

# LIS students' diploma theses as digital documents : citation analysis

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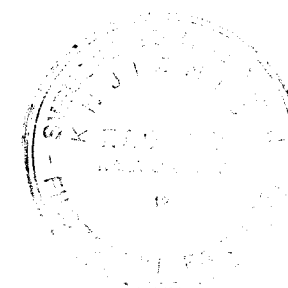
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# La médiation numérique

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Actes du colloque « Document numérique et société »,  
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# LIS STUDENTS' DIPLOMA THESES AS DIGITAL DOCUMENTS. CITATION ANALYSIS

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## Abstract

The survey has two main purposes. The first one is to obtain results that would show citation patterns among Library and Information Science (LIS) students at the Department of Information and Communication Sciences, Faculty of Humanities and Social Sciences, University of Zagreb. The second purpose is to help the Faculty library to evaluate its acquisition policy and to harmonize it with the students' needs.

Sources for the survey are all the diploma theses written by LIS students in 2011 that were deposited in institutional repository of the Faculty until the end of June 2012. The study is based on reference analysis. Results show that the majority of cites is to printed sources (78.5 %). Most cited resource type is book, followed by journal articles. Age analysis shows that half of the references are less than ten years old. Authorship is analysed as well – out of the total of 681 authors, about two thirds are Croatian authors. The most cited authors, books, journals and proceedings are identified as well as the most used web sources). Results show that the students are familiar with using sources in English and are aware of the importance of different types of sources. The analysis gives an insight of the students citing practice and could be useful for the Faculty library, for students and also for educators and mentors in guiding their students.

**Keywords:** citation analysis, collection development, diploma theses, Library and Information Science, library catalogue, students

## INTRODUCTION

Libraries have to decide what to include in their collections to meet their users' needs. It is not always easy because of the high quantity of available materials. For example, number of scholarly journals

had increased since the first journals were launched in 1665, but at the beginning of the 20th century their number started to be a problem for libraries. The main question for libraries was – which journals to include in their collections. Checking citations in bibliographies of research documents and comparing them to library collections can be a good method of evaluating library collections and their usefulness (Smith, 1981). Citation itself is an entry in a reference list or bibliography of a document that gives the reader enough bibliographic information (author, title, publisher, journal title, journal issue etc.) for identification and verification of the original item (Leiding, 2005). The first step in the method of citation analysis is extraction of citations from each paper in sample. After that, citations have to be categorized according to the purpose and aim of the survey (e. g. data about authors, multiply authorship, age of citations, categories such as journals, books, conference papers...) (Olatokundo & Makinde, 2009).

The method of citation analysis is not new at all; it was recognized as a valuable method decades ago. The first recorded citation analysis was made by Gross and Gross in 1927. They looked at citation patterns to determine the journals to be subscribed to and back volumes to be acquired for the library of Pomona College (Chikate & Patil, 2008). The method was popular in the 1970s, (Broadus, 1977), (Kriz, 1977), but is much easier to apply in the electronic environment where library catalogues are easier to access and to search. Sylvia (1998) stated that bibliographic citation analysis of student research papers was a good method for evaluating journal collection in libraries because journal selection might be done on the basis of such analysis. According to Curtis (2005), studying references cited by students can show types of sources used and valued in their disciplines. It is a good way to understand library users.

Williams and Fletcher (2006) conducted a study with the purpose to determine the materials used by graduate students in engineering and to guide library collection development decisions. According to them, journal ranking traditionally use total number of citation, but for compiling core journal lists it could be better to rank the journals by number of authors citing them.

Newer example of citation analysis is a Newton Miller's paper (2011) where she analyses citations in graduate master theses and their implications for library collection management decisions in the times of fiscal constraint. The study focused on journal citations and the author concludes that the analysis is a useful tool for determining collection development needs. On the basis of core journal lists, it could be easier for librarians to make cancellation decisions.

Anunobi, Okoye and James-Chima (2012) published paper where they analysed postgraduate students' theses as a measure of their resource preference. They assert that citation analysis is of immense benefit to university libraries. In the study, the authors identified different resources' types cited by students; they ascertain the age of resources; they determine the journals preferred by students and suggest the journals to be available in the university library.

Based on the reviewed literature, citation analysis of LIS students' diploma theses at the Department of Information and Communication Sciences (Faculty of Humanities and Social Sciences, University of Zagreb) was conducted.

## 1. METHODOLOGY

All the diploma theses of LIS students defended during the year 2011 and deposited in Darhiv (digital repository of the Faculty of Social Sciences and Humanities, University of Zagreb) were analysed. During the year, 119 diploma theses were defended and 78 of them were deposited in Darhiv by the end of June 2012 (65.5 % of all the defended theses). The theses are written in the last semester and have approximately 35-50 pages.

Method used in the survey is citation analysis. It was used to count and rank documents and authors cited in bibliographies of the diploma theses. The study was meant to be a preliminary study of citations and has the purpose to find out which publications and which authors are the most cited. The results could help the librarians to make decisions about collection development policy. As method of analyzing citations is time-consuming (though not complicated), the analysis in this study is a basis for future longitudinal study that should include more theses with more bibliographies.

## 2. RESULTS

In the 78 diploma theses that were analysed, there are 1717 references. The thesis with the smallest amount of cited items cites 3 references, and the one with the largest number of cited items cites 97 references. Average number of cited items per thesis is 22.1 (median is 19).

Chart 1 shows number of references in all the theses.

If the theses are grouped in six groups according to the number of references (0-10 references, 11-20 references, 21-30 references, 31-40 references, 41-50 references and more than 50 references), the smallest number of theses is in groups 5 and 6. As shown in Table 1, the majority of the theses use 11 to 30 references (groups 2 and 3).

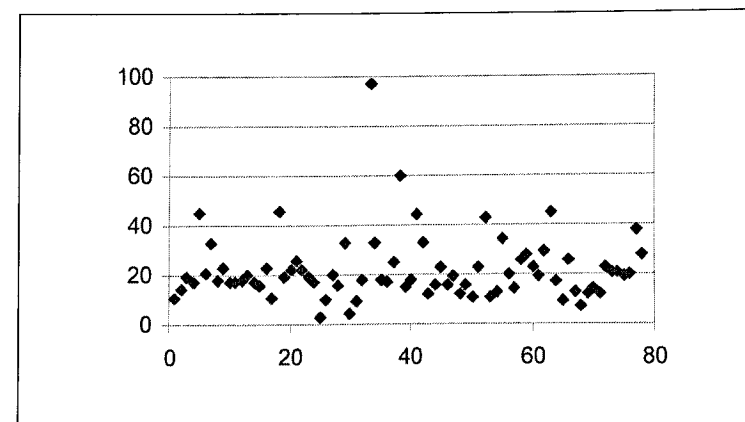


Chart 1. Number of references in all the analysed theses

**Table 1. Number of theses according to the number of references in 6 groups**

No. of references	No. of theses
0-10	7
11-20	40
21-30	18
31-40	6
41-50	5
more than 50	2

Total number of cited authors is 681 – 427 Croatian authors and 254 foreign authors. Most of them are cited only once (505 authors have one citation), 95 authors are cited twice, 26 authors are cited three times. The most cited authors are A. Stipčević (cited 45 times), I. Stričević (cited 38 times) and J. Lasić-Lazić (cited 23 times). The complete data on the number of citations are shown in Table 2. If Croatian and foreign authors are analysed separately, it is obvious that Croatian authors have more citations. Foreign authors are cited mostly once or twice. Foreign author with the highest number of citations is A. Manguel (7 citations). Total number of cited items with authorship differs from the total number of authors (as some items have more than one author). Total number of cited items is 629. Most of them are written by one author (527), 74 have two authors each, 24 have three authors each, and 4 items have four authors each. There are no cited items with more than four authors (Table 3).

**Table 2. Number of citations for authors**

Authors cited:	Croatian authors	Foreign authors	Total
once	287	218	505
twice	70	25	95
3 times	19	7	26
4 times	11	1	12
5 times	12	2	14
6 times	7	0	7
7 times	2	1	3
8 times	3	0	3
9 times	3	0	3
10 times	2	0	2
11 times	2	0	2

12 times	2	0	2
13 times	1	0	1
15 times	1	0	1
17 times	1	0	1
21 times	1	0	1
23 times	1	0	1
38 times	1	0	1
45 times	1	0	1
total	427	254	681

**Table 3. Number of authors per cited items in correlation with the number of cited items**

Nº. of authors per cited item	Nº. of cited items
1	527
2	74
3	24
4	4
total	629

Analysis of resource types shows that the majority of references refer to books (594 or 34.6 %). Journal articles are on the second place (306 or 17.8 %) and proceeding articles are on the third place (204 or 11.9 %). Numbers of references for all the other resource types are shown in table 4. There are 369 (or 21.5 %) references to electronic sources. The most cited type of electronic sources are articles on portals (mostly news portals) – 81 articles. There are 75 electronic citations of libraries' web sites (National and University Library in Zagreb, Zagreb City Libraries etc.). On the third place are library associations' web sites (IFLA, Croatian Library Association, ALA and other) with 54 cites. Scientific articles published electronically (mostly in journals and several of them in institutional repositories) are cited 40 times. Other electronic sources that are consulted in the theses are legal documents, web sites of publishers, blogs, Facebook, wikis, cultural and educational institutions.

*Croatian Librarians Herald* (*Vjesnik bibliotekara Hrvatske*), the most important Croatian scientific journal for LIS field, published by Croatian Library Association (CLA), is the most cited journal. It had received 81 citations in the analysed diploma thesis (4.7 % of all the citations). Other publications published by CLA are cited 48 times. That makes the total of 129 citations to all the CLA publications (7.5 % of all the citations). The number shows the importance of the CLA publications, and especially of *Croatian Librarians Herald*, for undergraduate research.

Table 4. Number of resource types

Resource types	N°. of references
book	594
journal article	306
proceeding article	204
non-library website	174
website article	121
library website	74
legislative and regulatory sources	52
book chapter	50
reference source citation	41
international guidelines, standards, documents (IFLA, UNESCO, UN...)	30
archival source	24
statistical data	17
curriculum	11
thesis	10
blog	8
e mail	1
total	1 717

Age of references is analysed only for the sources where publishing year is specified. For majority of electronic sources that year is not given. Unpublished sources (such as archival sources) are also excluded from the age analysis. Total number of references in the age analysis is 1472. Only 8 of them are published in the same year the theses were written (2011). That is not surprising if we have in mind that papers reach citation peak at least two years after publication. Of course, the theses are not published so no additional time is spent on publishing, but anyway it is not expectable for references to be less than a year old (Essential Science: Hot Papers. Science Watch, 2013). The total of 129 references (8.8 %) was published in the year 2010, 114 references (7.7 %) were published in 2009 and 87 theses (5.9 %) in 2008. If we group the age of references, we can see that 400 of them (27.2 %) are published within the last five years. In the second group are the references published five to ten years prior to writing theses and there are 390 of them (26.5 %). Table 5 shows the data for all the age groups of references. The oldest reference is from the year 1875. There is also one reference published in 1905, one in 1920, one in 1922, two in 1925 and one in 1930. All the other references are published after 1940.

Table 5. Number of references by age

Age of references	N°. of references
less than 2 years	137
2 to 5 years	263
5 to 10 years	390
11 to 15 years	301
16 to 20 years	152
21 to 30 years	101
31 to 40 years	71
more than 40 years	57
total	1 472

## CONCLUSION

Results show that average number of references in the theses written by LIS students at the Department of Information and Communication Sciences in 2011 was 22. Total number of references is 1717 and about one fourth of them are references to electronic sources. Mostly cited resource type is book (594 books cited), followed by journal articles (306). Students are more likely to cite Croatian authors (427 references written by Croatian authors) but are not uncomfortable to cite foreign authors as well (254). Majority of references are written by only one author (527) but there are also multiply authorships (two to four authors). Age analysis shows that students prefer to use newer sources, but that surely depends on the topic. Almost three thirds of references are less than 15 years old. Results of the survey could be useful for the three important groups in education system – librarians, educators and students. Librarians can profit from the results by using them to adjust collection development and acquisition policies. They could also use the results to plan institutional repository development, as well as to plan users' education. Educators (i. e. mentors) can use the data on the sources and authors cited by the students in planning future mentorship (e.g. revising recommended bibliographies or instructing their students to use sources such as library catalogues and institutional repositories). Students could find important information on the sources used by other students; they could get some information on previous diploma theses that could help them in writing their own thesis. It would be quite important to continue with the same research in future to obtain a permanent source of information for librarians, LIS educators and students at the University of Zagreb.



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## PARTIE 5

# DOCUMENTS ET INTERFACES

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