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CITATION STUDY OF LIBRARY AND INFORMATION SCIENCE DISSERTATIONS FOR COLLECTION DEVELOPMENT

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Abstract
This study applies citation analysis method to examine the use of information resources by students of the Master in Library and Information Science (MLIS) at the University of Malaya in preparing their dissertation. References from a sample of 40 MLIS thesis from the period 2000-2005 were examined for: year of publication; author; source title; bibliographic format; language; subject category; and place of publication. Core journal titles are compared with Journal Citation Report (JCR) listing and also for availability at the University of Malaya Library. The study shows that journals and books are still the most used sources for information and there is a steady increase in the use of electronic media by Library and Information Science (LIS) researchers. Authorship pattern indicates preference for single authored works. This study serves as a baseline indicator of resources used by LIS researchers. It can be utilised by librarians to focus on collection development to support research needs.

Keywords: Bibliometrics; Citation analysis; Authorship pattern; Library & information science research; Journal ranking

INTRODUCTION

University libraries must have a robust and dynamic collection development policy to keep abreast with changing needs of its users, may they be the undergraduates, postgraduates, teaching staff or researchers. Changing trends in research areas and information seeking behavior of users are factors that libraries need to study in order to provide collections and services that fulfill the information needs of their clients. One such method to examine actual use of library collection is in the analysis of citations or references listed at the end of a researcher's publication. A citation is a bibliographical entry in a footnote, reference list or bibliography of a document that contains enough information to verify the original item (Leiding 2005). According to Hovde (2000), citation checking of research documents and comparison of those citations with the availability of materials in a local collection offers unobtrusive and cost-effective method of evaluating that collection's ability to support research. Several studies have used citation analysis within a discipline

for checking subscriptions or budget planning (Leiding 2005; Haycock 2004, Edwards 1999; Sylvia 1998; Devin & Kellogg 1990).

Citation analysis provides information on the use of references or literature in journals, thesis and others materials. In analysing the citations, the frequency of the journal title, type and age of the resources used, place of publication, language and frequency of the author are analysed to study use trends, which suggests means to enhance the library collection. It helps to point out the way to revise the collection and the services to allow the librarians to better serve the needs of the library users from the present to the future. Furthermore, it is also a technique that gives potentially valuable information in the management of library journal collection (Sapiah 1997). Citation analysis helps identify the quality of the information sources. The more the information is cited, the higher the impact factor on the measure of citation count. This implies that more people use the information and the reliability of the cited information becomes higher. It is therefore pertinent that an analysis of the resources used by researchers be continually reviewed so that it can assist the library to build the collection, and at the same time help researchers know the trend of their information resources use.

This paper reports part of the results obtained from a dissertation done in partial fulfillment for the degree of Master of Library and Information Science (MLIS) (Yeap 2007). The following sections include related works to citation studies in Library and Information Science (LIS) and other fields, presentation of the findings, discussion of key findings and conclusion of the study.

RELATED WORKS

In Malaysia there has been no study yet on the citation analysis of MLIS dissertations submitted to the University of Malaya. There has been building interest in such studies in other fields. Goi (1997) analyzed the research trends of postgraduate students in the Humanities based on dissertations submitted to the University of Malaya between 1984 and 1994. She found that the preferred language was Malay (61%) followed by English, as such the subject coverage is mostly of local orientation. Her study supported the trend that books were cited the highest followed by journal articles. Authorship pattern for the citation showed that single author dominates.

Buttlar (1999) did a citation analysis of 61 LIS dissertations which revealed interesting publication patterns. About 80% of the citations were of single authors. However, he found that journal articles were cited more than books, books chapters, proceedings, theses and other formats. The most cited journals were

College & Research Libraries and *Journal of the American Society for Information Science*. Over half of all the works cited were published within the last 10 years and originated from USA and UK. Tonta and Al (2006) did a study on the scatter and obsolescence of journals cited in theses and dissertations of librarianship. They analysed bibliometrics features such as the number of pages, completion years, the fields of subject, the number of citations and their distribution by types of sources and year of 100 theses and dissertations completed at the Department of Librarianship of Hacettepe University between 1974 and 2002. Monographs received more citations than journal articles. The more recent completed theses and dissertations contained more citations to electronic publications. Among the core journals identified in the field of librarianship were *Tu¨rk Ku¨tu¨phanecilig˘ i, College & Research Libraries*, and *Journal of the American Society for Information Science.* Hart (2007) did a study on the collaboration and article quality in the literature of academic librarianship. He suggested that co-authorship results in a higher quality articles. The study looks for evidence of this in the literature of academic librarianship. He utilized citation counts to articles from two important journals over a ten-year period and found no evidence to support the superiority of co-authored articles. A total of 543 journal articles were taken into this study were from *College & Research Libraries* and *Journal of Librarianship*. For both journals the majority of articles were single authored.

Leiding's (2005) study on the James Madison University Library collection needs, revealed that the proportion of journal citations in relation to books has increased slightly over the period of 1993-2002. Though her intention was to examine the pattern of use of electronic journals, it could not be done as there was no indication in the citations if the journal article was accessed in print or electronic means. Line and Sandison (1974) stated that citation analysis documents not only the relationships among journals, papers and authors, but also investigates the quality and quantity of research work. Citation data is used in the study of the growth and aging of the literature, although some researchers preferred to use document user data for studies of ageing and obsolescence. Being an established research tool it can be utilised by librarians, educators, researchers and information scientists to study the relationship that exists between the cited and citing document.

OBJECTIVES

The objective of this study is to examine the cited literature in dissertations submitted by the Master in Library Information Science, MLIS students at University of Malaya. The following questions were used to guide the research:

a) What is the bibliographic format of cited resources in MLIS dissertations?
b) What is the language distribution of cited resources in MLIS dissertations?

c) What is the pattern of the 'place of publication' of cited resources in MLIS dissertations?
d) What is the subject distribution of cited resources in MLIS dissertations?
e) What is the chronological distribution of cited resources in MLIS dissertations?
f) What are the core journals cited in MLIS dissertations?
g) How do the core journals in MLIS dissertations compare to the Journal Citation Report?
h) Are the core journals cited in MLIS dissertations listed in the Journal Citation Report and are they available at the University of Malaya Library?

RESEARCH DESIGN

The present study, undertaken in 2006, examined a total of 40 (95.2%) dissertations submitted within the span of five years, 2000-2005, by MLIS students at the University of Malaya. Only two dissertations of the total submitted, were excluded as the copies were not available at the library. The references in each dissertation were checked and a total of 3206 citations were compiled. The references found in these dissertations were compiled according to the following characteristics: (a) year of publication; (b) name of author; (c) source title; (d) bibliographic format; (e) language; (f) subject category; and (g) place of publication. The subject category was based on subject classification used by the *Malaysian Journal of Library and Information Science* (MJLIS). Data was input into two separate databases: one for the cited documents and another for the citing documents. Citations in the Journal category were checked against the Journal Citation Report (JCR) to determine use of highly cited resources. Checks were also made against the library catalog to determine local availability at that time. Availability of full-text articles in online databases was also checked.

RESULTS

Distribution of Citations by Bibliographic Format

All 3206 citations were identified based on bibliographic form: journals, books, electronics media, theses and dissertations, conference proceedings, reports, newspapers, government publications, dictionaries and encyclopedias and dissertation abstracts. Electronic media in this study refers to Internet resources. Table 1 shows the distribution of the cited document based on ten identified bibliographic forms.

Table 1: Ranking of Bibliographic Form of Cited Document

No	Bibliographic format	No. of Citation	Percentage %	Cumulative	
				No. of Citation	Percentage %
1	Journals	1590	49.59	1590	49.59
2	Books	604	18.84	2194	68.43
3	Electronics Media	306	9.54	2500	77.97
4	Theses and Dissertations	281	8.76	2781	86.73
5	Conference Proceedings	151	4.71	2932	91.44
6	Reports	114	3.56	3046	95.00
7	Newspapers	71	2.21	3117	97.21
8	Government Publications	49	1.53	3166	98.74
9	Dictionaries and Encyclopedias	36	1.14	3202	99.88
10	Dissertation Abstracts	4	0.12	3206	100.00

It is revealed that journals, books and electronics media are the most used literature in preparation of dissertations by MLIS students in the last 5 years. These three formats of information resources make up almost 77.9% of the total citations. Half of the citations are of journal articles (49.9%), followed by books (18.84%) and electronic media (9.54%). Theses & dissertations follows closely at 8.76%. The other categories, conference proceedings, reports, government publications, newspapers, reference sources and dissertation abstract form about 12% of the citations

Distribution of Citations by Language

The three main languages are English, Malay and Chinese, of which the number of English language documents cited is 3009 (93.77%), Malay language 186 (5.83%) and Chinese language documents cited were 11 (0.40%) (Table 20. The language distribution of cited document shows the preference of MLIS students is for documents in English.

Table 2: Language Distribution of Cited Document

No	Language	No. of Citation	Percentage	Cumulative Citation	Cumulative Percentage
1	English	3009	93.77	3009	93.77
2	Malay	186	5.83	3195	99.60
3	Chinese	11	0.40	3206	100.00

Distribution of Citations of Place of Publication

In addition to bibliographic format and language, all citations were analysed to ascertain the place of publication of the cited document.

Table 3: Distribution of Place of Publication of Cited Document

No	Country	J	B	TD	CP	R	N	GP	DE	No. of Citation	Percentage %
1	USA	922	282	193	14	28	6	1	10	1506	52.94
2	UK	414	184	17	33	16	11	0	10	785	27.60
3	Malaysia	71	94	58	21	16	19	31	4	334	11.74
4	Australia	46	5	0	1	1	0	0	0	53	1.86
5	India	28	11	1	1	1	1	0	8	51	1.79
6	Canada	40	2	1	2	1	0	0	0	46	1.62
7	Singapore	6	16	0	1	0	2	0	0	25	0.87
8	Germany	8	0	0	1	0	0	0	0	9	0.32
9	France	8	0	0	0	0	0	0	0	8	0.28
10	Bulgaria	5	0	0	0	0	0	0	0	5	0.18
11	Hong Kong	0	2	0	0	1	0	0	0	3	0.11
12	Ireland	2	0	1	0	0	0	0	0	3	0.11
13	Sri Lanka	0	0	2	0	1	0	0	0	3	0.11
14	New Zealand	1	0	0	1	0	0	0	0	2	0.07
15	Sweden	1	1	0	0	0	0	0	0	2	0.07
16	Denmark	2	0	0	0	0	0	0	0	2	0.07
17	South Africa	2	0	0	0	0	0	0	0	2	0.07
18	Netherlands	2	0	0	0	0	0	0	0	2	0.07
19	China	0	1	0	0	0	0	0	0	1	0.04
20	Thailand	0	0	0	1	0	0	0	0	1	0.04
21	Indonesia	0	1	0	0	0	0	0	0	1	0.04
22	Israel	0	0	0	1	0	0	0	0	1	0.04
23	Cuba	0	0	0	1	0	0	0	0	1	0.04
Total		1558	599	273	78	65	39	32	32	2846	100.00

J = Journals
CP = Conference Proceedings
R = Reports
B = Books
TD = Theses and Dissertations
N = Newspapers
EM = Electronics Media
GP = Government Publications

Table 3 presents the distribution of citations in MLIS dissertations according to the place of publication and distribution by bibliographic format. United States of America (USA) contributes the most number of citations with 922 citations for

journals, 282 for books, 193 for theses and dissertations, 14 for conference proceedings and 28 for reports. The second highest citations came from the United Kingdom (UK) with 414 citations for journals, 184 citations for books, 17 citations for theses and dissertations, 33 citations for conference proceedings and 16 citations for reports. Malaysia came third with 71 citations for journals, 94 citations for books, 58 citations for theses and dissertations, 21 citations for conference proceedings and 16 citations for reports. It is noteworthy to see that Malaysian resources cited by researchers are at the third place after USA and UK. This is a good indication that Malaysian researchers are utilising local resources.

In term of total number and percentages of citations by countries USA has contributed most to the number of citations used by MLIS researchers with 1506 (52.94%) citations, followed by UK with 785 (27.60%) citations, Malaysia with 334 (11.74%) citations. Australia with 53 (1.86%) citations, India with 51 (1.79%) citations, Canada with 46 (1.62%) citations, Singapore with 25 (0.87%) citations, Germany with 9 (0.32%) citations, France with 8 (0.28%) citations, Bulgaria with 5 (0.18%) citations, Hong Kong, Ireland, Sri Lanka, each with 3 (0.11%) citations, New Zealand, Sweden, Denmark, South Africa, Netherlands each with 2 (0.07%) citations and China, Thailand, Cuba, Indonesia, Israel, each with 1 (0.04%) citations respectively.

Subject Distribution of Research of Cited Document

Table 4 indicates the subject distribution MLIS researcher's cited document. The highest cited documents were in the subject category of 'Information use, need, seeking' which has 675 (21.12%) citations. This is followed closely by 'Information networks' with 652 (20.33%) citations and 'Academic libraries' with 478 (14.91%) citations. These three subjects contribute to 56.36% of the total citations.

The remaining 43.64% of the citations are from the subject area of Library automation (6.92%), Research methods (5.52%), User studies (5.40%), Management of information centres (4.71%) , Catalogs, cataloging and classification (4.43%), Bibliometrics (3.31%) , Electronic publishing (2.99%), Reading habits (2.68%), Collection development (2.31%), School libraries (2.18%), Library science(1.84%) , Journal studies (1.4%).

Table 4: Subject Distribution of Research of Cited Document

No	Subject	No. of Citation	Percentage %	Cumulative Citation	Cumulative Percentage %
1	Information use, need, seeking	675	21.12	675	21.12
2	Information networks	652	20.33	1327	41.45
3	Academic libraries	478	14.91	1805	56.36
4	Library automation	222	6.92	2027	63.28
5	Research methods	177	5.52	2204	68.80
6	User studies	173	5.40	2377	74.20
7	Management of information centres	151	4.71	2528	78.91
8	Catalogs, cataloging and classification	142	4.43	2670	83.34
9	Bibliometrics	106	3.31	2776	86.65
10	Electronic publishing	96	2.99	2872	89.64
11	Reading habits	86	2.68	2958	92.32
12	Collection development	74	2.31	3032	94.63
13	School libraries	70	2.18	3102	96.81
14	Library science	59	1.84	3161	98.60
15	Journal studies	45	1.40	3206	100.00

Chronological Distribution of Total Citation

The analysis of chronological distribution of citation can indicate the currentness of the literature being used in research. Results show that the highest percentage of citations are about 6-10 years of age (36.06%), followed by citations in the age range of 0-5 years (26.23%). Table 5 details the findings. It is noted that 62.29% of the cited literature was published in the last 10 years.

Table 5: Chronological Distribution of Total Citation

No	Span of Period	Age of Distribution	No. of Citation	Percentage %	Cumulative Citation	Cumulative Percentage%
19	2000-2004	0-5	840	26.23	3206	26.20
18	1995-1999	6-10	1156	36.06	2366	62.26
17	1990-1994	11-15	632	19.71	1210	81.97
16	1985-1989	16-20	218	6.80	578	88.77
15	1980-1984	21-25	165	5.15	360	93.92
14	1975-1979	26-30	72	2.25	195	96.17
13	1970-1974	31-35	84	2.62	123	98.79
12	1965-1969	36-40	30	0.94	39	99.73
11	1960-1964	41-45	1	0.03	9	99.76
10	1955-1959	46-50	3	0.09	8	99.85
9	1950-1954	51-55	1	0.03	5	99.88

8	1945-1949	56-60	1	0.03	4	99.91
7	1940-1944	61-65	1	0.03	3	99.94
6	1935-1939	66-70	0	0	2	99.94
5	1930-1934	71-75	0	0	2	99.94
4	1925-1929	76-80	0	0	2	99.94
3	1920-1924	81-85	0	0	2	99.94
2	1915-1919	86-90	0	0	2	99.94
1	1910-1914	>91	2	0.06	2	100.00
	Total		3206			

Figure 1 shows that a total of 37.5% of the citations are aged between 11-40 years and 0.21% of the citations are in the age range of 41-90 years. There are also two citations as old as 95 years still being used. Generally it can be assumed that MLIS students are referring to literature published less than ten years.

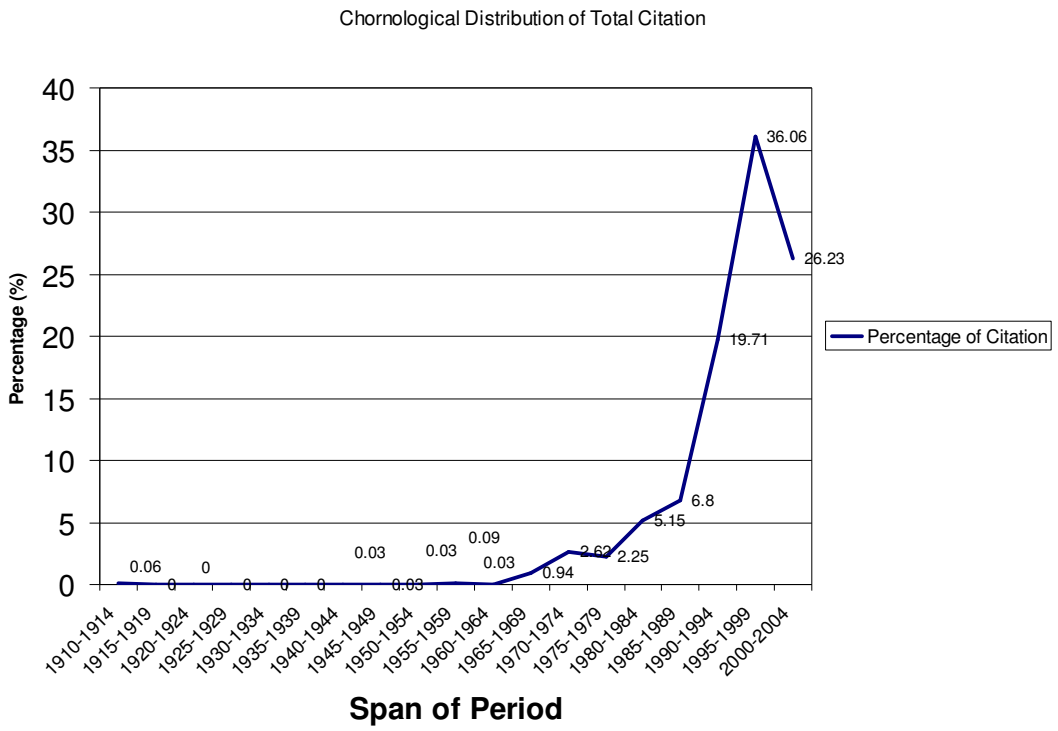

Figure 1: Chronological Distribution of Total Citation

Core Journals

A total of 175 journals title contribute to the 1590 citations in this study. Table 6 lists the titles of core journals and their corresponding number of citations. Core journal titles are identified as journals that have 18 or more citations. There are 17 journals in this group and the total citation covered is 551. This is about one third of the total citations. These 17 journals also make up for 34.7% of the total journal citation count.

Table 6: Core Journals

Rank	Journals	No. of Citation	Percentage %	Availability in UM Library	Availability in full text
1	College & Research Libraries	69	4.34	available till 2007	full text in print format
2	Journal of the American Society for Information Sciences	53	3.33	available till 1998	full text in print format
3	Bulletin of the Medical Library Association	48	3.02	available till 2007	full text in print & electronic format
4	Journal of Information Science	45	2.83	available till 1999	full text in print format
5	Journal of Documentation	44	2.77	available till 2007	full text in print & electronic format
6	Malaysian Journal of Library and Information Science	36	2.26	available till 2006	full text in print format
7	School Library Media Quarterly	33	2.08	available till 2002	full text in print format
7	Aslib Proceedings	33	2.08	available till 2006	full text in print format
9	Teacher Librarian	26	1.64	available till 2006	full text in print & electronic format
10	Campus Wide Information System	25	1.57	available till 1998	full text in print format
11	Journal of Academic Librarianship	22	1.38	available till 2007	full text in print & electronic format
12	Library Trend	21	1.32	available till 2006	full text in print & electronic format
12	Library and Information Science Research.	21	1.32	available till 2006	full text in print & electronic format
14	School Libraries World Wide	20	1.26	available till 2000	full text in print format
15	Library Quarterly	19	1.19	available till 2006	full text in print & electronic format
16	Information Research	18	1.13	available till 2007	full text in electronic format
16	Information Technology and Libraries	18	1.13	available till 1996	full text in print format

The most cited journal is *College & Research Libraries* with 69 citations, followed by *Journal of the American Society for Information Sciences* with 53 citations, *Bulletin of the Medical Library Association* with 48 citations, *Journal of Documentation* with 44 citations and *Malaysian Journal of Library and Information Science* with 36 citations.

Out of the 17 core journals, 11 are currently available full-text at University of Malaya Library, either in print or electronic format or both. However, six of the core journals are not currently available at University of Malaya Library. These titles were available in print format, but have not been included in any of the online databases subscribed by the library, as indicated in Table 6.

Comparison of Journal Titles to JCR

Literature of high quality in the field of LIS has been identified by Journal Citation Report (JCR) and the impact factor is used as an indicator. From the 17 core journals identified in this study, two of the journal titles are listed in JCR. The journals are *Aslib Proceedings* (impact factor = 0.333) and *Journal of Information Science (*impact factor = 0.747). Besides the core journals, there are 21 journal titles (of the 175 journals being cited) which are listed in JCR. Table 7 shows the impact factor of these journals that are being used by LIS researchers.

Of the 21 journal titles which do not fall in the category of core journals, the journal with highest impact factor is *Journal of Marketing* with impact factor 4.132, followed by *Human Resources Management* with impact factor 2.378 and *Journal of Consumer Research* with impact factor 2.161. These three titles are not from the field of LIS. It indicates that LIS researchers are also using quality publication from other fields when involved in interdisciplinary research. Of the 23 titles, 19 titles are available in the library and are available in full-text. The four not available in the library and not available in full-text are *American Educational Research Journal*, *Information Research*, *Journal of Consumer Research* and *Online Information Review*. It shows that journals with high impact factor are not within the LIS field that is why they do not appear in the core journal lists. It also shows a tendency for LIS researchers towards interdisciplinary research.

Table 7: Journal Titles by JCR's Impact Factor

Journals Title	Impact Factor	Availability in UM Library	Availability in full text
Aslib Proceedings	0.333	available	full text
Journal of Information Science	0.747	available	full text
Journal of Marketing	4.132	available	full text
Human Resource Management	2.378	available	full text
Journal of Consumer Research	2.161	not available	-
Scientometrics	1.738	available	full text
Journal of the Academy of Marketing Science	1.485	available	full text
American Educational Research Journal	1.383	not available	-
International Journal of Human-Computer Studies	1.348	available	full text
Communication Research	1.255	available	full text
Journal of the Medical Library Association	1.225	available	full text
Information Processing & Management	1.192	available	full text
Information Research	0.701	not available	-
International Journal of Service Industry Management	0.635	available	full text
Journal of Geography in Higher Education	0.604	available	full text
Journal of Academic Librarianship	0.559	available	full text
Journal of Computer Assisted Learning	0.556	available	full text
Journal of Teacher Education	0.500	available	full text
Online Information Review	0.469	not available	-
Interlending & Document Supply	0.431	available	full text
American Journal of Education	0.353	available	full text
Information Technology and Libraries	0.288	available	full text
Educational Leadership	0.283	available	full text

Authorship Pattern of Total Cited Documents

A total number of 2769 citations were analysed to ascertain the authorship pattern of cited documents by LIS researchers. Some of the cited documents such as reports, government publications and dictionaries and encyclopedias do not have personal authors. Therefore these documents are not included in the analysis. The authorship pattern were categorised into seven groups: single author, two authors, three authors, four authors, three authors, four authors, five authors, six authors, and seven and above authors. Table 8 reveals that the majority 2046 (73.89%) of citations in MLIS dissertations are single-author works.

This is followed by 544 (19.65%) works authored by two authors, 159 (5.74%) by three authors, 14 (0.51%) by four authors, 4 (0.14%) by five authors, and 1 (0.04%) by six and above authors.

The authorship pattern in this study indicates that an MLIS dissertation seems to be in favour of single authors. Researchers in the MLIS field seem to undertake less collaborative research.

Table 8: Authorship Pattern of Total Cited Document

No. of Authors	No. of Citations	Percentage,%
1 author	2046	73.89
2 authors	544	19.65
3 authors	159	5.74
4 authors	14	0.51
5 authors	4	0.14
6 authors	1	0.04
> 6 authors	1	0.04
Total	2769	100.00

Core Authors of Cited Documents

Authors from the 2769 cited documents were identified and sorted to calculate frequency count. Again these were only personal authors, excluding corporate authors. Joint authors are treated separately. A total of 2658 authors were identified with 3669 citations based on cumulative counts of author names. About 2073 (56.5%) authors are cited only once by the researchers. The remaining 1596 (43.50%) citations are from 585 authors that are cited more than twice (Table 9).

The most cited authors, ranked by cohort groupings and frequency of citations, are listed in Table 10. There are a total of 21 authors listed by the name who were cited at least 7 times. Haycock, Ken is the most cited author with 15 citations, followed by Harter, Stephen P (14), Abrizah Abdullah (12), Chen, Ching-chih (12), Singh, Diljit (12), Tenopir, Carol (11), Dervin, Brenda (10), Oberg, Antoinette (10), Lin, N. (10), Md. Sidin Ahmad Ishak (10), Busha, Charles H (9), Robinson, Robyn (9), Kuh, G.D. (9), Suzanne, Carrington (9), Herring, James. E. (8), Kinnel, Margaret (8), Magill, Kathleen (8), Majid, S. (8), Lampert, M. (7), Powell, Ronald R. (7), and Zainab Awang Ngah (7).

Table 9: Frequency of Authors Cited

No of Authors (A)	Cumulative No of Authors (B)	No of Citations	Cumulative No of Citations
1	1	15	15
1	2	14	29
3	5	12	65
1	6	11	76
4	10	10	116
4	14	9	152
4	18	8	184
3	21	7	205
12	33	6	277
14	47	5	347
32	79	4	475
109	188	3	802
397	585	2	1596
2073	2658	1	3669

Table 10: Authors Ranked by Cohort Groupings and Frequency of Citations

Rank		Cohort Groupings (A)	Frequency of Citations (B)	Running Number of (A) n= 2658	Running Number of (B) n= 3669
1	Cohort :1	Haycock, Ken	15	1	15
2	Cohort :1	Harter, Stephen P	14	2	29
3	Cohort :3	Abrizah Haji Abdullah Chen, Ching-chih Singh, Diljit	12	5	65
4	Cohort :1	Tenopir, Carol	11	6	76
5	Cohort :4	Dervin, Brenda Oberg, Antoinette Lin, N. Md. Sidin Ahmad Ishak	10	10	116
6	Cohort :4	Busha, Charles H Robinson, Robyn Kuh, G.D. Suzanne, Carrington	9	14	152
7	Cohort :4	Herring, James. E. Kinnel, Margaret Magill, Kathleen Majid, S.	8	18	184

8	Cohort :3	Lampert, M. Powell, Ronald R. Zainab Awang Ngah	7	21	205
9	Cohort :12		6	33	277
10	Cohort :14		5	47	347
11	Cohort :32		4	79	475
12	Cohort :109		3	188	802
13	Cohort :397		2	585	1596
14	Cohort :2073		1	2658	3669

DISCUSSION AND CONCLUSIONS

Bibliographic format

The findings reveal that there are a variety of formats of publication that were being cited. The most frequently cited format was journals followed by books. It is also a fact that most of the researchers produce their research in these two formats. As mentioned in the literature review, the research done by Leiding (2005) and Shi and Wang (2005) in the field of LIS also followed this trend of students and researchers relying heavily on journals.

Further analysis show that, primary resources are most used by MLIS students. This includes journals, and books. Usually in doing the dissertation and research report, it is found that researchers needed primary resource in checking the original works of other researchers rather than use the information that is compiled by another. It is common for most researchers to provide results of their research in these two bibliographic formats. Librarians need to focus on these two types of bibliographic format for subscribing information that fulfills the needs of the MLIS students in their research.

Language

English was the dominant language and also an important communication language in the field of Library Science. The results are similar with other fields of research. This is because English speaking countries, such as USA and UK mainly contributed to the progress of Library studies.

This show a general trend in Malaysia as English is used widely in higher education institutions. It is an international language used by different races for communicating with each other, besides Malay language. In order to make their work recognized by people of various languages, researchers usually use English as

their communication medium. This is an indication to libraries to have a sound collection in the English language, which so far has not been a hindrance.

Place of publication

The findings revealed that USA and UK are the two most prominent countries which the cited literature originated from. Fletcher (1972) and Georgas and Cullars (2005) also found that the most popular place of publication was USA and UK. It is encouraging to find that the third most prominent country which the cited literature comes from is Malaysia. This indicates that Malaysian students doing dissertation are utilising local resources. This could be because the research relates to the Malaysian context.

Subject

Almost a quarter of the resources are from the subject area of "Information use, need, seeking". This is followed by "Information Networks" and "Academic Libraries". Half of the research is being done in these three subject area. This may be because the faculty focuses on these three core areas thus encouraging students to perform research in these areas. It may now be the time for the LIS students of the University of Malaya to widen and broaden their research area as University of Malaya is focusing to be a research intensive university.

Chronological Distribution

The findings of the chronological distribution of citation can indicate the currentness of the literature being used in research. Results show that the highest percentage of citations is about 6-10 years of age. This shows that the information used by the MLIS students is up-to-date. Recognising the chronological distribution can overcome the problem of subscribing to old journals which are not used by the MLIS students. Further study needs to be done so that old journals identified in the collection that are no longer used by MLIS students can be removed or cease subscription. Purchasing of new resources which are more in demand by MLIS students can be undertaken.

Core Journal Titles Compared To JCR

This study identified 17 core journals cited in the field of LIS. The most cited journals by MLIS dissertations are *College & Research Libraries*, followed by *Journal of the American Society for Information Sciences*. The findings revealed that only two from the list of the top 17 core journals titles are listed in JCR. The journals are *Aslib Proceedings* and *Journal of Information Science.* This shows that the other 15 core journals used by MLIS students are not in the JCR list. Buttlar (1999) and Tonta and Al (2006) did a research on LIS and found that the core journal titles were *College &*

Research Libraries and *Journal of the American Society for Information Sciences.* Thus the results obtained, showed the similarity of the core journal titles.

From the total journal titles 175, only 23 titles appear in JCR. It shows that mostly all the journal titles that are used by the MLIS students are not in the JCR list. MLIS students may not be aware of the quality of journals listed in JCR and are more keen on using any available literature for their research. However it is noted that there are other journals in JCR that are being used by MLIS researchers. Out of the 17 core journals, 11 of the core journals are currently available full-text at University of Malaya Library either in print or electronic format or both. However 6 of the core journals are not currently available at University of Malaya Library. As for the journals titles that listed in JCR, all the journals are also available in University of Malaya library, except *American Educational Research Journal*, *Information Research, Journal of Consumer Research*, and *Online Information Review*. Librarians must look to the needs of users in LIS in subscribing to the relevant journals titles and promote the usage of quality journals listed in JCR or even the ISI index.

The use of JCR is for the librarian to subscribe to quality journals which are mostly used internationally. Based on the focus area of research, these journal titles may not be suited to local research interest. Therefore a core journal list should be built based on the LIS student's needs. The core journals titles will help the librarian to buy the relevant titles that are more closely related to the research interest of MLIS students

Authorship Patterns

The findings revealed that the dominance of single authors can be clearly seen. This means the major proportion of research output used for citations is generated mostly by single-authored work, followed by two and more. This is because most the resources are written by single author rather than more than one author. Tiew (2006) and Hart (2007) also found that single-authorship patterns were the most popular which shows similar results to the study done here.

Core Authors of Cited Documents

A total of 2658 authors were identified with 3669 citations based on cumulative counts of author names. About 2073 (56.5%) authors are cited only once by the researchers. The remains 1596 (43.50%) of the citations are from 585 authors that are cited more than twice. The result indicates that MLIS researches need to cover a large group of authors. MLIS researchers are not only journals dependent, but also require a broader and rich pool of documents. Thus it was found that the majority of authors were only cited once at 56.5% although 43.50% of the citations were from authors that were cited more than twice.

This study has revealed that the resources used by the MLIS dissertation students follow almost the same pattern as of those in other studies. The preferred resources are journal articles followed by books, which are mainly in English and originate from UK and US. Though the cited resources are quite current there is a need to increase awareness on the use of higher quality journals, as listed in JCR. The library and teaching staff may need to promote the use of these high impact journals and increase the availability of in demand journals.

REFERENCES

Devin, Robin.B. and Kellogg, Martha. 1990. The serial monograph ratio in research libraries: budgeting in light of citation studies. *College & Research Libraries*, Vol. 51: 46-54.

Edwards, Sherri. 1999. Citation analysis as a collection development tool: a bibliometric study of polymer science theses and dissertations. *Serials Reviews*, Vol. 25 no.1: 11-20.

Georgas, Helen and Cullars, John. 2005. A citation study of the characteristics of the linguistics literature. *College & Research Libraries,* Vol.66, no.6: 496-515.

Goi, Sook Sze. 1997. *Analysing the research trends and use of information sources amongst postgraduate students in the humanities* (MLIS diss., University of Malaya).

Hart, Richard L. 2007. Collaboration and article quality in the literature of academic librarianship. *The Journal of Academic Librarianship*, Vol. 33, no.2: 190–195.

Haycock, Laurel A. 2004. Citation analysis of education dissertations for collection development. *Library Resources & Technical Services*, Vol.48: 102-106.

Hovde, Karen. 2000. Check the citation: library instruction and student paper bibliographies. *Research Strategies*, Vol.17: 3-9.

Leiding, Reba. 2005. Using citation checking of undergraduate honors thesis bibliographies to evaluate library collection. *College & Research Libraries*, Vol.66, no.5: 417-429.

Line, M. B. and Sandison, A. 1974. Obsolescence and changes in the use of literature with time. *Journal of Documentation*, Vol. 30, no.3: 283-350.

Sapiah, Sakri. 1997. *A citation analysis of thesis and dissertations in education submitted to the University of Malaya* (MLIS diss., University of Malaya).

Shi, Jian Gao and Wang, Zhi Yu. 2005. A local citation analysis in china: from wuhan university faculty in surveying and mapping. *The Journal of Academic Librarianship, Vol.* 31, no.5: 449–455.

Sylvia, Margaret. 1998. Citation analysis as an unobtrusive method for journal collection evaluation using phychology student research bibliographies. *Collection Building*, Vol.17, no.1: 20-28.

Tiew, Wai Sin. 2006. Authorship characteristics in Sekitar Perpustakaan 1994-2003: a bibliometric study. *Malaysian Journal of Library & Information Science*, Vol..11, no. 1: 49-59.

Tonta, Yasar and Al, Umut. 2006. Scatter and obsolescence of journals cited in theses and dissertations of librarianship. *Library & Information Science Research* Vol. 28: 281-296.

Yeap, Chun Keat. 2007. *A citation analysis of MLIS dissertations submitted to University of Malaya: 2000-2005* (MLIS diss., University of Malaya)