CHAPTER 4

DIGITAL LIBRARIES INITIATIVES: ANALYSIS OF READINESS

4.1 Introduction

As had been specified in Chapter 3, the research had adopted both methods of data gathering techniques i.e. quantitative (using the questionnaire) and qualitative (interview sessions). This chapter consists of data analysis, findings and discussions that had resulted from the quantitative method, specifically covering the readiness aspects, done in accordance with the research questions. While the qualitative data analysis from the interview sessions were elaborated in Chapter 5, specifically covering the aspect of perceived conditions of digital library future growth. Summaries of both chapters are found at the end of Chapter 5.

A total of 354 libraries listed in the *Directory of Libraries in Malaysia, 2002* were randomly selected for the study. A total of 223 (63%) questionnaires out of 354 sent were returned. It must be pointed out that the follow-up reminders and phone calls had contributed greatly to the high percentage of questionnaires sent being attended to and returned. The respondents who replied did so voluntarily, and this augurs well for the overall quality of the data supplied.

4.2 Profile of Libraries
4.2.1 Types of Libraries

The libraries were divided into four types, namely, state libraries, public libraries, special libraries and academic libraries. Figure 4.1 shows that special libraries made up

the largest number 52.5% (117) followed by academic libraries 40.3% (90), public libraries 4.5% (10) and state libraries 2.7% (6).
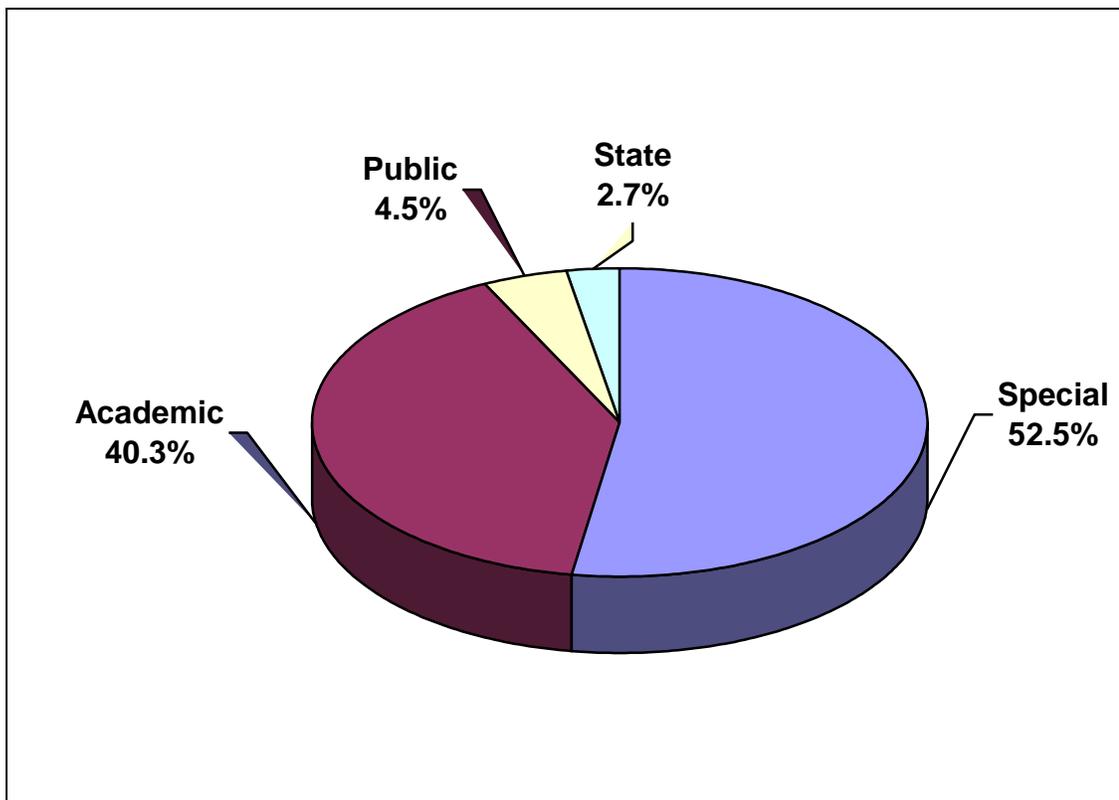

Figure 4.1: Distribution of Libraries by Type

4.2.2   Category of Libraries

About 36.3% (81) of the libraries were perceived to be hybrid, while 55.2% (123) were considered print-based. Hybrid and print-based libraries together accounted for 91.5% (204) of the total sample, with the digital/virtual making up just 1.3% (3). A rather substantial 6.3% (14) of the respondents did not answer this question, and another 0.9% (2) considered none of the categories in the grouping scheme fits their libraries (Table 4.1).

Table 4.1: Distribution of Libraries by Category

Category	Number of Libraries	Percent
1. Digital	2	0.9
2. Virtual	1	0.4
3. Hybrid	81	36.3
4. Print- based	123	55.2
5. Not Applicable	2	0.9
6. No Response	14	6.3

Looking at the individual figures for digital, virtual and print-based libraries in the table, and what the term hybrid implies, it could be inferred that hybrid libraries was the new forthcoming library pattern in Malaysia. That was to say, Malaysian libraries could have been largely print-based in content, but some or parts of the operations and services could have been converted to digital and, hence the hybrid designation.

(Note: The terms digital and virtual libraries were used concurrently because both terms are being used by Malaysian libraries).

4.2.3 Age of Libraries

The libraries were found to vary greatly in age from the latest set up, which was one-year old, to the earliest established 118 years ago (Table 4.2). Its mean age of 18.95 years had a standard deviation of 16.78, or a coefficient of variation (C.V) of 88.5%, implying a wide variability in the age of individual libraries in the sample.

Table 4.2: Statistics on Age of Libraries by Type

Type	Minimum	Maximum	Mean	Std Deviation
1. State	4.0	35.0	26.3	11.69
2. Public	4.0	30.0	19.4	8.98
3. Special	1.0	118	22.7	18.03
4. Academic	1.0	75	13.3	14.25
5. All libraries	1.0	118	18.95	16.78

State and public libraries, with mean age of 26.3 and 19.4 years respectively, had relatively lower age variability as reflected by the C.V. values of less than 50%. Special libraries had a mean age of 22.7 with a C.V. of 79.4%. Academic libraries had the lowest mean age of 13.3 years, but with the highest C.V. of 107.1%. The large variability in the age of the libraries under study might not lead to a meaningful average age figure, but it could be useful later in explaining variation in certain aspects of the libraries that might be related to age.

4.2.4 Heads of Libraries

There were 205 heads of libraries reported in the questionnaire. They were made up of 1 JUSA B officer, 7 grade 1 (S54/53) officers, 23 grade 2 (S48) officers and 59 grade 3 (S41) officers, all with degree level qualifications. There were 20 personnel designated as heads of libraries with diploma level qualifications and 50 were reported to be heads of libraries although with salary scales of Malaysian Higher School Certificate (STPM) and lower qualifications. With one end of the spectrum of heads of libraries having Malaysian School Certificate (SPM) level salaries, and at the other end an officer with a

salary scale equivalent to that of a director-general of a federal level government department, the conclusion had to be that this study was dealing with libraries that was vastly different with each other in many aspects.

(Note: 'S' refers to the designation of grade within the Social category of the government employment scheme, assigned by the Public Service Department. The number is the ranking system where the higher number denotes higher ranking).

4.2.5   Provision of E-mail Addresses to Staff

Only 94 libraries out of 223, or 42.2%, provided e-mail addresses to their staff. Table 4.3 shows the statistics on the provision of e-mail addresses to staff by type of library and total sample. From the table, it appeared that state libraries performed better than other libraries in this aspect, with 50% (47) of their staff being provided with e-mail addresses, followed by academic libraries 48.9% (45) and special libraries 39.3% (36). Only 10% of the staff in public libraries had official e-mail addresses.

Table 4.3:   Libraries Providing E-mail Addresses to Staff by Type

Type of Library	Yes (%)	No (%)	No Response (%)
1. State	50.0	50.0	0
2. Public	10.0	80.0	10.0
3. Special	39.3	59.0	1.7
4. Academic	48.9	48.9	2.2
5. All libraries	42.2	55.6	2.2

n=94

4.2.6　Other profiles

The data show that the heads of libraries had been working for an average of 10.5 years. By type, state libraries led with 23.4 years, followed by special libraries (11.09 years), public libraries (10.5 years) and academic libraries (8.8 years) (Figure 4.2). About 52% (116) of the libraries planned to be 100% digital by 2010.
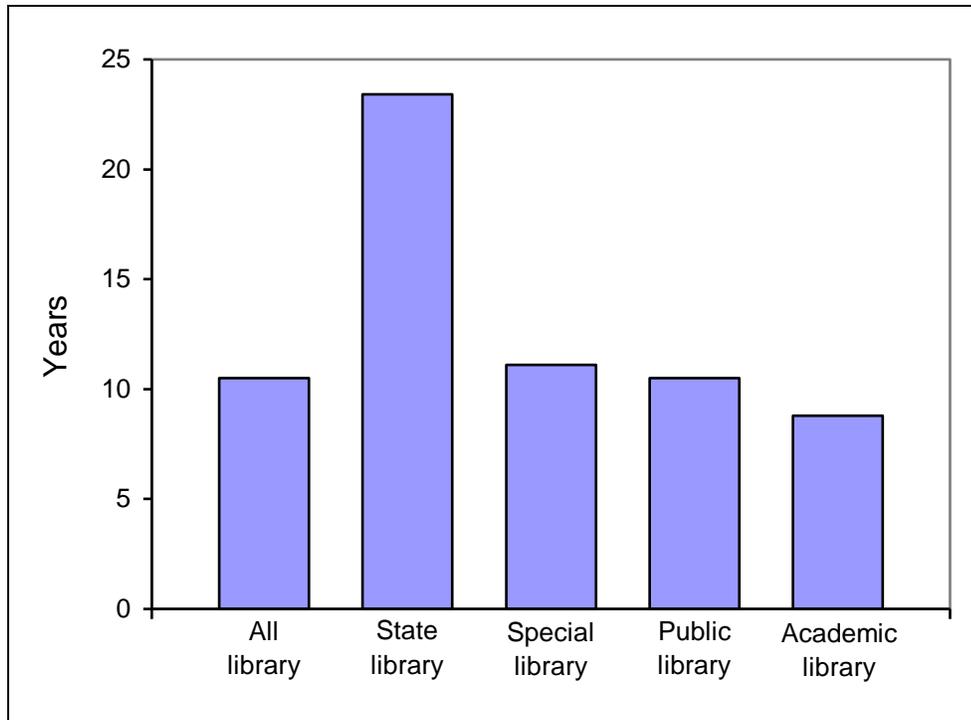

Figure 4.2: Working Experience of Heads of Libraries by Type of Library

4.3　　Analysis on General Problems

The respondents were asked the problems their libraries were facing, if any, ranging from lack of professional staff to attitude of staff. A scale from 1 (*not a problem*) to 5 (*extremely problematic*) was used to indicate the extent of problems prevailing. However, for simplicity and data analysis, the five measures of problem were collapsed into two, namely, *not problematic* and *problematic*. All responses with *not a problem*

and *slightly problematic* were classified as *not problematic*; those with *problematic*, *very problematic* and *extremely problematic* responses were grouped together as *problematic*.

The rationales of having five scales of problem measurement in the questionnaire, but only two for data analysis were as follows. A respondent's feeling or view on the shortcomings their libraries were facing could not easily be represented by a clear-cut yes or no. The wider range of measure or degree of problem provided him with avenues to state the best possible situation. In the end, the answer being probed in the study, and the most practical one, was whether the respective library faces any problem or not, regardless of whether the problems were under the category *problematic*, or *very problematic*, or *extremely problematic*. They were all shortcomings faced by the libraries. On the other hand, the term *slightly problematic* was a statement which in everyday usage, meant that a situation was generally alright. Yes, there was some problem, but it was manageable. In short it was to give options to the respondents and to help facilitate decision- making process.

With the above explanation, the result of the survey on the perception of respondents on general problems faced (and not faced) by the libraries was summarized in Table 4.4. Based on a cut-off point of 50% (the research wanted only the highest categories of problems which could be considered of real significance affecting the libraries) either way, 11 of the 19 possible shortcomings of a library were not deemed to be problems, while 8 were considered problems.

Table 4.4: Perceptions of Respondents on General Problems

Shortcomings	Not a Problem (% of total respondents) (f)	Problematic (% of total respondents) (f)
1. Lack of professional staff	53.4 (119)	45.7 (102)
2. Lack of IT personnel	35.9 (80)	64.1 (143)
3. Lack of supporting staff	51.6 (115)	48.4 (108)
4. Lack of IT training	41.7 (93)	58.3 (130)
5. Lack of leadership	60.1 (134)	39.9 (89)
6. Lack management support	60.1 (134)	39.9 (89)
7. Lack of suitable integrated library system	46.6 (104)	53.4 (119)
8. Lack of local vendor	61.4 (137)	38.6 (86)
9. Lack of IT facility	50.2 (112)	49.8 (111)
10. Lack of ICT infrastructure	51.6 (115)	48.4 (108)
11. Lack of collaboration (among local librarians)	68.2 (152)	31.8 (71)
12. Lack of demand on library services	69.5 (155)	30.5 (68)
13. Lack of budget	37.2 (83)	62.8 (140)
14. Lack of library space	47.1 (105)	52.9 (118)
15. Lack of digital library initiatives (at all level)	39.9 (89)	60.1 (134)
16. Under-utilization of digital resources	42.6 (95)	57.4 (128)
17. Renewal subscription of online databases	44.4 (99)	55.6 (124)
18. Not up-to-date holdings	57.8 (129)	42.2 (94)
19. Attitude problems	62.8 (140)	37.2 (83)

n=223

Table 4.5 presents the list of shortcomings deemed *not a problem* and those that were considered *problematic*. These shortcomings were arranged in descending order of percentage respondents both under the *not a problem* column and under the *problematic*

column. That was, as we went down the *not a problem* column, the shortcomings become relatively more problematic; as we moved down the *problematic* column, the shortcomings become less problematic.

Table 4.5: Shortcomings Considered Not Problematic and Problematic

Not Problematic	% of respondents (f)	Problematic	% of respondents (f)
1. Lack of demand for library services	69.5 (155)	1. Lack of IT personnel	64.1 (143)
2. Lack of collaboration among local librarians	68.2 (152)	2. Lack of budget	62.8 (140)
3. Attitude problem	62.8 (140)	3. Lack of digital library initiatives	60.1 (134)
4. Lack of local vendor support	61.4 (137)	4. Lack of ICT training	58.3 (130)
5. Lack of leadership & lack of management support	60.1 (134)	5. Underutilization of digital resources	57.4 (128)
7. Not up-to-date holding	57.8 (129)	6. Renewal subscription on online databases	55.6 (124)
8. Lack of professional staff	53.4 (119)	7. Lack of suitable integrated library system	53.4 (119)
9. Lack of supporting staff & Lack of ICT infrastructure	51.6 (115)	8. Lack of library space	52.9 (118)
10. Lack of IT facility	50.2 (112)		

n=223

As could be seen, *lack of IT personnel* had been identified as being the most problematic to the libraries. This was followed *by lack of budget*, *lack of digital library initiatives*, *lack of IT training*, *underutilization of digital resources, renewal subscription of online databases, lack of suitable integrated library system,* and *lack of library space*. Among a library's possible shortcomings that the respondents thought of as not being problematic, *lack of demand for library services* tops the list, followed by *lack of collaboration among local librarians, attitude problem, lack of local vendor support, lack of leadership, lack of management support, not up-to-date holding, lack of professional staff, lack of supporting staff, lack of ICT infrastructure,* and *lack of IT facility*.

In other words, the average library in Malaysia, at least as represented by the libraries in this study, did not lack users, collaboration between local librarians, local vendor support, leadership, management support, professional staff, supporting staff, ICT infrastructure and IT facilities; it did not face attitude problem and had sufficient up-to-date collections. However, the average library lacks IT personnel, funds, digital library initiatives, IT training, suitable integrated library system (s), and library space; it also faces problem of digital resource utilization and renewal subscription of online databases.

4.4 Holdings/Collections

A library might have many collection types but this study identified ten to be the most relevant for analysis. These were monographs (including books, theses, and annual reports), journals and periodicals, audio cassette tapes, video tapes, films, photographs, maps, posters, microfiche and CD-ROM, some of which were storage media rather than actual reference materials. Table 4.6 shows the statistics on these collections by types.

As could be seen from the statistics in Table 4.6 there was a large variability among the libraries for each type of collection. For monograph, the size of collection ranges from 10 units to 1 600 000 units, with a coefficient of variation (CV) of 353%. This was too large a variation which renders the mean figure meaningless. As such, subsequent discussion on the other collection types would only be on the range. (In fact, all the CVs for the other collection types were very large, ranging from 197% for video tapes to 580% for CD-ROM).

Table 4.6: Statistics on Library Collection by Type

Type of collection	No. of libraries	Minimum	Maximum	Mean	Std. Deviation
1. Number of monographs (including books, theses, annual report, etc)	199	10	1 600 000	50 514	178 094.9
2. Journals & periodicals	165	2	48 000	1 655	4 908.3
3. Audio cassettes tapes	99	1	6 686	266	749.5
4. Video tapes	118	1	5 026	371	734.0
5. Films	7	39	28 059	4 657	10 363.4
6. Photographs	34	3	1 600 000	70 478	283 989.1
7. Maps	46	1	3 000	173	586.1
8. Posters	48	1	2 670	167	483.3
9. Microfiche	16	4	120 000	11 002	29 725.5
10. CD-ROM	129	2	50 000	768	4 454.9

It was also surprising that only 199 libraries out of 223 had monographs. Could it be that those libraries outside the 199 had completely digitized their collections or had converted them into other storage medium? So were journals and periodicals, where only 165 libraries reported to have them. The size ranges from 2 units to 48 000 units. The next most common collection in terms of the number of libraries reporting was CD-ROM (129 libraries), ranging from 2 units to 50 000 units. This was followed by video tapes (118 libraries), ranging from 1 unit to 5 062 units; audio cassette tapes (99 libraries), ranging from 1 unit to 6 686 units; posters (48 libraries), ranging from 1 unit to 2 670 units; maps (46 libraries), ranging from 1 unit to 3 000 units; photographs (34 libraries), ranging from 3 units to 1 600 000 units. In terms of collections, monographs still dominated.

4.5   Automation

4.5.1   Installation of Integrated Library System

Only 121 libraries (54%) of the 233 libraries reported to have installed integrated library systems. Out of these, more than half (52.9% or 64 libraries) had installed the systems between 1999 and 2004. The earliest installation was made in 1982 (one library). Between then and 1998, the progress of automation was rather slow, averaging about three libraries per year. Between 1999 and 2003, the pace of automation quickened to about 12 libraries per year. In 2004, that was at the time of survey, this progress in automation appeared to be coming to a grind as only two additional libraries reported to have installed an integrated library system.

4.5.2 Integrated Library Systems

Table 4.7 lists the various integrated library systems used and the number of libraries under each system. There were 15 different brand names with at least two libraries each. The system known as ILMU was the most common with 21 libraries; followed by VTLS (15 libraries), SISPUKOM (10 libraries), CDS/ISIS (9 libraries), TECHLIB (6 libraries), GEAC (5 libraries), Micro VTLS and WINNIS (4 libraries each), and HORIZON (3 libraries). Systems with two libraries each carry the following names: CLM, CLS, PUSTAKAWAN, Supermax, Winnebago, DOBIS, LIBRARY WORLD and DNIX. In addition, there were twenty other systems known by their designated names with one library each.

Table 4.7: Integrated Systems Installed and Number of Libraries Adopting

Name of Integrated System	Number of libraries	Name of Integrated System	Number of libraries
1. ILMU	21 (19%)	10. CLM	2 (1.7%)
2. VTLS	15 (13%)	11. CLS	2 (1.7%)
3. SISPUKOM	10 (9%)	12. PUSTAKAWAN	2 (1.7%)
4. CDS/ISIS	9 (8%)	13. Supermax	2 (1.7%)
5. TECHLIB	6 (5%)	14. Winnebago	2 (1.7%)
6. GEAC	5 (4%)	15. DOBIS	2 (1.7%)
7. Micro VTLS	4 (3.5%)	16. LIBRARY WORLD	2 (1.7%)
8. WINISIS	4 (3.5%)	17. DNIX	2 (1.7%)
9. HORIZON	3 (2.6%)	18. Others	20 (17.6%)

n=113

4.5.3   Services Offered and Operational

Table 4.8 lists, in descending order the services offered by the libraries. With 45.7%:102 libraries providing it, OPAC was the most widely available service, followed by online circulation (35.9%:80), Web OPAC (34.5%:78), Website services (26.0%:58), online reservation (25.6%:57), online registration (20.2%:45), online reference enquiry and hypermedia/multimedia (19.7% each:44), online acquisition (15.2% :34), online SDI (selective dissemination of information) service (12.6%:28), self-check machine (9.9%:22), mobile internet services (8.1%:18), online inter-library loan (7.2%:16), and several services categorized as "others" such as digital multimedia, electronic forum, library bar-code, Mykad, ASTRO and EIS which altogether make up 3.6%:8 libraries.

Table 4.8: Services Offered to Clients (n=223)

No.	Service	% of Libraries (f)
1	OPAC	45.7 (102)
2	Online circulation	35.9 (80)
3	Web OPAC	34.5 (78)
4	Website Services	26.0 (58)
5	Online reservation	25.6 (57)
6	Online registration	20.2 (45)
7	Online reference enquiry	19.7 (44)
8	Hypermedia/Multimedia	19.7 (44)
9	Online acquisition /ordering	15.2 (34)
10	Online Selective Dissemination of Information (SDI)	12.6 (28)
11	Self Checked Machine	9.9 (22)
12	Mobile Internet Services	8.1 (18)
13	Online Inter-library loan/ SPP	7.2 (16)
14	Smart card	5.4 (12)
15	Others	3.6 (8)

4.5.4 IT Facilities

Table 4.9 shows the list of IT facilities arranged in descending order of percentage distribution. It could be seen local area network (LAN) was the most available facility with 108 of the libraries (48.4%) having it. This was followed by intranet (40.8% or 91 libraries), scanners (39.9% or 89 libraries), internet (22.4% or 50 libraries), wide area network (WAN) (22.0% or 49 libraries), telnet (11.7% or 26) and extranet (6.3% or14 libraries). For libraries with internet facility, 41.7% of these or 21 libraries were on leased lines and 14.8% on dial up systems. About 16.0% of the libraries *do* charge clients for the use of Internet facilities.

Table 4.9: IT Facilities

No.	IT Facility	% of Libraries (f)
1	Local area network (LAN)	48.4 (108)
2	Intranet access	40.8 (91)
3	Scanners	39.9 (89)
4	Internet access	22.4 (50)
5	Wide area network (WAN)	22.0 (49)
6	Telnet	11.7 (26)
7	Extranet	6.3 (14)

n=223

4.5.5   Number of PCs Owned and Internet Connection

Considering that PCs were now a must for any establishment, just as typewriters were in the older days, it was quite perplexing that only 82.5% of the libraries surveyed (184 out of 223) responded to the question on the number of PCs owned. A 100% response

should have been obtained from the respondents. However, the 184 libraries responded all had PCs: 37.2% had between 1-5 PC each; 14.8% with 6-10 PCs each; 13.0% with 11-20 PCs each; 9.9% with 21-50 PCs each; 2.7% with 51-100 each; 4.9% with more than 100 PCs each (Table 4.10). The data also shows that special libraries made up 63% of those libraries having the smallest number of PCs (1-5 each). This was not surprising as libraries under this type constituted 52% of the total sample, and many of them could have been small in terms of staff size; hence the small numbers of PCs. Public and state libraries tend to have more PCs per library. Forty per cent (40%) of public and 20% of state libraries had more than 100 PCs each compared with academic libraries (1.1%) and special libraries (1.1%).

Table 4.10: Number of PCs Owned, Percentage Distribution of Libraries [a], and Percentage with Internet Connection [b]

Number of PCs per Library	% of Libraries (f)	% of PCs with Internet Connection (f)
1 – 5	37.2 (68)	35.0 (64)
6 – 10	14.8 (27)	15.2 (28)
11 -20	13.0 (24)	13.5 (25)
21 – 50	9.9 (18)	10.3 (19)
51 – 100	2.7 (5)	3.6 (7)
>100	4.9 (9)	4.5 (8)

[a, b] out of total sample;   n=184

The number of PCs with internet connection appeared to be in proportion to the number of PCs owned. Thirty-five per cent of the libraries have internet connection for only 1 – 5 of their PC sets. Those with 6 – 10 of their PCs having internet connection account for only 15.2% of the libraries. This was followed by the 11 - 20 PCs group (13.5%) and the 21 – 50 PCs group (10.3%). Those with more than 100 of their PCs being connected to internet account for 4.5% of the libraries, while those with 51 -100 of their PCs connected to internet make up 3.6% of the libraries.

4.5.6   Subscriptions to Foreign and Local Databases

Table 4.11 shows the extent of subscriptions to local and foreign databases. It could be seen that only 33.1% or 73 of the libraries were subscribing to local databases. Moreover, more than two-thirds of the subscriptions were for 1-3 databases only, while the rest were for 4-6 data bases (8.2%), 7-10 databases (9.4%) and 28-35 databases (1.2%). Similarly, a rather low percentage (31.6%) of the libraries subscribed to foreign databases. Out of these, about 61.0% were for 1-3 databases each, 15.5% for 4-6 databases, and 8.5% for 7-10 databases. Unlike the case with local subscriptions, those subscribing to foreign databases also included the 11-27 database groups. In addition, 4.1% of those who subscribed to foreign databases were paying for more than 50 databases. It could be seen that subscriptions to foreign data bases were more significant as compared to local data bases. Local subscriptions end within the range of 7-10 data bases only.

Table 4.11: Subscriptions to Databases among Libraries

Database group	Local subscription (as % of Sample) (f)	Foreign Database Subscription (as % of Sample) (f)
1 – 3	26.9 (60)	19.3 (43)
4 – 6	2.7 (6)	4.9 (11)
7 – 10	3.1 (7)	2.7 (6)
11 – 15	-	1.3 (3)
16 – 19	-	0.9 (2)
20 – 23	-	0.4 (1)
24 – 27	-	0.4 (1)
28 – 35	-	0.4 (1)
51 -100	-	1.3 (3)
All groups	33.1 (73)	31.6 (71)

n=223

4.5.7   Technical Support for Library Automation

Fifty-six percent (56%) or 124 of the libraries obtained their technical support for facilitating automation from the IT units of their parent organizations (Table 4.12). This was to be expected and supported earlier finding that related to the lack of IT personnel. Out-sourcing was the mean for getting technical support for 18.8% or 42 of the libraries, while 17.9% or 40 of the libraries were utilizing the services of their own internal IT units. Apart from these sources, 8% or 17 of the libraries obtained their technical support for automation from 20 different service entities.

Table 4.12   Technical Support for Library Automation

No.	Technical Support	% of Libraries (f)
1	IT unit of parent organization	56% (124)
2	IT unit within the library itself	17.9% (40)
3	Out-sourcing	18.8% (42)
4	Others	8% (17)

n=223

4.6   Training

4.6.1 ICT Training for Staff

Table 4.13 shows the number of libraries that had sent their staff for various ICT courses, listed in descending order of percentage respondents. About 72% or 160 of the libraries had sent their staff for training in *application software.* This was followed by *introduction to computers* (66.4% or 148) and *internet & worldwide web* (51.6% or 115) among courses that were attended by more than 50% of the libraries.

Other courses attended were *web design and home page* (40.4% or 90), *online searching skills* (38.1% or 85 libraries), *PC maintenance* (21.5% or 48 libraries), *operating system* (15.7 or 35 libraries), *online indexing & abstracting* (15.2% or 34 libraries), *content management* (15.2% or 34 libraries), *database management system* (14.8% or 33 libraries), *information system development* (9.9% or 22 libraries), *programming* (9.4% or 21 libraries), *telecommunication and networking* (9.4% or 21 libraries), and *others* (4.0% or 9 libraries).

Table 4.13:   Number of Libraries Providing IT Training for Staff by Type of Training

Type of Training	Number of libraries (f)	% of Total Sample
1. Application software	160	71.7
2. Introduction to computers	148	66.4
3. Internet & world wide web	115	51.6
4. Web design & home page	90	40.4
5. Online searching skills	85	38.1
6. PC maintenance	48	21.5
7. Operating system	35	15.7
8. Online indexing & abstracting	34	15.2
9. Content management	34	15.2
10. Database management system	33	14.8
11. Information system development	22	9.9
12. Programming	21	9.4
13. Telecommunication & networking	21	9.4
14. Others	9	4.0

n=223

4.6.2 ICT Training Providers

Table 4.14 shows providers of ICT training. It could be seen that the largest number, that was 94 libraries (42.2%) of the total sample, had in-service ICT training for the staff using both in-house and outside trainers. There were 53 libraries (23.8% of total sample) that trained their staff exclusively in-house. Only 13.5% or 30 of the libraries sent their

staff for ICT training under external trainers who might be better equipped with the knowledge considering the pace of advancement in ICT application. Moreover, a quite substantial number of the libraries (23.3% or 52 libraries) claimed that the staff enhanced their ICT skills through self-learning.

Table 4.14: Providers of ICT Training

Trainers	Number of Libraries (f)	As % of Total Sample
1. Both in-house and external	94	42.2
2. In-house trainers	53	23.8
3. Self trained	52	23.3
4. External trainers	30	13.5

The breakdown of trainers by type of library (Table 4.15) shows that special libraries tend to be more likely to adopt in-house ICT training than the other types of libraries; academic libraries were more likely to employ external trainers as well as had staff resorting to self- training; state and public libraries combined were more inclined to have both in-house and external training.

Table 4.15: ICT Trainers by Type of Libraries

Type	Total	In-house	External	In-house and external	Self-trained
1. State/Public	16	2 (12.5%)	2 (12.5%)	11 (68.8%)	3 (18.8%)
2. Special	117	31 (26.5%)	13 (11.1%)	52 (44.4%)	24 (20.5%)
3. Academic	90	20 (22.2%)	15 (16.7%)	31 (34.4%)	25 (27.8%)
Total	223	53 (23.8%)	30 (13.5%)	94 (42.2%)	52 (23.3%)

4.6.3   Length of ICT Training

Based on the duration of the above training, it was quite evident that the libraries were not serious in their effort to enhance the ICT skill of their staff. It was found that 68.6% or 153 of the libraries reported that the courses/training mentioned were for duration of less than one week. Courses of this duration couldn't be more that an "introductory" or a "refresher" in nature. Only 5.2% or 12 of the libraries sent their staff for courses/training that was more than three months long (Figure 4.3).

It was recalled in Table 4.13 that 71.7% or 160 of the libraries, 66.4% or 148 of the libraries and 51.6% or 115 of the libraries sent their staff for training on *application software, introduction to computers* and *internet and worldwide web*, respectively. These courses tend to be short-duration in nature, hence the finding that 68.8% or 153 of the libraries sent their staff for courses which lasted less than one week.
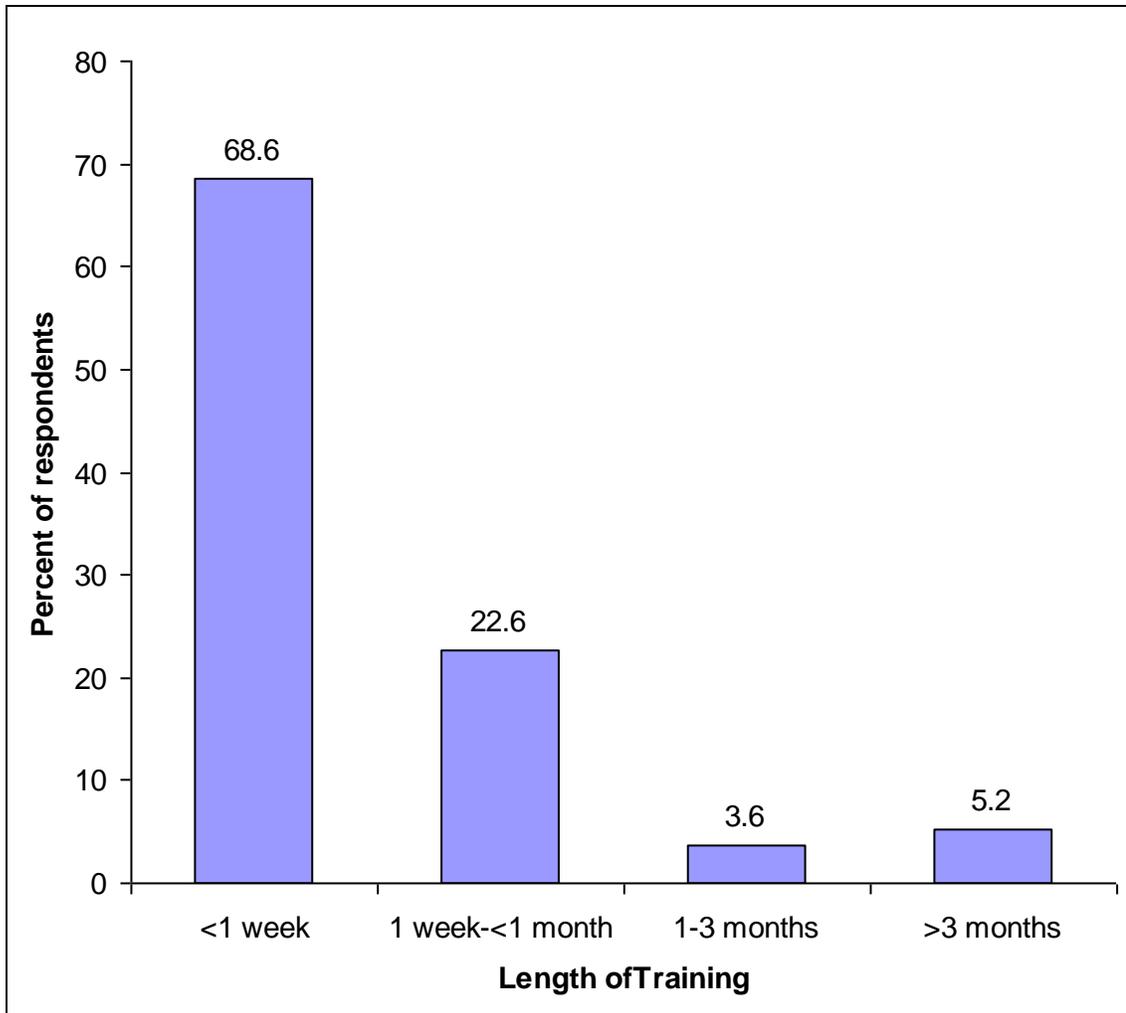
Figure 4.3: Length of ICT Training

4.7   Digitization Project (s)

4.7.1   Digitization Activities in Libraries

Figure 4.4 shows the proportion of the libraries that had done some kinds of digitization works or projects. Sixty-four libraries, or only about 28.7% of the libraries surveyed, had done some digital library initiatives while the remaining 71.3% or 159 libraries had not done any digitization work as yet.
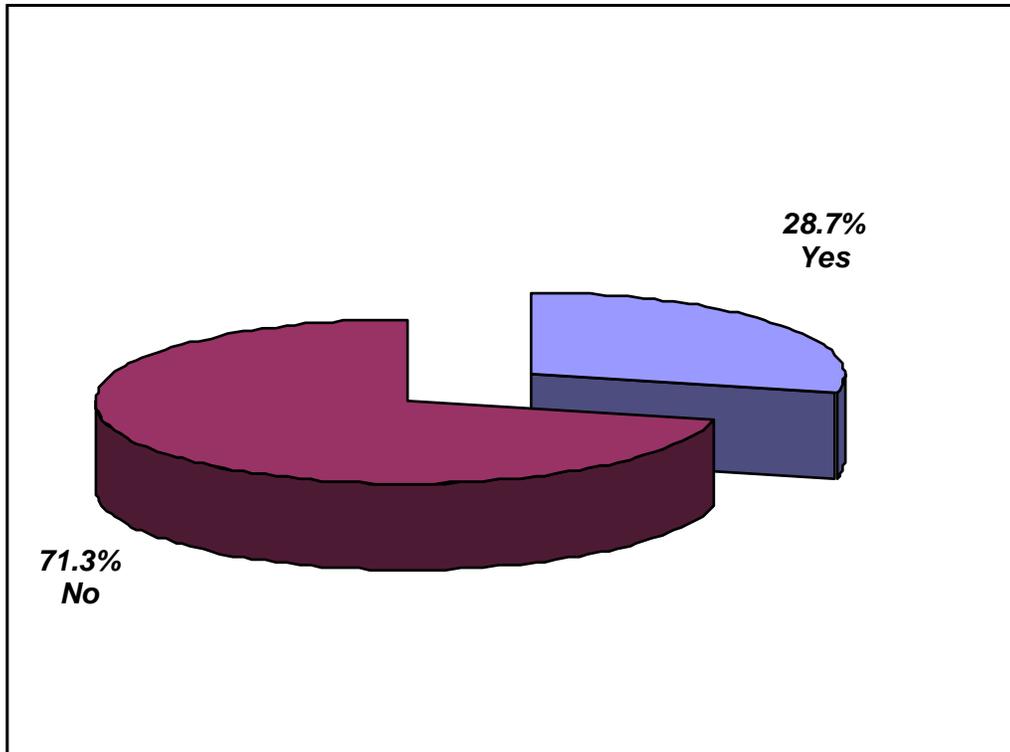
28.7%
Yes

71.3%
No

Figure 4.4: Distribution of libraries by Digitization Project

A Chi-square test was performed to determine whether the percentage of libraries digitizing differed between different library types. For this statistical test, the state and public libraries were combined into one (state/public) because they numbered only 16 libraries, as well as because the two types of libraries were quite similar in terms of services and users. Table 4.16 presents the results of the statistical test. Since the *P-value* was less than 0.05, it meant that the percentage of libraries digitizing differs between the three types of libraries, and the difference was statistically significant. It could, therefore, be concluded that the state/public group had the highest proportion (62.5%) of its libraries digitizing. This was followed a distant second by special libraries (29.9%) and academic libraries (21.1%). A note of comment was in order on this

conclusion. Firstly, the result for state/public libraries might have to be interpreted with caution because of its relatively smaller sample size. Secondly, that academic libraries occupied the bottom-most position in terms of digitization was rather surprising. We would expect academic libraries to be the most advanced in adopting new information technology. But, that was what statistical test on the data shows.

Table 4.16: Chi-square Statistics on Digitization Difference between Library Types

Library Type	Sample Size	Percent with Digitization Project	*P-Value* of the χ^2 Test
a) State/Public	16	62.5	0.003
b) Special	117	29.9	
c) Academic	90	21.1	
Overall	223	28.7	

4.7.2 Materials Digitized

Table 4.17 lists the materials that had been digitized by the libraries. It could be seen that *newspaper cuttings wa*s the most widely digitized material, with 56.3% of the libraries digitizing. Next (32.8% of the libraries) was *theses/dissertations, books* and *articles*. This was followed by *conference papers*/*proceedings* (31.3%), *booklets/pamphlets/leaflets* (29.7%), *photo collections* (28.1%), *others* (25.0%), *newsletters/house organs* (23.4%), *speeches* (21.9%), *minutes of meeting/organization's special reports* (20.3%), *circulars* (18.8%), *occasional papers/organization's technical reports* (17.2%), and *archival materials* (14.1%). In addition, there were materials, each

with less than 10% of the libraries digitizing it. These were *maps, manuscripts and patents & specifications.*

Table 4.17: Materials Digitized

Material	Number of Libraries	As % of	
		Digitizing Libraries	**Total Sample**
1. Articles	21	32.8	9.4
2. Books	21	32.8	9.4
3. Booklets/leaflets/pamphlets	19	29.7	8.5
4. Circulars	12	18.8	5.4
5. Conference papers/proceedings	20	31.3	9.0
6. Manuscripts	4	6.3	1.8
7. Maps	5	7.8	2.2
8. Minutes of meeting	13	20.3	5.8
9. Newsletters/house organ	15	23.4	6.7
10. Newspaper cuttings	36	56.3	16.1
11. Occasional papers	11	17.2	4.9
12. Organization's special report	13	20.3	5.8
13. Organization's technical report	11	17.2	4.9
14. Photo collection	18	28.1	8.1
15. Standards	5	7.8	2.2
16. Patents & specifications	4	6.3	1.8
17. Speeches	14	21.9	6.3
18. Theses and dissertations	21	32.8	9.4
19. Archival materials	9	14.1	4.0
20. Others	16	25.0	7.2

From the point of progress in digitization for all the libraries that the sample was representing, it could be seen that Malaysian libraries were doing some amount of information surrogation as a starting point towards digital library initiatives.

4.7.3   Technical Support for Digitization Work

As could be seen from Table 4.18, 45.3% of the libraries (39) that were reported to have done digitization works, did it fully using their own capability in terms of technical expertise and facilities, while 40.7% (35) resorted to local private company to carry out the task. Libraries that made use of their parent organizations' IT units for their digitization works accounted for 14.0% (12).

Table 4.18   Technical Support in Digitization Works

Technical support	Number of Libraries	As % of	
		Digitizing Libraries	**Total Sample**
1. Local private company	35	40.7	15.7
2. Organization's IT Unit	12	14.0	5.4
3. Library's own equipment	39	45.3	17.5

4.7.4   Storage Media Adopted

As shown in Table 4.19 below, compact disc (CD) served as the storage media for 62.5% (40) of the libraries with digitization projects. This was followed by PDF and hard disc (50.0% each or 32 libraries), floppy disc (20.3% or 13 libraries), and enterprise storage system (18.8% or 12 libraries). Others, each with less than 10% of the libraries,

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were DVD (6.3%), miniature mobile storage media (4.7%), and PC cards (3.1%). As the statistics imply, several of the libraries made use of more than one medium of storage each.

Table 4.19: Digitization Storage Media

Media	Number of Libraries	As % of	
		Digitizing Libraries	Total Sample
1. CD	40	62.5	17.9
2. PDF	32	50.0	14.3
3. Hard Disc	32	50.0	14.3
4. Floppy Disc	13	20.3	5.8
5. Enterprise storage system	12	18.8	5.4
6. DVD	4	6.3	1.8
7. Miniature mobile storage media	3	4.7	1.3
8. PC Cards	2	3.1	0.9

4.7.5 Digitized Materials On Website

Out of the 84 libraries reporting to have digitized or have digitization project (s), only 57 responded to this question. Table 4.20 shows that 54.4% (31) of these libraries had flashed only some selected digitized materials on the websites, while quite a substantial proportion (33.3% or 19) had not done so, but would be attempting to do so in the future. Only 7 libraries or 12.3% flashed all materials online.

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Table 4.20   Proportion of Materials on Website

Proportion of Materials on Website	Number of Libraries	As % of Libraries Giving Response	As % of Total Sample
1. All materials	7	12.3	3.1
2. Some selected materials	31	54.4	13.9
3. None, but will be in future	19	33.3	8.5

The number of libraries that was full public domain (i.e. putting all that they had digitized on the website) was only 12.3% (7). This was not conducive for the purpose of resource sharing, as one of the fundamental features in a digital library environment.

4.7.6   Budget Spent/Committed Until December 2003

Table 4.21 shows the distribution of the libraries (only 54 of the 64 libraries digitizing responded to this question) and the budget they either had spent or had committed until December 2003. Fifteen libraries, or 27.8% of them, had spent or committed RM25 000 – RM50 000 each, 9 libraries (16.7%) with RM50 00 – RM75 000 each, 8 libraries (14.8%) with RM100 000 – RM200 000 each, 7 libraries (13.0%) with RM200 000 – 300 000), 6 libraries (11.1%) with RM75 000 – RM100 000, 3 libraries (5.5%) with RM300 00 – RM400 000, 3 libraries (5.5%) with more than RM2 million, and 1 library (1.9%) with less than RM25 000 each.

Table 4.21: Budget Spent/Committed for Digitization until December 2003

Size of Budget (RM)	Number of Libraries	As % of Digitizing Libraries Responding	As % of Total Sample
1. < 25 000	1	1.9	0.4
2. 25 000 – 50 000	15	27.8	6.7
3. 50 000 – 75 000	9	16.7	4.0
4. 75 000 – 100 000	6	11.1	2.7
5. 100 000 – 200 000	8	14.8	3.6
6. 200 000 – 300 000	7	13.0	3.1
7. 300 00 – 400 000	3	5.5	1.3
8. 500 000 – 1 000 000	2	3.7	0.9
9. >2 000 000	3	5.5	1.3

4.7.7   Contents of Website

About 90% of the 57 digitizing libraries placed general basic information on their websites (Table 4.22). E-mail was the next most commonly stated website content by 70.3% (45) of the libraries. Other website contents mentioned with more than 50% counts were, in descending order: Web OPAC (68.8%)/44; hypertext linkages to agencies within the same ministry /department (62.5%)/40; hypertext linkages to related websites (59.4%)/38; feedback and comment (53.1%)/34; access to commercial online databases (51.6%)/33; new books list (51.6%)/33; and access to e-book (50.0%/32). Website contents with less than 50% of the libraries reporting to have them were: calendar of events (42.2%)/27; e-forms (42.2%/27); book/article reviews (37.5%/24); access to local contents databases developed internally (35.9%/23); FAQ (34.4%/22);

suggestion page (32.8%/21); electronic document delivery service (32.8%/21); community information database (29.7%/19); location maps (17.2%/11); and others (6.3%/4).

Table 4.22: Contents of Website

Content description	Number of Libraries	As % of Digitising Libraries
1. General information on the library, staff, contact number, opening hours, services, collections, rules and regulation	57	89.1
2. Hypertext links to other agencies within the same ministry/department	38	59.4
3. Hypertext links to related websites	40	62.5
4. Community information database	19	29.7
5. FAQ	22	34.4
6. Web OPAC	44	68.8
7. Access to E-books and e-journals	32	50.0
8. Access to commercial online databases	33	51.6
9. Access to local content databases (developed by the library itself) e.g. *Raja Kita/Sireh Pinang*	23	35.9
10. E-mail	45	70.3
11. E-forms (e.g. application forms)	27	42.2
12. Electronic document delivery service	21	32.8
13. Calendar of events & exhibition	27	42.2
14. Book/article reviews	24	37.5
15. New book list	33	51.6
16. Location maps	11	17.2
17. Suggestion page	21	32.8
18. Feedback & comment	34	53.1
19. Others	4	6.3

4.7.8 Digitization Related Problems

It was recalled that 64 (28.7%) of the libraries surveyed reported to have done some digitization works. In this section, the task was to find out what were the problems faced during the digitizing process. Table 4.23 lists the 17 statements that this study had identified, which might or might not be problems to the libraries, plus any other situations altogether categorized as *others*, and the opinions of the respondents about them. These statements were arranged in descending order from the highest percentage to the lowest percentage of "Yes", or alternatively, in ascending order from the lowest to the highest percentage of "No".

Table 4.23: Perceptions of Respondents on Digitization Related Problems

Statements/Problems	Respondents	% Yes	% No
1. Projects have to be done with existing staff	53	73.6	26.4
2. Absence of a blueprint as a guideline	49	70.8	29.2
3. Absence of National Information Infrastructure Policy	44	63.6	36.4
4. Too expensive	50	60.0	40.0
5. Lack of role model	49	57.1	42.9
6. Copyright Act clearance	43	51.2	48.8
7. Lack of collaborative works among libraries	44	50.0	50.0
8. Lack of exposure of what is digital and virtual library is all about	56	46.4	53.6
9. Lack of suitable hardware and software	51	45.1	54.9
10. Lack of understanding of the actual concept of digital/virtual library phenomena	53	43.4	56.6
11. Lack of initiatives at national level (e.g. from PNM)	43	37.2	62.8
12. Lack of local contents	48	35.4	64.6

13. Lack of IT vendor specializing in digitization of library	50	32.0	68.0
14. Home page is not updated regularly	49	30.6	69.4
15. Too busy running the library to have the time to plan for digital and virtual library development	50	30.0	70.0
16. Proposal has been turned down	41	26.8	73.2
17. Others	13	23.1	76.9
18. Management is not very keen on digitization	45	20.0	80.0

Taking a cut-off point of 50%, it could be seen that six of the 18 statements were considered problems to digitization process by the respondents. *Projects have to be done with existing staff* (73.6% of the respondents saying yes) were the most common problem faced. The problem might be in terms of staff shortage or lack of relevant training/background. This was closely followed, in descending order of importance, by *absences of a blueprint that may serve as guidance* (70.8% of respondents), *absence of National Information Infrastructure (NII)* (63.6%), *too expensive* (60.0%), *lack of role model* (57.1%), and *Copyright Act clearance* (51.2%).

Among the "not problematic" statements, *management is not very keen on digitization* was the least problematic with 80% of the respondents saying "no". It could be taken to mean that the majority of the management of the libraries studied was keen on digital library. The next least problematic statement is *others* (76.9% of the respondents). However, there had to be a reservation on the interpretation of *others* because only 13 provided answers, and two of the three who responded with a "yes" mentioned *limited budget* and *lack of staff* which should have been accounted for under *too expensive* and

project has to be done with the existing number of staff. Therefore, the second least problematic of the statements was *proposal has been turned down* (73.2% saying no). This was followed by *don't have time* (70.0% saying no), *homepage was not updated regularly* (69.4% saying no), *lack of IT vendor* (68.0% saying no)), *lack of local contents* (64.6% saying no), *lack of initiatives at national level* (62.8% saying no), *lack of understanding of the actual concept of digital library* (56.6% saying no), *lack of suitable hardware and software (54.9% saying no), and lack of exposure on what digital library was all about (*53.6 saying no). *Lack of collaborative works among libraries* is considered neither "problematic" nor "not problematic".

In short, it could be inferred from the results that the problems encountered during digital library development were: the lack of staff (either in terms of number or the required skills); a dearth of a blueprint for guidance; absence of National Information Infrastructure policy; the project being too expensive; lack of role model; and Copyright Act clearance.

4.7.9   Involvement in Digitization Project under the National Library of Malaysia

Playing a leading role in library development, the National Library of Malaysia had initiated a number of collaborative digitization projects with several other libraries, notably the MyLib/*PERDANA* Project. However, the participation among the libraries studied in these projects was not widespread. According to the data, only 24 libraries or 10.8% of the total sample, reported to have been involved (Figure 4.5).
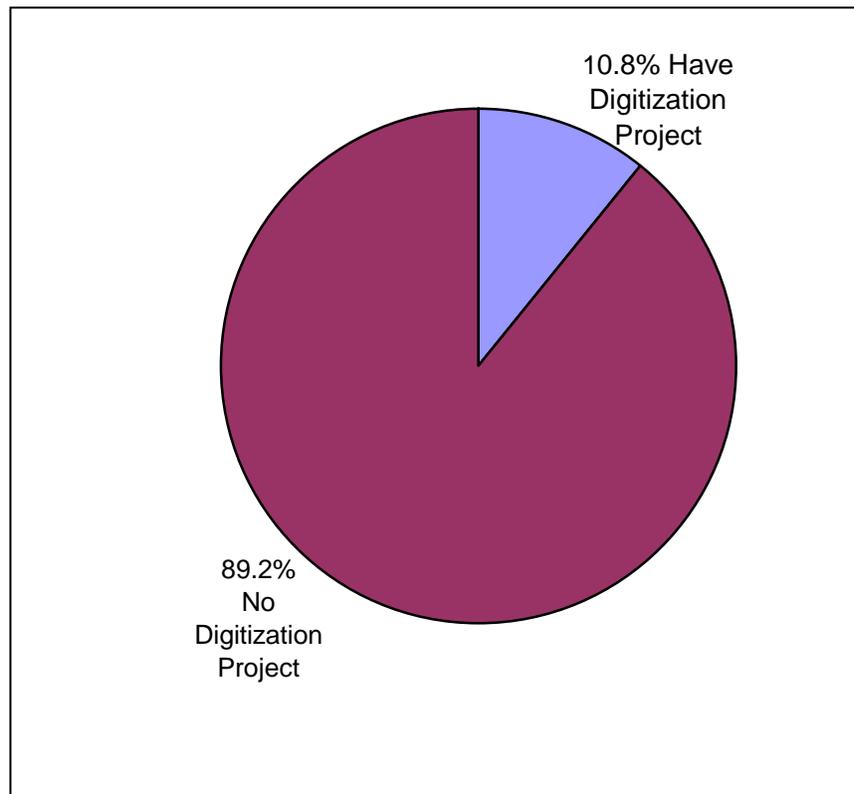
10.8% Have Digitization Project

89.2% No Digitization Project

Figure 4.5: Percentage of Libraries Involved in Digitization with PNM

4.7.10 Development of In-house Databases

The development of in-house databases ran parallel with progresses in automation and digitization. Progress in in-house database development among the libraries studied appeared to be keeping abreast with digitization, with sixty-three libraries, or 28.3% of the total sample, reporting to have developed some kind of in-house databases (Figure 4.6). Earlier it was reported that 64 libraries or 28.7% of the total sample did have digitization project(s).
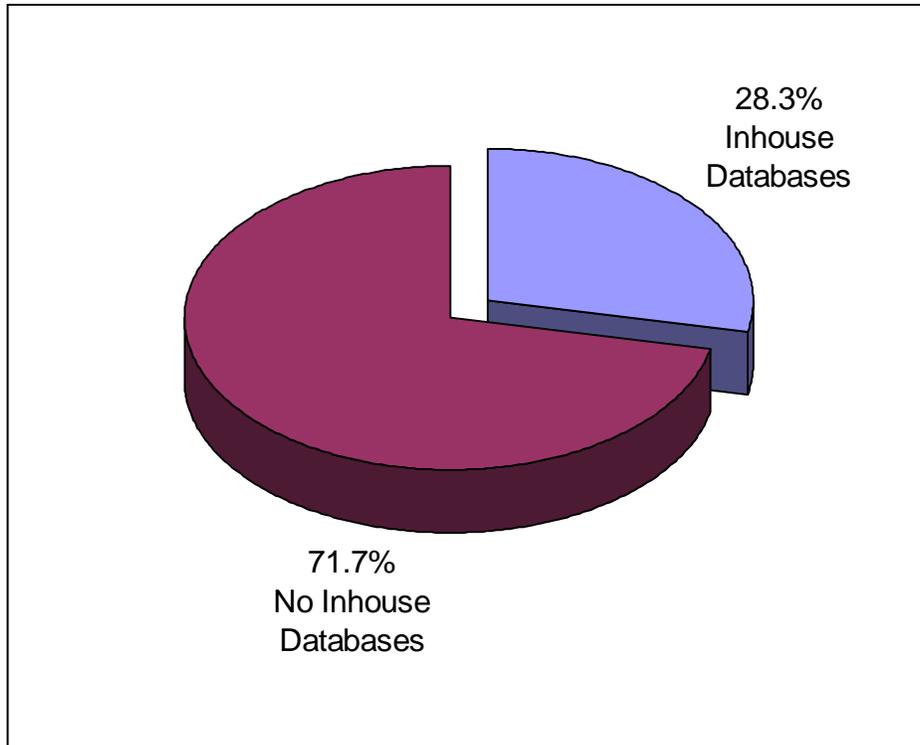
Figure 4.6: Percentage of Libraries with In-house Databases

4.7.11 Future Plan for Digital Library Development

A total of 138 respondents answered this open-ended question on the future plan for digital development of their libraries. Although there were numerous responses and plans, in actuality these could be relevantly sorted into ten different groups of responses. Table 4.24 lists the ten response groups/plans in descending order of percentage respondents.

Table 4.24: Plans for Digitization and Percentage Respondents.

Responses/Plans	% of Respondents (f)
1. Will be automating/going online	39.9 (55)
2. Others	11.6 (16)
3. Improve the infrastructure	10.9 (15)
4. In the planning stage	8.7 (12)
5. Acquire more electronic library resources	7.9 (11)
6. Depend on budget / to ask for budget increase	6.5 (9)
7. Depend on main/parent organization	4.3 (6)
8. Improve staff IT competency	3.6 (5)
9. Establish linkage with other libraries including PNM	3.6 (5)
10. Make the library more user-friendly	2.9 (4)

n=138

It was noted in Chapter 1 that it was very unlikely that Malaysian libraries would develop digital libraries without first embracing automation and becoming electronic. It re-affirms that statement when the largest proportion (39.9% or 55) of the respondents who provided answers to the question of digital library planning, said that they would automate in the near future. It seemed that this was the logical sequence and it was an accepted phenomenon that digital library development would come next after transforming the library from print based, electronic and then digital. Followed by close to 12% or 16 of them cited several answers (some were related to automation and electronic libraries) which fall into the category of *others*. These included *updating existing project*, *knowledge portal*, *install library system*, *make information available to*

public, *publication/research data/photo gallery*, *portal of k-management*, *to be the best library in the country*, *stay with hybrid library but promote electronic medium*, and *integrated broadcast library system.* *Improving existing infrastructure* (10.9% or 15) was the next most mentioned plan, followed by *In the planning stage* (8.7% or 12), *to acquire more electronic library resources* (7.9% or 11), *depend on budget* (6.5% or 9), *depend on main/parent organization* (4.3% or 6), *improve competency of staff* (3.6% or 5), *linkage with other libraries including PNM* (3.6% or 5), and *make the library user-friendly* (2.9% or 4). What seemed to be missing in their future planning were a concrete and solid digital library initiative, no mention of collaborative effort and the small localized initiatives that seemed to be all at the initial stage.

4.8 Opinions of Heads of Libraries

4.8.1 Digital Library Development

This study was also interested to gauge the opinions of the library heads with respect to some points related to digital library development and the extent to which libraries in Malaysia would actually become digital. It had been shown throughout the earlier discussions that the concept of digital library had been initially received by the library community, at least from their perspectives. However, viewed from the interviews and field visits, and as evident from the data, progress in the actual realization of the concept had not been extensive. There could be teething problems with the implementation here and there that contributed to the slow progress. What did they think was going to happen later with digital library, especially among those occupying

positions in the libraries that had a better perspective of what had happened in the past, and at the same time could collectively influence its future development.

To facilitate this analysis, a total of five questions were posed to the respondents, who by designation were heads of libraries. The selection of five levels of perceptions at the time of survey was to minimize the possibility of respondents stating their opinion wrongly if only the *yes* and *no* options were provided. Just as the case with Section 4.3, the five levels of perceptions were collapsed into two measures ("yes" and "no") to arrive at a more definitive interpretation of how did respondents perceived about the issues. In interpreting the results, this study's approach was to treat the measurement level denoted by the numeric *2* as a "no" that was, it was in the same category of perception as numeric 1. The rationale was that there could be a tendency among the respondents to somewhat paint a slightly better picture of a negative situation. Whether it was a *bona fide* "no" or slight "yes", both were manifestations of opinion that actually meant "no". Similarly, for practical purpose, *very positive* and *extremely positive* were degrees in opinion, and were, therefore, interpreted simply as a "yes".

Table 4.25 shows the distribution of respondents on perceptions about the development of digital library. It could be seen that the majority (88.7% or 198) of the respondents were positive about digital library development in Malaysia. This optimistic view from people who were in-charge of the organizations themselves might be influenced more by an honest desire to see that such a situation should materialize, and less by actual progress in digital library development in the country. Since the concept of digital library was already accepted and its implementation had been initiated, albeit slow in progress. The desire to see libraries become digital could in itself become an

impetus to the actual implementation of the concept and this somehow reflected their readiness to go for digital libraries.

More than three-quarters (78% or 173) of the respondents believed that users were now ready for new information technology or digital information. Being at the forefront of library services, they knew that library users were expecting changes, demand more electronic, online and digital services, as they themselves were becoming more IT savvy.

One the one hand, respondents were overtly confident that in the future libraries would become digital, but on the other hand, they did not think that digital format would finally dominate the entire library scene. Only 52.7% or 118 of the respondents thought that libraries would be predominantly on digital format. If another inference could be made here, it meant that it would not be likely that Malaysian libraries would become full fledge digital libraries but rather the hybrid type because the other information media would be present for quite an indefinite time.

On whether there had been a change in the collection development policy of the libraries since 2000, 70.3% or 157 of the respondents answered that there was none. This study had intended the question to mean whether the library concerned had created or transformed more digital format and subscribed to more on-line services since 2000. If so, then 70.3% of the libraries had not done so. This finding did not augur well for the transformation of traditional libraries as collection development policy must be in tandem with digital library initiatives. Digitization progress in Malaysian libraries was indeed slow going by the result of data analysis.

Table 4.25: Distribution of Respondents on Perceptions towards Development of Digital Library

Questions/Issues	Perception (%) and (f)	
1. Are you positive about digital library development?	Not positive (11.3%) 25	Positive (88.7%) 198
2. Do you think library users are ready for new information technology?	Not ready (22.2%) 50	Ready (77.8%) 173
3. In your opinion will digital format finally dominate the entire library scene?	Will not dominate (47.2%) 105	Will dominate (52.7%) 118
4. Has there been a change in your collection development policy since 2000?	No change (70.3%) 157	Change (29.7%) 66

n=223

A Chi-square test of significance was performed on the data to determine whether opinions on the four statements/questions differed between the different types of libraries. As was the case with the section on digitization, in this analysis state and public libraries were combined into one group because of their much smaller sub-sample sizes (altogether there were only 16 libraries). Results of the statistical analysis were presented in Table 4.26. As could be seen, none of the *P-value* is less than 0.05 (level of significance), meaning that in all of the five statements/questions, the opinions of heads of libraries did not differ between the different library types.

Table 4.26: Chi-square Statistics of Opinion on Digitization by Type of Library

Statement	Type of Library		Opinion (% of Respondent)		P-Value of the χ^2 Test
			Negative	Positive	
1. Are you positive about virtual library development?	a)	State/Public	20.0	80.0	0.526
	b)	Special	11.2	88.8	
	c)	Academic	10.0	90.0	
		Overall	11.3	88.7	
2. Do you think library users are ready for new information technology?	a)	State/Public	31.3	68.8	0.438
	b)	Special	19.1	80.9	
	c)	Academic	24.4	75.6	
		Overall	22.2	77.8	
3. In your opinion will digital format finally dominate the entire library scene?	a.	State/Public	62.5	37.5	0.347
	b.	Special	48.2	51.8	
	c.	Academic	43.2	56.8	
		Overall	47.2	52.8	
4. Has there been a change in your collection development policy since 2000?	a)	State/Public	78.6	21.4	0.229
	b)	Special	74.1	25.9	
	c)	Academic	64.0	36.0	
		Overall	70.3	29.7	

4.8.2 PNM Project, Type of libraries and Role of Information Professional

In the literature review, it was mentioned that the National Library of Malaysia played a leading role in the country's library development and more so in spearheading national digital library initiatives. This study seeks to obtain the opinion of respondents on this role. It was also interesting to know how heads of libraries perceived about the role of information professionals *vis-à-vis* computer science professionals in the development of digital libraries, as well as the future of printed books and traditional libraries.

Respondents were asked to state their perceptions on these issues using five evaluation scales: *disagree* (1), *slightly agree* (2), *agree* (3), *agree to a large extent* (4) and *agree 100%*. It was reasonable that a perception or an opinion represented by "slightly agree" essentially meant one was not too sure. In fact, if the respondents were to be provided a "not sure" option for their opinion, those respondents who had stated "slightly agree' would most probably have chosen the "not sure" answer.

It was for this reason that the analysis treated *slightly agree* effectively as *disagree*. Similarly, *agree to a large extent* and *agree 100%* essentially meant that a person agrees, or believes, or thinks so. With this, the results of analysis (Table 4.27) were presented and discussed as follows.

Table 4.27: Perceptions on PNM, Type of Library, Role of IPs and Future of Books and Traditional Libraries

Questions/Issues	Disagree: % of respondents (f)	Agree: % of respondents (f)
1. PNM should publish a blue print that will serve as a guideline for digital library development in Malaysia	5.1 (11)	94.9 (212)
2. *Projek Perdana* of PNM does reflect some degree of digital library development in Malaysia	19.0 (42)	81.0 (181)
3. In your opinion, do you think that the hybrid type is the best for Malaysian libraries?	14.9 (33)	85.1 (190)
4. Do you think that books are here to stay despite the rapid expansion of the on-line services?	9.4 (21)	90.6 (202)
5. Do you feel that the information professionals are being threatened by the computer science professionals?	59.6 (133)	40.4 (90)
6. Information professional must embrace technology and not leave everything to the computer science professionals	4.2 (9)	95.8 (214)
7. Traditional libraries are on the brink of extinction	56.1 (125)	43.9 (98)

n=223

Heads of libraries overwhelmingly (94.9% or 212) agreed that the National Library of Malaysia should fulfill its leading role in spearheading the drive towards digitization by publishing a blueprint that would serve as a guideline for the other libraries. A substantial number of respondents (81.0% or 181) viewed the national digital library

program, the *PERDANA* Project as a manifestation of some development in the way of national digital library development.

Despite their views that digital library had a bright future, a high percentage of the respondents (85.1% or 190) thought that the best library would be the hybrid type, combining the digital and the print collections. Thus, in the context of the Malaysian library communities, digital library was perceived to be one that was not necessarily one hundred per cent digital. This might actually be true even in the more technologically advanced countries. If so, there was a need to "quantify" the definition of a digital library.

This might be a suggestion for future research. A large proportion (90.6% or 202) of the respondents believed that books would continue to be an essential part of a library's collections. The digital library concept was developed to provide users convenience and quick access to information. Books, and for that matter other print materials, should also be kept as libraries were traditionally the depository of published materials.

A Chi-square test of significance was carried out to determine whether opinions of heads of libraries on the five statements differed by type of libraries (Table 4.28). As could be seen from the various *P-values*, only in the first statement (about whether PNM should publish a blueprint) that the percentage figures differed, that was statistically significant, between different types of libraries.

It could be concluded, therefore, that the heads of state/public libraries were unanimous (100%) in their opinion that the National Library of Malaysia should produce a blueprint that would be a guideline for the other libraries. This was followed

by special libraries (98.2%) and academic libraries (89.9%). In the case of the other four statements, although the percentages of respondents who were positive about the four statements appear to be different, these were not statistically significant. Therefore, it was concluded that all library heads, regardless of the type of libraries, view the issues (about *Projek* Perdana, hybrid library, books, and information technology professional being replaced by computer scientists), the same way as with the general sample.

Table 4. 28: Opinion of Heads of Libraries on Various Issues by Type of Library

Statement	Type of Library		Opinion (% of Respondents)		*P-Value* of the χ^2 Test
			Negative	Positive	
1. The National Library of Malaysia (PNM) should publish a blueprint that will serve as a guideline for digital and virtual library development in Malaysia	a)	State/Public	0	100.0	0.017
	b)	Special	1.8	98.2	
	c)	Academic	10.1	89.9	
		Overall	5.0	95.0	
2. Projek PERDANA of PNM does reflect some degree of digital and virtual library development in Malaysia	a)	State/Public	25.0	75.0	0.387
	b)	Special	15.5	84.5	
	c)	Academic	22.4	77.6	
		Overall	19.0	81.0	
3. In your opinion, do you think that the hybrid type is the best for Malaysian libraries?	a)	State/Public	6.3	93.8	0.417
	b)	Special	13.6	86.4	
	c)	Academic	18.1	81.9	
		Overall	14.8	85.2	
4. Do you think that books are here to stay despite the rapid expansion of the online services?	a)	State/Public	12.5	87.5	0.294
	b)	Special	6.4	93.6	
	c)	Academic	12.6	87.4	
		Overall	9.4	90.6	
5. Do you feel that the information professionals are being threatened by the computer science professional?	a)	State/Public	50.0	50.0	0.382
	b)	Special	56.9	43.1	
	c)	Academic	64.8	35.2	
		Overall	59.6	40.4	

4.9 Analysis of findings (Quantitative)

4.9.1 Library Profiles

The first emerging sign of digital library development from the research was that 36% of the libraries had declared to become hybrid type, having some components of their collection digitized and was providing some form of online services. The remaining 55 % was print-based and only 1.3% declared to be digital.

The oldest library in Malaysia was the special library type followed by academic, state and public. There were great variations in terms of grade of library heads, ranking from JUSA B officer to S27, embedded within 15 designations i.e. Director General, Chief Information Officer, Chief Knowledge Officer, Director, Assistant Director, Deputy Director, Manager, Information Manager, Chief Librarian, Library Head, Librarian, Library Officer, Assistant Library Officer, Senior Library Assistant and Library Assistant.

As for staff strength, there was a close relationship between the number of professional staff and supporting staff. On the average there were 2 professional staffs / library. By type, state libraries had the highest average number of professionals followed by public, academic and special libraries. For supporting staff it was slightly higher than those above but in the same pattern. For IT personnel, it was much lower. With only 39 respondents answering this question, the average was only 2 persons / library. The provision of e-mail facilities for staff usage (with personal addresses) was only 42 %. This was considered to be low due to the fact that e-mail facility was one of the platforms for information transfer. In the cyber area where means of communication had been dominated by wireless technology, e-mail should be at everybody's disposal. However, by

type state libraries were the most generous followed by academic, special and public libraries. In terms of experience of library heads, state librarians had served the longest, followed by special, public and academic libraries. Average for all was 11 years.

4.9.2 Analysis of Library General Problems

Since the research wishes to see the readiness of Malaysian libraries in starting digitization programs and providing online services, it would be wise to ascertain their present conditions in terms of the nature of problems that they were facing. This was because the present environment did have some impact on any new undertakings. It would be difficult to move forward if not supported by adequate facilities, budget, training, management support and human resource. Earlier it was found that only 54% of the libraries had installed an integrated library systems, meaning 46% were still without library system. In another words, almost half of the respondents did not have as yet the most basic infrastructure for electronic library where at least web OPAC could be operational. It would be hard to imagine that in the cyber era, where the Internet had changed the way we live, there were still libraries without library system. How could they be ready or even plan for the setting up of a digital library in the absence of a library system? Therefore nineteen different kinds of general library problems had been asked in the questionnaire and these were what the research unfolded:-
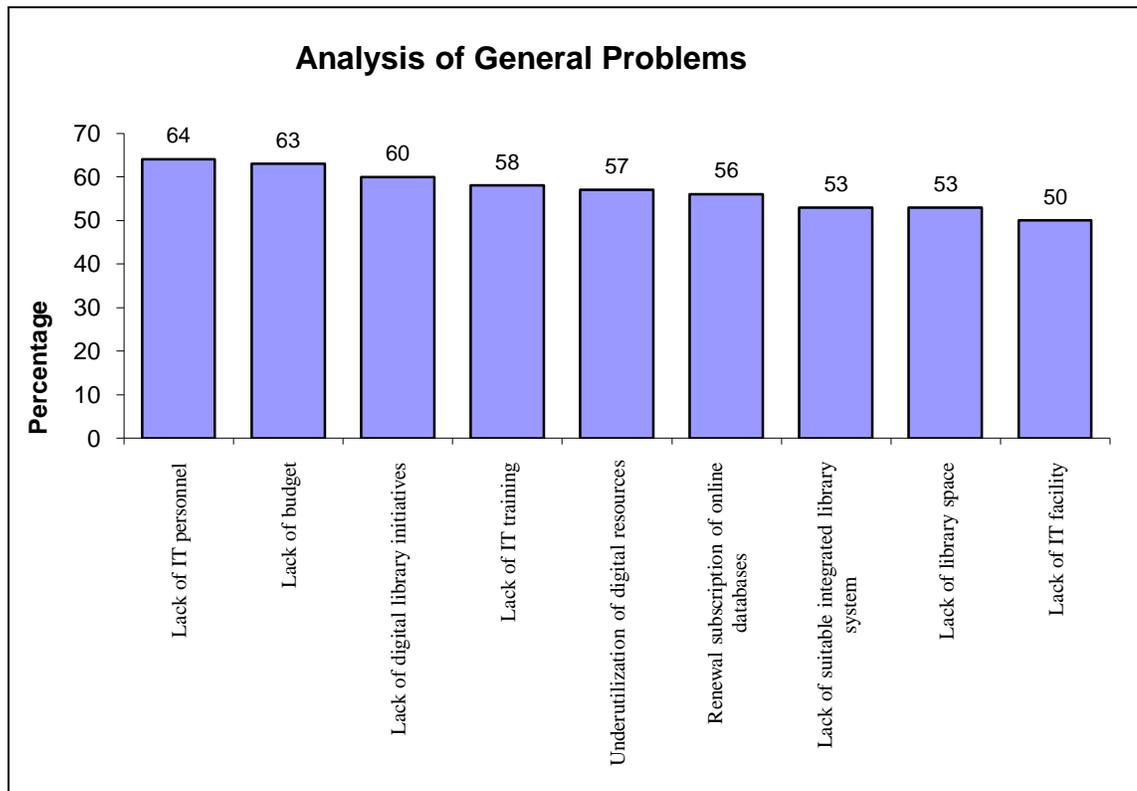
Analysis of General Problems

Figure 4.7: Analysis of General Problems

Lack of IT personnel had been identified as the most problematic and this was in fact very crucial to digital library development that was supposed to be IT dependent and IT driven. This was partly the reason why there had been some form of dependence on the IT unit of the parents' organizations for technical support and also the reason why heads of libraries unanimously agreed that librarians must embrace digital technology. As had been pointed out earlier, there was an average of only two IT personnel / library. This factor was further intensified by the lack of IT training. These problems co-related. The lack of IT personnel should be substantiated with the librarians themselves being sent for IT training, but this was not happening either.

In the literature review there had been a lot of discussions on the importance of funding and with such funding, digital library initiatives flourished. Digitization projects were complex and it required a significant amount of investment. But as the research found, the lack of budget came next after the lack of IT personnel. As we would see later, only 5% of the respondents had budget of more than 2 million and funding from non-governmental sector for digital library development was not yet a norm in Malaysia. Unlike in the United States, bodies like NASA and FBI were also involved in the sponsoring of digital library programs. The only known Malaysian non-governmental sector that had been sponsoring part of the maintenance costs of Universiti Kebangsaan Malaysia Medical Virtual Library had stopped doing so at the end of 2008 for reason they only knew.

The third problem was the lack of digital library initiatives and this was a testimony of the level of digital library development in Malaysia. In relation to this, some of the responses under digital library planning further emphasizes on this matter where it was gathered that they were still in the mid of planning for automation and electronic libraries, improving infrastructure and staff competency, depending on the availability of budget and on parent organizations. What seemed to be missing in their future planning were a concrete and solid digital library initiative and most probably they depended on the digital library initiatives of the National Library of Malaysia.

The other problems of underutilization of digital resources and renewal subscription of online databases were inter-related. The underutilization of digital resources could stem from several reasons. Its either users were not familiar with digital resources or the new service had not been promoted or user education program had not

been intensified. With limited budget, renewal would be a problem if the subscriptions remained underutilized. Therefore some publicity embedded within user education program might help solved underutilization of digital resources. Together with the lack of suitable integrated library system, lack of library space and lack of IT facility would definitely slow down development growth, even though lack of library space might not be so important because with digital materials, supposedly less space would be needed.

4.9.3 Holdings

Print-based libraries still dominated Malaysian scenario although 36% had turned hybrid. This was further intensified by the fact that 89% had monograph as one of their main collections followed by periodicals, video cassettes and audio cassettes. Others in a much smaller percentages were posters, maps, photographs, microfiche, and films. On the rise was CD-ROM (58%). CD-ROM collection had surpassed the last 5 collection types that used to be among the most important collections being kept. This was a good indication of the inclination towards digital library development. On the contrary, the western library scenario was quite different when Pack and Pemberton (1999) were reported as saying that the use of CD-ROMs had declined. If we might infer, we had been left behind.

4.9.4 Automation

One of the problems identified earlier was the lack of suitable integrated library system and as a result only fifty four percent (54%) of the libraries had installed integrated library system and most of them have got it quite recently, i.e. between 1999 and 2004. The earliest reported was in 1982. Between 1982 and 1998, the automation

was rather slow averaging about 3 libraries per year, and between 1999-2003, the pace quickened to about 12 libraries per year. The fact that only half of the respondents had installed library system was another major setback when libraries of the world were actively transforming from print to digital based but some Malaysian libraries were still without a library system. Progress in library automation and electronic libraries would logically be the force factor to further accelerate digital library development. As mentioned earlier, this was due to the fact that it would be very unlikely that Malaysian libraries would go into digitization without first installing library systems. The researcher's twenty years experience as practicing librarian had witnessed this trend and the field works done at initial stage of the research had confirmed this. When they were fully automated, at least some of the basic infrastructures such as Web OPAC would be there in place. It was just a matter of taking one step further and exploring all new possibilities.

There had been a tendency to install locally developed library system as shown below but unfortunately Integrated Library Management Utility (ILMU), a joint venture between MARA University of Technology (UiTM) and Paradigm ceased operation in October 2007.
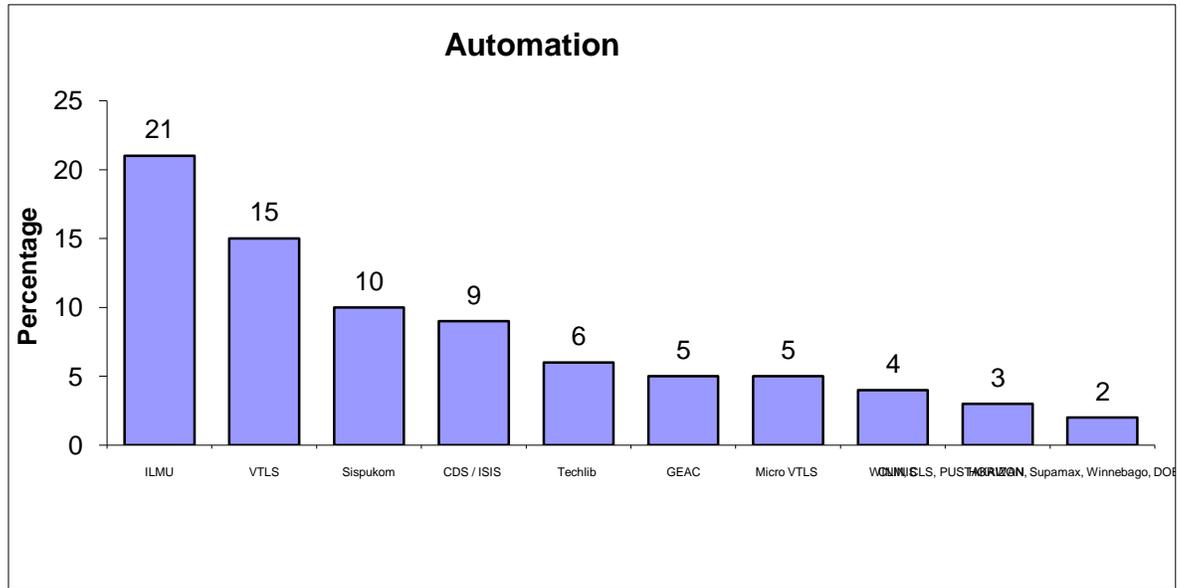
Automation

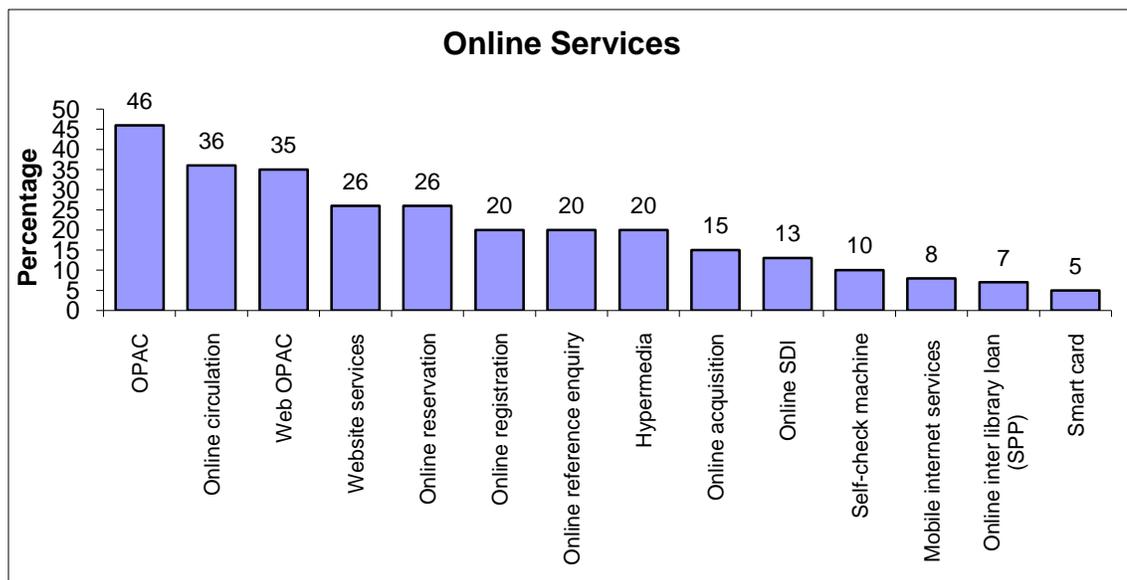**Figure 4.8: Automation**

Online Services

 Figure 4.9: Online Services

As a result of the problems of IT personnel, lack of budget, lack of digital library initiatives and lack of IT training, online services were still minimal and comprised only the basic library functions as shown above. But at least they were transforming

electronically and providing some important user online services even though the percentages were rather low. The widespread of web OPAC and web site services were good indicators. Again Malaysian libraries were advancing albeit slow but progressing.

4.9.5 IT Facilities

Universal access was the keyword with respect to digital library information services. Information infrastructure and ICT facilities were prerequisite without which online services might not be possible. Again these were also at the minimal level as shown below.
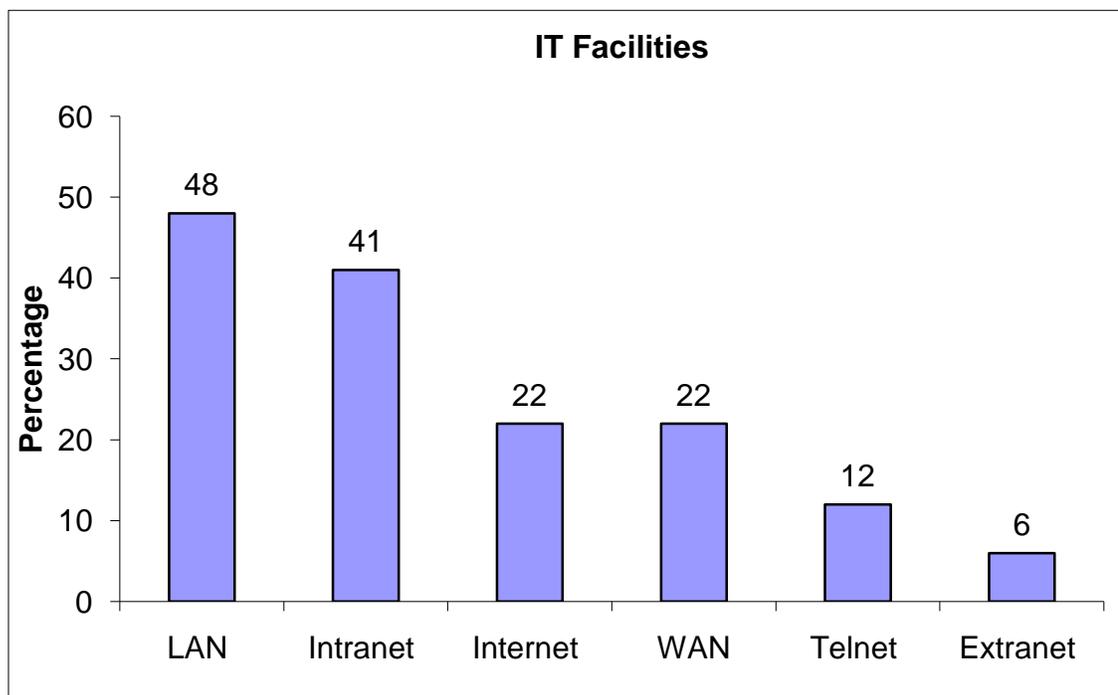
Figure 4.10: IT Facilities

Digital library's existence is totally dependent on Internet facilities where World Wide Web would be in full operational to enable transboarder data flow. These findings somehow reinforced the earlier finding which had identified that lack of IT facilities as

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one of the problems facing Malaysian libraries. The fact that only 22% had Internet access in the cyber era was indeed surprising and disappointing. Automatically for the other 78% of the libraries there would be no virtual access and services and definitely digital library development would be out of question.

It was quite difficult to believe in the digital age that there were still some Malaysian libraries operating without any PCs. Only 83% of the respondent did possess PCs in varying numbers and the biggest percentage was within the range of 1-5. This was also not a good indicator for digital library development. The availability of PCs meant the possibility of online services. And the number of PCs owned in this study corresponded very much with the number of PCs with Internet connection.
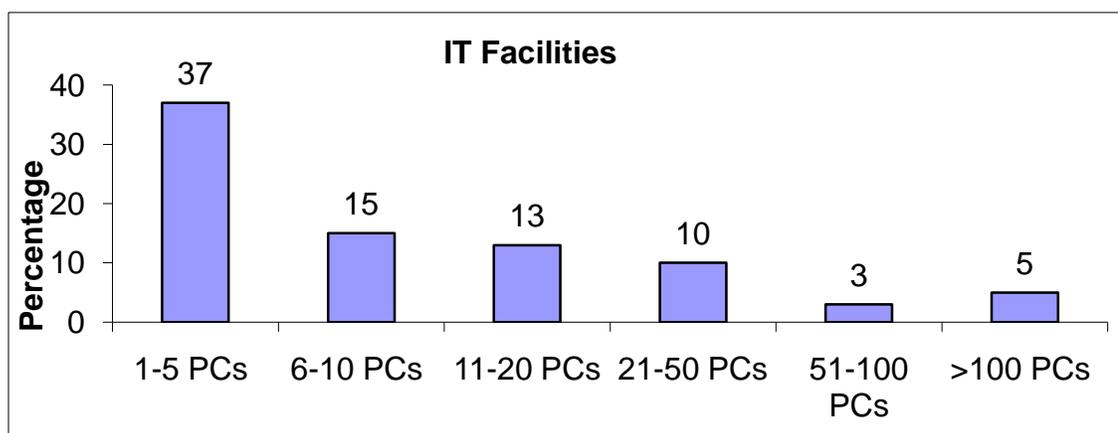

Figure 4.11: IT Facilities

4.9.6 Data base subscription

Subscriptions to local and foreign databases did not show much different in term of percentages. Average for local database subscription was 33% and for foreign database subscription was 31.6%. Those subscribing to between 1-3 databases, 27% were local while 19% was foreign. Between 4-6, 3% was local while 5% was foreign. Between 7-10, 3% was local while 2.7% was foreign. While subscriptions to local

databases stopped at a range of between 7-10, foreign databases subscription continues to a higher range till between 51-100. The percentage for these categories was all below 1%. But subscription for the 51-100 databases was represented by 1.3%. Therefore a conclusion could be made that Malaysian libraries subscribed more to foreign databases as compared to local data bases. Three inferences could be drawn here. First there wasn't enough local databases to subscribe to; second if there was any, it might not be relevant to organizational needs; third foreign databases were plenty in the market and in multidisciplinary subjects.

4.9.7 IT personnel and technical support for library automation

Earlier it was found that IT personnel constitute an average of only 2 persons / library. The shortage of IT personnel was further intensified by another finding that 56% of the libraries were dependent on IT units of their parent organizations for technical support. The tendency to depend on parent organization's IT unit was not a very encouraging phenomenon because at times libraries would have to cue for jobs to be done. As a result of the shortage, outsourcing for digitization works accounted for 19% and only 17% did have their own internal IT units. What was needed by librarians was actually intensive ICT training and this was what suggested under opinion when they strongly felt that information professionals must embrace technology and not to leave everything to the computer science people.

4.9.8 ICT Training

As for ICT training, 42% of the libraries did engaged in both in-house and external trainers. But in-house training alone accounted for 24% and self–trained was

represented by 23%. Those engaging external trainers accounted for only 14%. Earlier it was found that the most top problems faced by all libraries were the lack of IT personnel. Therefore this problem should have been substantiated by intensive training. This could be the reason why many of the librarians had resorted to undertake self-training. This was further intensified by the fact that 70% of the libraries reported having ICT training of less than one week. Short courses might not what they required. With ICT changing like the speed of light, training should be in tandem with the development itself. A week of training could expose them only to basic skills or just a refresher course. Those attending courses between 1 - 3 weeks but less than a month were 23%, as compared to about 70% that constituted less than a week. For courses that were more than 3 months was only represented by 5%.

The above phenomena accounted for the high dependency on parent organizations IT unit as already mentioned above. Technically, librarians could not stand on their own as yet for digitization works. And looking at the kinds of ICT training that they had been sent, 72% was on application software, 66% on introduction to computers, Internet and World Wide Web 51%, and web design 40%. More ICT inclined courses pertinent to digital library development such as database management, information system development, programming and telecommunication and networking were represented by only small percentages i.e. 15%, 10%, and 9.4% respectively, which were insufficient.

4.9.9 Digitization

Digitization of library materials meant creating and transforming some of the library's print holding into digital format, either through information surrogates, born

digital materials and giving access to digital information through subscription of e-resources, as part of digital library initiatives. The survey showed that only 29% had done some kind of digitization works, while 71% had not done anything as yet. Earlier it was also found out that 55% of the libraries were still print-based and only 36% had turned hybrid. Comparatively, the state/public group had the highest proportion of its libraries digitizing (63%), followed by special libraries 30% and academic libraries 21%.

The development of Malaysian libraries had actually begun with the introduction of library automation in 1978. Then it progressed further from electronic and networked environment and then to digital library concept. In short from *MALMARC* to *PERDANA*. For a period span of about 25 years, having only 29% of the libraries had done digitization works and where 55% of the libraries were still print-based, the development was seemed to be relatively slow. As noted earlier under digital library planning, when digital library initiatives were taking shape in the western world, majority of Malaysian libraries were only planning to automate/going online. Comparatively, the American Memory Project had digitized almost 9 million items and France's *Gallica*, was offering 90,000 volumes in image format, 1200 volumes in searchable text format, 500 sound recordings and 80,000 digitized still images (http://www.bnf.fr/pages/zNavigat/fraem/version_anglaise.htm?ancre=english.htm). The Koninklijke Bibliotheek, of Netherlands was planning mass digitization from 2007 – 2011, putting online 8 million pages from colonial Dutch daily newspapers (Klijn, 2008). *Europeana*, started in July 2007 had initially 2 million digital collections of texts, images, audio files and movies and the number was projected to reach 6 million items

by 2010 (Landon, 2009). The Portal of the Association of Computing Machinery had 54,000 online articles from 30 journals it ever published (http://portal.acm.org/dl.cfm). European Commission's digital library initiative under the EU's i2010 strategy, aimed to make over the next 5 years, 6 million resources accessible through the European Digital Library web portal and the cooperation between Europe's national libraries in 2006, would see digitized objects increasing from 2 million in 2008 to 6 million in 2010. The National Library of Malaysia had digitized 600,000 pages as at September 2008.
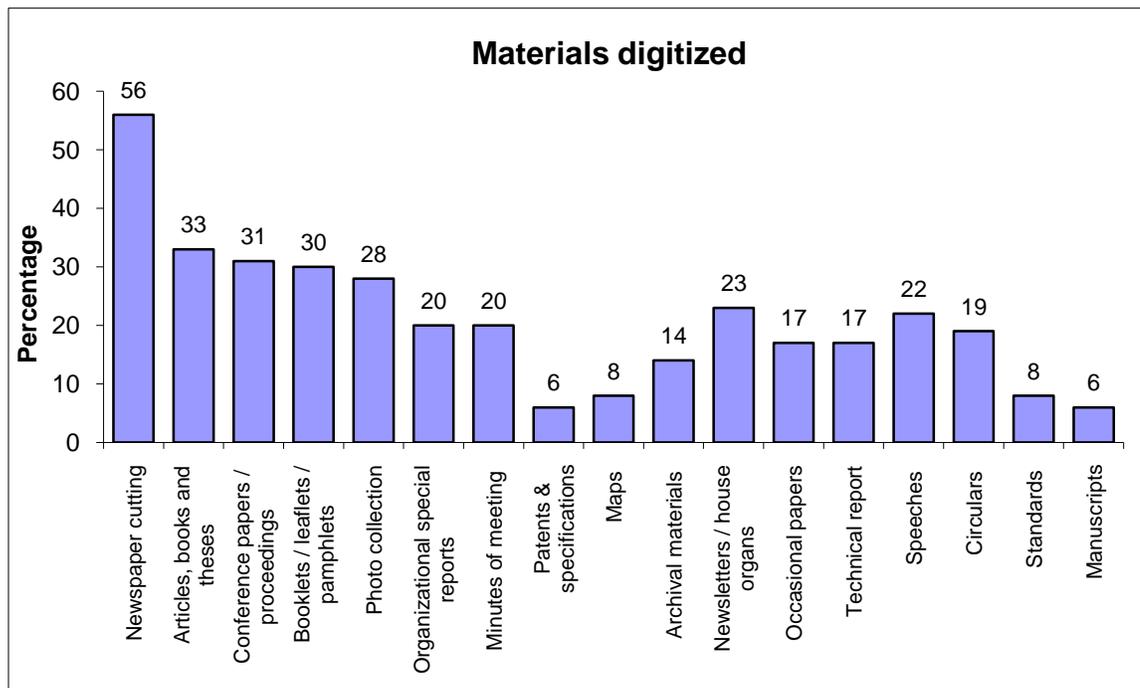

Figure 4.12: Materials Digitized

If we look deeper at the choices of materials digitized, these were very much localized materials pertaining to the organization's themselves, their own internal publications and were meant mainly for internal usage. If we might infer, it seemed that the main aim of digitization was to preserve these materials to be part of the institutional

memory systems and by digitizing their own internal publications, they did not have to infringe on any copyright matters or get involved with any legal matters. The other possible reason could be to solve space problems since this had earlier been identified as one of the problems faced. Information surrogate in the form of digitizing internal organizational publications seemed to be the favorite approach for digital library initiatives followed by subscription to commercial online databases and e-journals.

The above inference was further supported by the next finding i.e. only 12% of the libraries flashed on the World Wide Web as a public domain whatever that they had digitized. Majority 54% flashed or uploaded only selected materials and 33% didn't put their digitized material on the web, only planning to do it in the near future. So, it could be further inferred that Malaysian libraries digitize not so much for resource sharing, which was a fundamental concept of digital library environment but rather using it as a new platform for preservation or institutional memory and at the same time to increase online or digital services within their own territory.

Libraries undertaking digitization works preferred to buy their own equipment and did it themselves within the library premise despite digitization works had to be done with the same number of existing staff. This was represented by 45% and outsourcing to local private company was the second best choice (41%) and only 14% depended on organization's IT unit. Even though 56% of the libraries depended on their respective parent organization IT units for technical support, but for digitization works, they prefered buying their own equipment and outsourcing. As mentioned earlier, total dependent on parent organization's IT unit would slows down development growth as all the other divisions together with the libraries would have to cue for works to be done.

So, to speed up digitization process they had to resort to other alternatives i.e. buying their own equipment and outsourcing.

One of the findings earlier under library holdings was that collection on CDs was on the increase. In terms of importance, CDs came third after monograph and journal collections. This finding was further intensified by the storage media adopted for digitization purposes. CD tops the list represented by 63% of libraries choosing this medium, followed by PDF and hard disc 50% each, floppy disc 20% and enterprise storage system 19%. Other media were less significant; DVD 6%, miniature mobile storage media 4.7% and PC cards 3%.

However the use of CD-ROMs in the west had declined considerably in the digital age (Pack and Pemberton, 1999).

4.9.10 Budget for digitization

The literature review earlier had revealed that budget was indeed very important as one of the successful determining factors with respect to the amount of digitization works that libraries could have possibly done. Unfortunately, to many of the libraries for this study, budget was classified as confidential and therefore couldn't be released.

However data could still be generated from the 54 responding libraries. The total amount of budget on digitization works varies greatly between RM25, 000 to RM2 million as shown below:
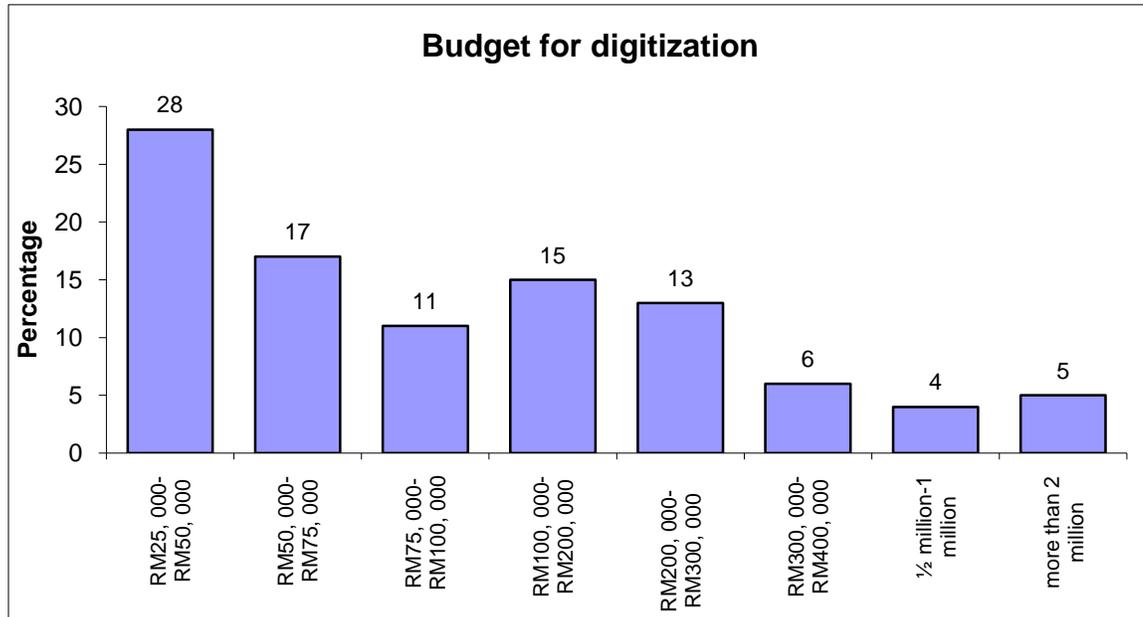
Budget for digitization

Budget range	Percentage
RM25,000-RM50,000	28
RM50,000-RM75,000	17
RM75,000-RM100,000	11
RM100,000-RM200,000	15
RM200,000-RM300,000	13
RM300,000-RM400,000	6
½ million-1 million	4
more than 2 million	5

Figure 4.13: Budget for Digitization

The above statistics were drawn from only 54 libraries that were willing to disclose their budgets for digitization projects. Even though the figures were not well represented from the total respondents but the researcher had to respect the libraries decisions to classify their budget as confidential. However, the statistics did provide a glimpse of financial standings of libraries in terms of budget provision for digitization purposes.

Looking at the statistics, 56% of the libraries had below RM100,000 and this was not an encouraging figure. The literature review had revealed that almost all the digitization projects mentioned were all in the multi-million brackets. There were several factors that might lead to this scenario. Earlier it was found that libraries did face problems in terms of staffing, IT personnel, budget, digital library initiatives, ICT training, under utilization of digital resources, renewal subscriptions of online data bases and to a lesser extent, IT facilities and infrastructure. Digital library development

required an extensive long-term planning that needed to be staggered into several phases, over a period of time that might take several years to accomplish. It could be inferred that Malaysian libraries were still configuring and planning to embark on a massive digitization projects but they were now doing it, steadily albeit slow. They were still experimenting, trying and taking smaller steps but definitely progressing.

As we realized, digitization process was a big undertaking, requiring huge investment and capital expenditure. This was one of the reasons why in other countries, most of the digitization projects were done on a collaborative basis, where operational costs and expertise were shared wherever possible. However, the scenario was not all too bad. Four percent (4%) of the libraries did have between RM1/2-1 million and 5% did have budget of more than RM 2 million. Comparatively small to match the western digital library initiatives' budget allocation but positively a good start.

4.9.11 Website contents

There were many approaches to the development of a digital library. One of the most popular among Malaysian libraries was the development of websites where electronic or digital access to information that used to be in the printed form was now provided online or virtual. The research had posted 18 possible areas with respect to the contents of websites.
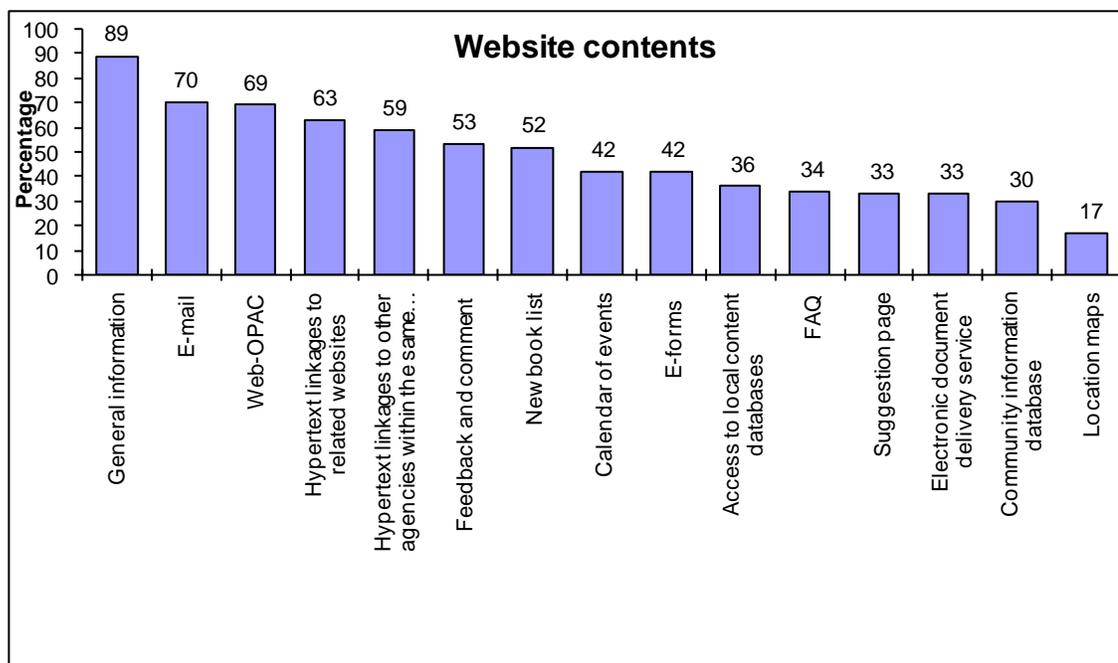
Website contents

Category	Percentage
General information	89
E-mail	70
Web-OPAC	69
Hypertext linkages to related websites	63
Hypertext linkages to other agencies within the same...	59
Feedback and comment	53
New book list	52
Calendar of events	42
E-forms	42
Access to local content databases	36
FAQ	34
Suggestion page	33
Electronic document delivery service	33
Community information database	30
Location maps	17

Figure 4.14: Website Contents

From the statistics above, several inferences could be made. Most of the contents of the websites were the information that they used to have them printed on their brochures or leaflets. In a way they had moved one step further. With digitization, they had made it available online. Global access to many of the other related digital contents of other organizations' web sites were also possible through the hypertext linkages thus increasing virtual communications. The presence of hypertext linkages helped users in their searching for more related information and might also help reduced reference enquiries. It might also substitute the production of subject bibliographies, in the new form. Their potential users had grown by leap and bound, cutting across physical boundaries. The availability of web-OPAC, which was one of the outcomes of library automation, had facilitated further the management of Inter Library Loan. It also helps copy cataloging and thus reducing original cataloging time and maintaining standardization as far as call number and subject headings were concerned. Thus it could

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be seen that the websites were fully utilized as a platform to disseminate information that previously used to be in the printed form. They were now used to facilitate and enhance library routine functions with respect to enquiries pertaining to the normal libraries' enquiries and the provision of linkages to other local and foreign related websites.

It could be also be inferred that the website services were the initial attempts toward online/digital services and gradually the libraries would be putting up more varieties. As statistics showed, 52% of the libraries had converted to virtual accession list, 50% had started to provide access to e-book through their websites and another 52% for the provision of online databases.

4.9.12 Problems related to digitization

Since digital library development was a new phenomenon, the research also wishes to ascertain the kinds of problems that these libraries might have encountered in the process of going digital. Earlier it was found that only 29% of the respondents had started some kind of digitization works and 71% had not done anything as yet. Definitely this was not a good indicator. What could possibly the reasons that many of the libraries had not done anything despite the fact that the topic was gaining momentum worldwide. The questionnaire had posted 18 possible problems and 6 items had been classified as the top most problems as shown below.

The first digitization related problem on staff shortage (digitization project done with existing staff) further intensified earlier finding that stated lack of IT personnel (64%) as one of the general problems faced by Malaysian libraries. Similarly cost factor (60%) also bore similar weightage as lack of budget (63%).

From the interview sessions with the 38 libraries that the researcher did for the qualitative data, it could be seen that all of these libraries were planning and doing their own digitizing works independently, depending on whatever resources they had at their disposal, where there was an absent of any concerted or collaborative efforts at any level
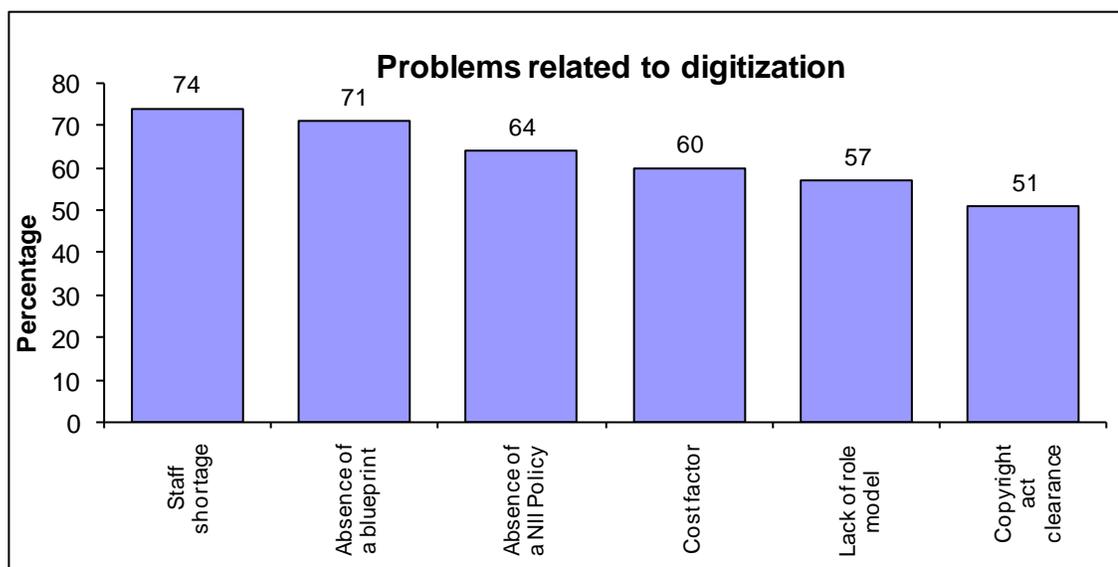
Problems related to digitization

74	71	64	60	57	51
Staff shortage	Absence of a blueprint	Absence of a NII Policy	Cost factor	Lack of role model	Copyright act clearance

Percentage (y-axis: 0, 10, 20, 30, 40, 50, 60, 70, 80)

Figure 4.15: Problems Related to Digitization

among the libraries that could be the platform for some kind of cooperative work, except those spearheaded by National Library of Malaysia or PERPUN. The involvement of the respondents with digital library projects under the National Library of Malaysia was also very small i.e. only 11% and 89% had never been involved. Everyone was doing their own work, at their own pace; they did communicate through the invisible college but not through well chartered and published guidelines.

The above observation had been further justified when 71% of the respondents felt that the absence of a blueprint that might serve as a guideline for digital library development as another one of the problems faced. The high percentage for this problem could be taken as an indicator that the Malaysian librarians were ready to move forward

and embrace digital environment but needed the right guidance and reference so that they would be moving in the right direction in tandem with the concept of world's digital library development. The next problem faced was the absence of National Information Infrastructure policy (64%). Many felt that digital policy with respect to national information infrastructure should be formulated by the authority concerned to help putting in place the much needed basic information infrastructure to keep regulate digital library development.

Since 55% of the respondents declared themselves as print-based, 36% hybrid and digital libraries accounts for only 1.3%, therefore, lack of role model where the libraries could learn, emulate and evaluate before starting their own digital library works was also one of the problems faced. Due to the lack of local published literature on digital library initiatives and the absent of an inventory of national digital library initiatives, no one knew what the others were doing and as such nothing could be learned or discussed from those who had initially started and progressed in digitization works. This lack of common official platform, called for an urgent extensive collaborative digital library projects among all Malaysian libraries and other related information agencies.

The last problem identified was related to Copyright Act Clearance (51%). There was a co-relation between this problem and materials digitized by libraries. Earlier findings revealed that information surrogate was one of the most popular methods chosen by Malaysian libraries as a short-cut to the formation of a digital library. Internal organizational publications such as newspaper cuttings was the most widely digitized, followed by theses / dissertations, articles, books, conference papers, pamphlets,

technical reports, speeches, minutes of meetings, maps, manuscripts and circulars. Therefore it could be inferred that in the process of transforming these materials into digitized form, they did face some copyright problems. This had greatly contributed to the reason for resorting to digitizing mainly their internal organizational publications to avoid any legal problems.

From the total list of digitization related problems, those six mentioned above top the list scoring more than 50%. They *do* face other problems albeit insignificantly. The least of the problems i.e. 20% was related to management support. In other words, libraries *do* get management support literally i.e. they were keen on transforming the libraries into digital based but in some cases this had not been translated into monetary grant. Hence the problems of budget that had always besieged library development but at least as the evidence showed that management awareness was there in place. So it was up to the librarians to capitalize on this good indicator and work harder to convince the top management level in order to get more budgets for digitization works.

Those problems discussed above might also have contributed to another finding of the research i.e. only 28% of the libraries had developed some kind of in-house databases, while 72% had never done so. Developing in-house databases might stem from two sources i.e. information surrogates and born digital materials (through local contents). Lack of local contents was not a major problem. Only 35% said it was so. So again another inference could be made for the low level of digitization works i.e. lack of staff, expertise and budget.

4.9.13 Digital Library Planning

The questionnaire consisted of one open ended question with regards to digital library future plans that they might have. This question hoped to gauge all kinds of plans that were in the pipeline for Malaysian libraries. It seemed that some of their digital library planning (the highest percentage) was still surrounding the attempts towards automation and electronic libraries, which reflects their levels of perceptions, readiness or preparedness towards digital library environment. It seemed that they would automate first prior to planning for digital libraries, because by automating, at least the basic ICT infrastructure would supposedly be in place. That's why some of the digital library planning had included promoting the electronic media and acquiring/subscribing to more e-resources, as the fastest way of giving access to digital materials. This was in tandem with one of Cleveland's methods of building digital collections i.e. giving access to external materials, which Malaysian libraries had been capitalizing on.

What seemed to be missing in their future planning, which seemed to be very basic and loose, were a concrete long term planning and solid digital library initiatives and there had been no mention whatsoever of collaborative effort between organizations thus resulting in the small localized independent digital library initiatives that seemed to still remained at the preliminary stage.

Another major concerned was that only 62% did attempt this question. Therefore it could be inferred that most probably the other 38% did not have any plan as yet, and 9% was at the initial planning stage. For the purpose of convenience, the future plans had been themed and grouped as shown below:-
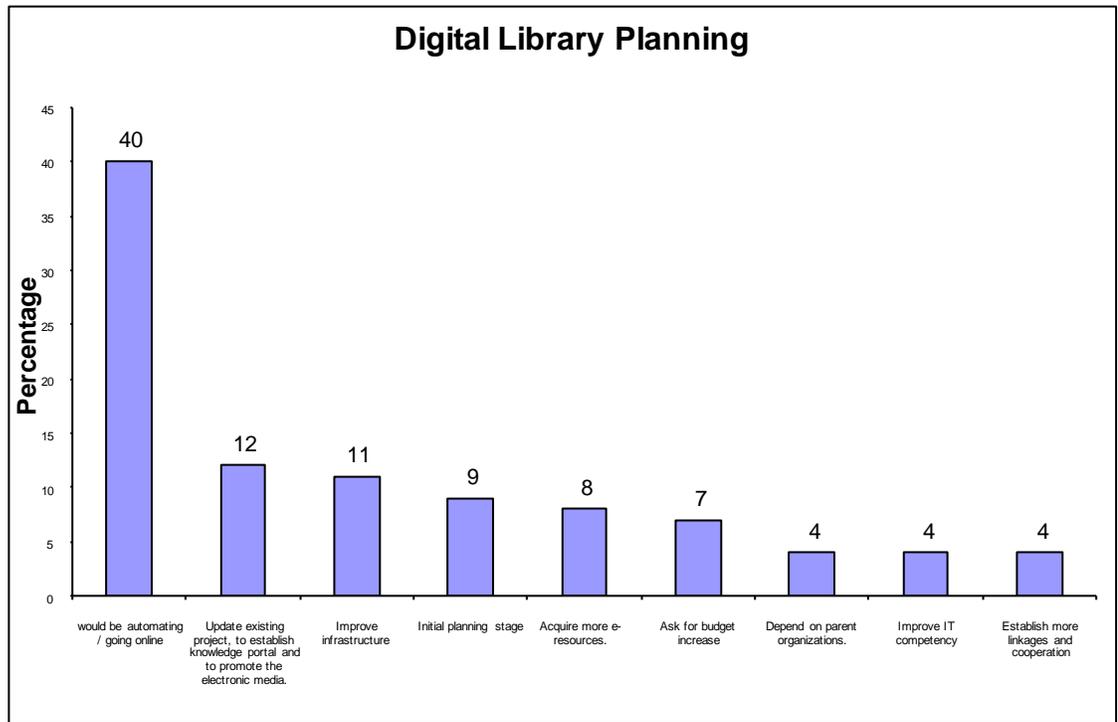
Digital Library Planning

Bar chart showing percentage values:
- would be automating / going online: 40
- Update existing project, to establish knowledge portal and to promote the electronic media.: 12
- Improve infrastructure: 11
- Initial planning stage: 9
- Acquire more e-resources.: 8
- Ask for budget increase: 7
- Depend on parent organizations.: 4
- Improve IT competency: 4
- Establish more linkages and cooperation: 4

Figure 4.16: Digital Library Planning

The above plans suggested that they would be automating and going online through the installation of integrated library system and would provide more web-based online services and access. In fact some of their planning co-related with the digital library related problems discussed earlier i.e. budget, infrastructure, training and dependence on parents' organizations IT Unit. That's why their plans included to ask for a budget increase, to improve infrastructure and IT competency and would depend on the parents' organizations initiatives. Many had the intention of digitizing their own organization's publications through the establishment of knowledge portals, reflecting efforts to actually establishing institutional memories and it seemed that Malaysian libraries preferred this approach when planning for digitization. Since Malaysian libraries were facing space problems presumably by digitizing their own materials, this

might help solved space problems and provide an avenue for the purpose of in-house archive preservation.

Other plans included to update existing project, acquiring more hardware and software, installing wide area network and enhancing Internet access. As stated above, they also wished to acquire more e-resources, ask for budget increase, to improve on staff IT competency and intended to establish linkages and cooperation with other libraries including the National Library of Malaysia. This was very contradicting with the western digital library initiatives. From the literature review, it was clear that all of the digitization projects done were on a collaborative basis, either locally, reginally or internationally.

From the above statements on digital library planning that had been collapsed, two inferences could be made. First, Malaysian digital libraries' planning related significantly to solve the problems that had been identified earlier such as lack of infrastructure and IT facility, staffing, installation of library systems, acquiring more e-resources, asked for a budget increase and staff IT competency. Secondly, the planning as a whole was too localized, mainly at the initial stage, focusing on the digitization of organizational publications, no big scale planning and without any concrete collaborative efforts among them. They seemed to be planning independently, what they thought would be best for their libraries without any specific guidance from any main body or digital library authority. This had partly contributed to another finding later in another research question when it was found that 95% of the respondents agreed that the National Library of Malaysia should publish a digital library blue print that would serve as a guideline for digitization works in Malaysia.

4.9.14 Opinions of Library Heads

The last part of the questionnaire attempted to seek general opinions of heads of libraries on their perception on the phenomenal growth of digital library development in Malaysia, where 89% of them were positive about it. They strongly supported and believed that Malaysian libraries must move toward digital library development and that users too were ready (78%) for new digital services. However only 53% thought that digital format would dominate the entirely library scene, while 47% felt the opposite. Several deductions could be made.

Firstly, majority of head of libraries were aware and realized the fact that traditional library operations and services were bound to change. But what they felt was not the same as what was happening. The change had not been drastic. Printed materials were still dominating. Digital library initiative planning was still minimal with high dependency on the National Library of Malaysia, together with other scores of problems that they were skeptical about Malaysian libraries turning 100% digital, even though it was earlier found that 52% of the libraries did plan to be digital by 2010. They had some reservations that the current scenario would change drastically in the near future. The last part of this question re-affirmed those above. 70% of the libraries had not experienced any change in collection development policy. Meaning they still purchased what they used to purchase previously. Only 30% had experienced some changes in the collection development policy, probably catering to the increase in the acquisition of digital information.

The next part of the questionnaire, consisting of seven general questions, was another attempt to establish the dimension of development, or the platform, the pace at which digital library development would takes place. As shown below, high percentage

or majority of the respondents felt that the National Library of Malaysia should publish a blueprint that would serve as a guideline for digitization works. Being the prime mover of national library development, hopes were high for the National Library of Malaysia to be proactive in establishing a set of guidelines that provides the mechanism for going digital.

From the field works and interview sessions made during the year 2002-2004, it was obvious that libraries started digitization works very much on their own, without one unified blueprint that they could consult, count or depend on. Each library, taking their own approaches and experimenting at times, what and how they should begin with. As each was developing on their own, collaboration was very minimal. The presence of a blueprint of digital library development and digitization works would serve well for Malaysian libraries as it would help solved a lot of basic questions and provide the right mechanism to adopt the right digital library concepts. A blueprint would also provide some form of standardization and serve as the national reference source or documentation for digital library operations and services that would generally be accepted by the Malaysian library community.

Many of them agreed that the *PERDANA* Project did reflect some degree of digital library development in Malaysia even though in terms of participation only 11% had been directly involved in that project. Since only 29% had done some kinds of digitization works, many were of the opinion that the hybrid type was the best for Malaysian libraries. This also coincided with the early finding whereby only 1.3% had categorized themselves as digital libraries. This finding was further intensified by another finding that books were here to stay despite the rapid expansion of online
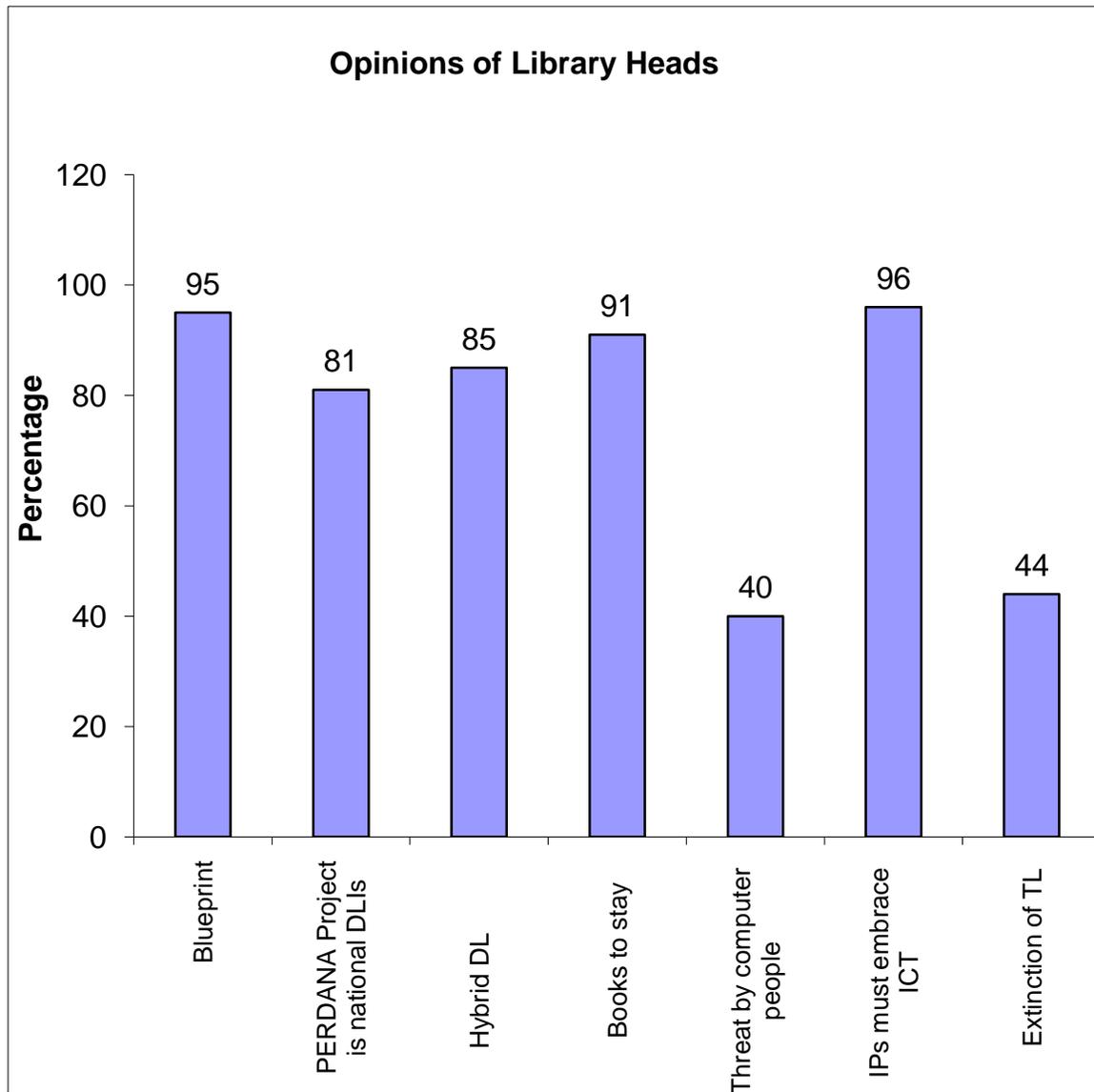
Opinions of Library Heads

Figure 4.17: Opinions of Library Heads

services. Even though users were ready for online library services as reported by earlier finding but the Malaysians custodians felt that print would stay despite the overwhelming digital library development worldwide. As such 60% did not feel threatened by the computer science people. However 40% felt the other way round. However a high percentage agreed that librarians must embrace ICT, indirectly sending a message that they should not be too dependent on the computer science experts.

From the above quantitative findings, Malaysian libraries were seemed quite ready and had embraced digital library concepts to some extent where digital library services and operations were permeating into the scene but more impetus were needed to progress further due to the facts that as of 2004:

- Some libraries were still run by non professional librarians.
- Lack of staff especially technical expertise.
- Only 54% of the respondents had installed library system.
- 17.5% did not answer the question on the number of PCs owned and only 5% had more than 100 PCs.
- High dependency on IT Unit of parent organizations for technical support.
- The domination of print materials in all libraries.
- The introduction of basic online library services (OPAC, circulation, website services, reservation, registration, reference and SDI).
- Press cuttings and organizational publications formed the bulk of digitized materials.
- Minimum ICT training.
- Modest ICT infrastructure.
- Only 29% had done digitization works.
- Only 11% had been involved in the national digital library project (*PERDANA*).
- Web sites were dominated by private domain.
- Only 1.3% had budget above RM 2 million.
- Digitization related problems were basic in nature (staff, blueprint, NII, budget, role model, copyright act).
- There had been no significant change in the collection development policy.
- There had been no concrete and long term digital library future planning.
- There had been no international collaboration as yet.

The scarce of some of the above basic necessities were not good indicators for the national digital library development. Although the digital library planning seemed to be basic and lack of depth but library heads were all pessimistic, users were ready and

their preference for hybrid library was commendable. With the right infrastructure (such as a blueprint, ICT and national information infrastructure), budget, training, cooperation/collaboration and leadership from the relevant authorities, they could go further. The necessary platforms for digital library development need to be created and the existing ones enhanced, so that the path would become clearer.

What follows in Chapter 5 were findings from the qualitative data based on the 12 structured interview questions from a total of 38 interview sessions, looking for some form of convergence of findings.