gathered through the interview sessions.

Having read the many published literature on foreign digital library initiatives in the United States, United Kingdom, India and even China, and the lack of locally published literature, the researcher could conclude that Malaysia had a lot more to catch up. There was a wide gap and digital library in Malaysia was yet to gain full momentum. The only exposure that they had were those from the National Library of Malaysia and through own personal readings, surfing and networking. Foreign digital library literatures were discussing about post digitization era. They had started many digital initiatives, so the next step they were talking about multi-lingual digital library (MLDL), open repository concept, integration of library e-resources, metadata, handle system, interoperability, and virtual unification of resources and digital preservation. In most cases the process of digitization was becoming secondary. As a result, in the process of

formulating the questionnaire and the interview questions, the researcher would have to be cautious, that the questions asked would not be of too high a content.

The literature review on Malaysian digital library initiatives was mostly done from checking and reading the websites of the respective organizations. The researcher could see a gap in digital library initiatives between Malaysia and some of the countries explored. That was the reason why some of the literature reviews in Chapter 2 had been explorative and descriptive in nature because the researcher was trying to expose some of the pushing factors of the foreign digital library initiatives and factors/conditions for their growth.

For the interview sessions, it was decided that the same respondents that had received the questionnaires for the quantitative survey would be used again for the qualitative method because they were already in the know. But preferences would be given to those in the Klang Valley areas specifically Kuala Lumpur, except for the state libraries. In the end 38 respondents were managed to be interviewed after several cancellations of schedules, dates and times. Even though prior appointments were made but due to unforeseen circumstances, many re-scheduling and re-timing had to be made and some appointments did not even materialized because of datelines.

The 38 head of libraries interviewed admitted that though experienced librarians, as some had been in the field for more than 25 years, they themselves were still learning on the subject matter and were exploring all possibilities to gain more knowledge on digitization and digital library initiatives. Since they were in the very early stage of undertaking digitization works some of their responses might fall below expectations and therefore would not be able to contribute much to the research.

The researcher would like to note that due to the part time nature of this research, there had been some time lapse in the processes between field work, questionnaire design, data collection, data analysis and report writing. The research was conducted in 2004 and therefore the information would not reflect the current situations of digital library developments in Malaysia. But as far as information was concerned, no information should be considered useless. It would be useful sometimes someday.

6.7 Directions for Future Studies

The findings from this research represented the platform of Malaysian libraries' readiness in embracing digital library developments where new promising areas could be explored.

Several possible areas of future research:

- a) A survey on the factors for Malaysian digital library future growth.
- b) Digital library framework for Malaysian libraries.
- c) The barriers to Malaysian national digital library system.
- d) The importance of national collaborative digitization program for Malaysian libraries, archives and museums.

6.8 Conclusion

In a nutshell, Malaysian libraries were moving forward toward digital library development, at different phases and levels. Librarians had been both very enthusiastic and positive. Majorities had installed integrated library systems, had embraced library automation and were ready for digital services, despite facing problems of various natures related to human resource, budget, ICT facilities and infrastructure and technical knowhow. Print materials still dominating but information surrogates of internal organizational publications had been rampant and the subscriptions of e-resources, particularly e-journals were on the rise. The provision of virtual online services were gaining momentum and the development of websites/homepages had been tremendous and significantly becoming the central of digital library activities.

The American Memory Project has digitized 7 million items as of June 2007, but 1.8 billion library patrons checked out more than 2 billion items in 2006 (ALA, 2007). In 1964, Arthur Samuel predicted that by 1984, paper libraries would disappear except at museums (Lesk, 1995). But this had not happened either. In Malaysia, online services were objectively to supplement rather than to replace the traditional library services, thus the high preference for the hybrid type.

The perceived conditions for digital library future growth derived from the interview sessions had significantly stressed of the need that digital library foundation and framework be laid out to facilitate national digital library planning and to extend the spectrum in terms of participating libraries and digital library expertise. ICT facilities and national digital library infrastructure need to be created and upgraded, budget increased, expand in digital library research and training, consolidate

collaboration between all information related agencies, and the introduction of a digital library blueprint and backed up with a strong national digital library policies and regulations and amendments to the copyright act.

From the literature review it could be seen that western digital library initiatives were talking about persistent identifiers, digital preservation, open access digital repositories, collection integration, user authorization and authentication, digital archiving, digital policy management and digital rights management. Library 2.0 concepts, based on freeing of data, permits the building of virtual application, participative, work for the user, sharing, communication and facilitating community, remix, smart and built upon trust (Miller, 2005) was also the future trends. The launching of the latest *World Digital Library* on 21 April 2009 (<http://www.worlddigitallibrary.org/project/english>) is the final manifestation that Malaysian libraries should be heading to.

To conclude, digital library development in Malaysia needs a lot more impetus to stand on equal footing with her western counterparts as we were developing areas that were done by them about 20 years ago. But digital library had a lot of prospects and from the digital library projects worldwide that were discussed in the literature review, and with all the recommendations proposed, the future directions of Malaysian digital library development would become clearer.

The information produced by this research would be useful to libraries, archives, museums and any other information related agencies and would serve as a contribution to the body of knowledge.