

## **Web References in Graduate Papers at the Department of Information Sciences at the Faculty of Humanities and Social Sciences in Zagreb**

Anina Bauer

Department of Information Sciences  
Faculty of Humanities and Social Sciences of the University of Zagreb  
Ivana Lučića 3, 10 000 Zagreb, Croatia  
abauer2@ffzg.hr

Marija Kirin

Department of Information Sciences  
Faculty of Humanities and Social Sciences of the University of Zagreb  
Ivana Lučića 3, 10 000 Zagreb, Croatia  
mkirin@ffzg.hr

Marija Turković

Department of Information Sciences  
Faculty of Humanities and Social Sciences of the University of Zagreb  
Ivana Lučića 3, 10 000 Zagreb, Croatia  
mturkovi@ffzg.hr

### **Summary**

*The aim of this article is to give insight into how graduate students at the Department of Information Sciences at the Faculty of Humanities and Social Sciences of the University of Zagreb tend to collect their references online. The research is based on the hypothesis, which was drawn up regarding the continuous spread of the Internet use, that the usage of web references in graduate papers has substantially grown in the period from 2004 to 2010. The period in question was chosen according to the availability of digitalised graduate papers in the Digital Repository of the Faculty Library. For this purpose a bibliometric method was used on the sample of over 360 graduate papers in the given period which include graduate papers from Archive Documentation, Library Science, General Information Science and Museology. A detailed analysis of the web references cited in the theses, together with the total number of references, is presented in this article. The analysis includes distinction based on authors and type of online references. One of the aims of the analysis was to investigate which author is most frequently cited even though web references are not always signed by an author. The different types of online references that are used, such as online books, articles, reference materials and others, were taken into*

*consideration as well. The analysis of the collected data proved the hypothesis that the number of web references increased over the period; however, there is still a great deal of offline based references used in the graduate papers.*

**Key words:** information sciences, web references, graduate papers, bibliometry

### **Introduction**

The research included papers in the period from 2003 to 2010 from the Department of Information Sciences at the Faculty of Humanities and Social Sciences of the University of Zagreb. The period in question was chosen according to the availability of digitalised graduate papers in the Digital Repository of the Faculty Library. The research included graduate papers from the fields of Archive Documentation, Library Science, General Information Science and Museology. The primary goal was to find out the amount of web references students use in their graduate papers, as well as to see how the trend changed over the years. Besides that, we also wanted to investigate which author is most frequently cited, even though the web references are not always signed by an author, and what type of web references students mostly refer. The work of dr. sc. Dilda Pečarić who researched the Development of Information Sciences in Croatia through a bibliometric analysis of doctoral thesis from the Department of Information Sciences was consulted during the research.

### **Hypothesis**

The research is based on the hypothesis, which was drawn up regarding the continuous spread of the Internet use, that the usage of web references in graduate papers has substantially grown in the period from 2003 to 2010.

Because of the free access to the majority of online content, it is believed that the students refer not only to scientific articles, but also to other types of web references.

In regard to different types of web references, it is predicted that articles from scientific journals are more frequent than monographs since the Faculty Library offers free access to many databases containing scientific journals.

### **Methods**

The research began in November 2010. At the time the list of graduate papers in the library catalogue comprised of 587 papers. It was decided to analyse those papers that are available online in the Digital Repository because of the easier manipulation of digitalised data. The pace of the research was dependant on the availability of the graduate papers in the Digital Repository of the Faculty Library. The papers were taken from the Repository as .pdf files and web references were manually entered into a Microsoft Access database. A bibliometric method was used on those references in order to obtain information regarding

the number of web references. The analysis also includes distinction based on authors and type of web references.

### Results

We were able to analyse 362 papers, which contain a total of 6525 references. The average number of references per paper is 18. Paper with the most references contains 70 references, while the paper with the least contains 3 references.

Out of total of 6525 references, 1947 are web references, that is 30 % of the total number (Figure 1.). The average number of web references per paper is 5. Paper with the most web references contains 57 web references, while the paper with the least contains 0 web references. In total, there are 116 graduate papers that did not contain any web references.

### Overall percentage of references

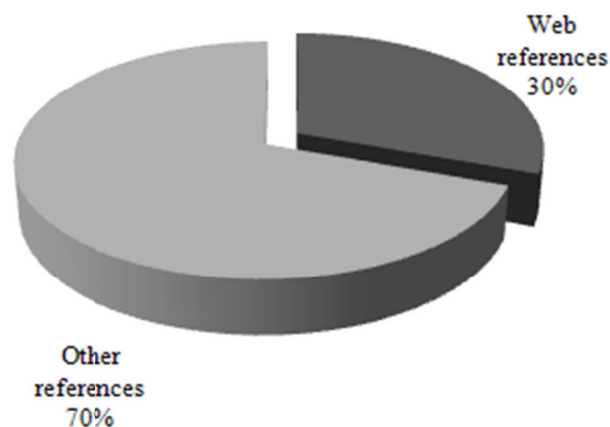


Figure 1. The overall percentage of references

The number of papers analysed from each field of study is as following: Archive Documentation (7), Library Science (268), General Information Science (72) and Museology (15) (Table 1). As seen from the aforementioned, the number of papers differs depending on the subject, which has to be taken into consideration while analysing the results for each field separately.

As seen from the Table 1 out of the four fields, the average number of references is the largest in Museology while the smallest is in General Information Sciences. Archive Documentation and Library Sciences have a similar average number of references, 18.86 and 18.84. The arrangement of the average number of web references slightly differs, smallest is in Archive Documentation, in Li-

brary Science that number is 5.02 and slightly higher are in General Information Science, 6.78 and Museology, 7.07.

The large delineation of average numbers of web references in Archive Documentation (extremely low) and Museology (high) is the result of a small number of analyzed papers in those fields and, therefore, the averages in question cannot be taken into consideration as representative of the field.

Table 1. The results according to the field per year

field	analysed papers	analysed references	average number of references	analysed web references	average number of web references
Archive Documentation	7	132	18,86	8	1,14
Library Science	268	5048	18,84	1345	5,02
General Information Science	72	993	13,79	488	6,78
Museology	15	352	23,47	106	7,07
<b>total</b>	<b>362</b>	<b>6525</b>	-	<b>1947</b>	-

The paper from Library Science with the most references has 70 references, from General Information Science 66, and from Archive Documentation and Museology 44 references. Concerning web references, the paper from General Information Science with the most web references has 57, from Library Science 45, from Museology 29 and from Archive Documentation 7 web references.

The average number of web references in General Information Science is considerably high, 6.78. As a possible explanation for the fact that General Information Science has both one of the largest average number of web references and the paper with the highest number of web references is that the papers in this field deal with the subjects more connected to Information Communication Technology than other fields.

Table 2. The number of references in the papers from 2003 to 2010

year	analysed papers	analysed references	average number of references	analysed web references	average number of web references
2003	4	88	22,00	37	9,25
2004	71	1104	15,55	264	3,72
2005	45	794	17,64	175	3,89
2006	69	1089	15,78	276	4,00
2007	63	1137	18,05	346	5,49
2008	78	1605	20,58	525	6,73
2009	27	586	21,70	276	10,22
2010	5	122	24,40	48	9,60

One of the reasons for the unequal number of papers per year is the sporadic input of papers in the Digital Repository of the Faculty Library, meaning the record of the papers was in the Repository but some papers were unavailable for download. Taking that into account, different number of graduate papers (per year) were analysed and the results may vary. Because of the small number of papers available for analysis, the results for the years 2003 and 2010 were not taken into consideration. The most accurate results are for the years 2004 and 2008 because of the large number of papers written in those years (Table 2).

The average number of web references as seen from Table 2 proves the hypothesis that the usage of web references increases over the years.

The graphical representation of this is Figure 2 which shows both the change of all references and the change of web references from 2004 to 2009.

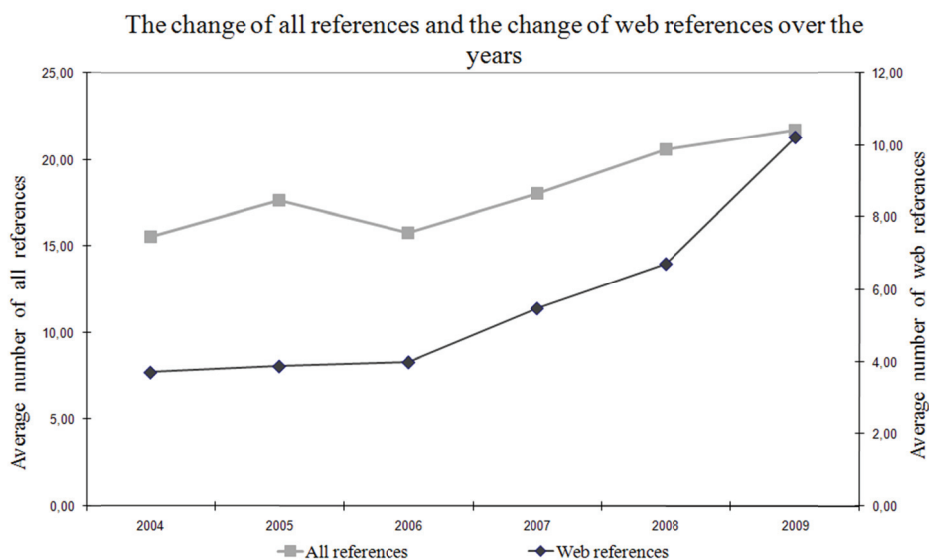


Figure 2. The change of all references and the change of web references over the years

Besides the frequency of the web references, we also wanted to find out what types of web references are most frequently used. The majority of web references used include web pages, reference materials and articles. Students mainly refer to web pages which may contain some information about the organization the paper refers to, such as libraries, universities and other institutions. Secondly, they refer to reference materials - out of which Wikipedia is the most-cited encyclopaedia with 102 references which make 5.24% of all web references; and Narodne novine (The Official Gazette) the most-cited newspapers, from which laws, standards, guidelines etc are referred, with 67 references, which make 3.44% of all web references. Thirdly, the graduate papers cite arti-

cles that appear either on the web pages or digitised and digital journals. Also, some students referred to scientific portals instead of actual articles. There is a small amount of online books used as references. Other web references include different types of manifests, guidelines, published lectures and alike.

The biggest problem we were faced with was the availability of the graduate papers which, as aforementioned, was limited. There were problems when analyzing the web references since a substantial number of the citations themselves are in some way deficient. For instance, some elements, such as titles, are missing or incorrectly cited (for example subtitles formatted as titles). Some of the citations only have the URL address listed and the date of access often omitted. Typographical mistakes are also common, even within the URL address, which indicates that, in some cases, the addresses were not directly copied from the Internet browser. Although the Department of Information Sciences does offer citation guidelines, the frequency of incorrect citations suggests that the students rarely follow them. Perhaps instead of guidelines a standard for citation should be prescribed for graduate papers.

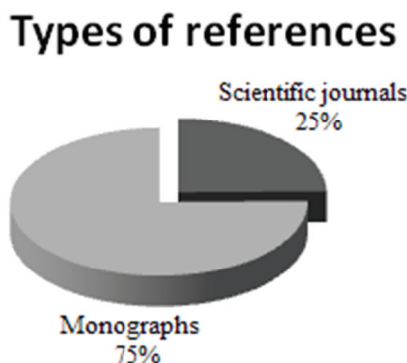


Figure 3. Types of references

Because of the listed problems, as well as because some of the URL addresses do not work anymore, it was not possible to identify the type of reference for 36.67% of all web references. The overall percentage of monographs and scientific journals from the identified types is shown in Figure 3. More referenced are monographs. This is probably so because of the vast number of standalone papers that can be found online such as different types of manifests, guidelines, published lectures and alike.

Concerning authors, 1422 web references, that is 73%, do not have an author listed, while the most commonly cited author in the other 524 web references is doc. dr. sc. Sonja Špiranec with 10 references, followed by prof. dr. sc. Tatjana Aparac-Jelušić with 7 and mr. sc. Jadranka Stojanovski with 6 references.

## **Conclusion**

The analysis of the collected data proved the hypothesis that the number of web references in the graduate papers of students of information sciences at the Faculty of Humanities and Social Sciences increased over the period; however, there is still a significant number of offline-based references used in the graduate papers.

As was presented in the results, the papers with the most references, and particularly web references, were from the field of General Information Science. That is possibly because of the fact that the field deals with the subjects most connected to Information Communication Technology. The analysis also showed that the most-used web references are in fact monographs, even though the scientific journals were expected to be more frequent. Other unforeseen results include the vast usage of Wikipedia articles, which is thought to be uncommon in graduate papers, and the alarming frequency of incorrect citations. It was interesting to find that one of the listed hypotheses was not accurate, however the primary hypothesis that the usage of web references has substantially grown was proven.

A possible prediction based on the results may be that the usage of web references by (graduate) students will continue to grow. It can also be concluded that more accurate results will be available when all of the graduate papers from the given periods are inserted into the Digital Repository of the Faculty Library, which indicates that the conducted research can easily be continued.

## **References**

- Pečarić, Đ. Razvoj informacijskih znanosti u Hrvatskoj: bibliometrijska analiza doktorskih disertacija iz informacijskih znanosti 1978.-2007.: doktorska disertacija. Zagreb, 2010
- Graduate papers at the Department of Information Sciences at the Faculty of Humanities and Social Sciences of the University of Zagreb ; downloaded from Digital Repository.
- Access database "Web reference u diplomskim radovima odsjeka za Informacijske znanosti.mdb" containing Web references in graduate papers at the Department of Information Sciences at the Faculty of Humanities and Social Sciences in Zagreb.