South African Journal of Information Management
[DoE accredited]

Peer Reviewed Article

Vol.7(3) September 2005

Analysis of the citation of Web-based information resources by UNISA academic researchers

F. Naudé
Centre for Information and Knowledge Management
University of Johannesburg
Johannesburg, South Africa
fnaude@unisa.ac.za

C. Rensleigh
Centre for Information and Knowledge Management
University of Johannesburg
Johannesburg, South Africa
cr@rau.ac.za

A.S.A. du Toit
Centre for Information and Knowledge Management
University of Johannesburg
Johannesburg, South Africa
asadt@rau.ac.za

Contents

Key words: Web-based information resources, bibliographic citation, UNISA

1 Introduction

The Web is a powerful, dynamic and flexible information resource interface that fundamentally alters the academic's research practices and interaction with information due to the additional avenues available to retrieve research and scholarly information. There is a surge in global knowledge production and a massive expansion in scholarly research output. The growth in the availability of fee- and free-based Web information resources, and the ease of access, has led to a phenomenal increase in the use of these information resources. Today's researcher has virtually unlimited access to a greater number and variety of information resources than ever before (Noam 1997).

The Web, as an online information repository, has greatly facilitated information accessibility. As the vastness of the Web grows, so does the potential for accessing previously inaccessible, unpublished and Web-exclusive information in newsgroups, portals, blogs, bulletin boards, electronic archives and Web sites. Hundreds of electronic journals, newsletters and magazines are now 'born digitally' on the Web. The abundant and mobile digital information is automatically pushed to academics via networks, creating an overflow of information (Christensen 1997:6).

As the size of the Web continues to expand, the variety of high quality scholarly information resources proliferates. An overwhelming amount of information is available on both the Web (electronic) and in the academic library (print and electronic), resulting in an information content overlap between the two sources. There is a major shift in academic libraries from ownership to access and the focus has been adjusted from the physical size of collections to electronic access. Academic libraries are purchasing access to electronic databases and replacing many print reference and periodical collections with Web-based access for users because the cost of access is more affordable than ownership.

In the pre-Web era, trained professional librarians conducted most of the literature retrieval by using online databases and acting as an intermediary and custodian of information. The development of Web search engines spawned a self-service culture where empowered academic end-users execute their searches independently on the Web. Before the dawn of the digital era, the academic operated in a simple linear mode when seeking information in a physical printed world. The Web added an additional dimension to information seeking, performed in a networked virtual electronic mode with open access and a systems environment. The academic is now confronted with a mixed environment of print and e-sources when searching for information and needs to make a format choice between printed physical sources or electronic Web sources.

The Web contains a growing amount of peer reviewed scholarly full-text documents available on open access mediums. Open access channels include firstly electronic, refereed open access journals, secondly research or subject specific archive (e-print) servers, thirdly institutional repositories of individual universities (electronic theses and dissertations) and finally self-posting on authors' home pages (De Beer 2005).

Academics are forced to incorporate the new technologies in the research activities of seeking, disseminating and citing of information. As the content of the Web continues to deepen, it becomes an increasingly critical resource for academics. The Web is the largest electronic information resource in the world and cannot be ignored as an information gathering tool (Bane and Milheim 1995:1).

There is a high Internet penetration rate among academics in the tertiary education sector in South Africa. Goldstuck (2004:60) estimates that there are in the region of 400000 academic Internet users at higher education institutions in South Africa. Approximately 85% of all

staff and close to 100% of professional staff at tertiary education institutions have Internet access. The literature review indicates almost no research on Web usage patterns of academic staff in higher education institutions in South Africa.

All professional academic staff at UNISA have access to a personal computer, e-mail and unlimited access to the Web via the campus network. UNISA is the largest distance education university in South Africa. Given the foregoing dramatic technological changes to the information world of the academic, it is unclear what the consequences and effects on the selection methods and citation approaches to information sources are.

This article intends to make sense of the shifts that occurred in the complex networked scholarly landscape by determining the relationship between Web-based references and non Web-based references in the reference lists of UNISA academics.

The research for the article addressed the issue of how the Web features as a scholarly information resource in the research products of academics in UNISA by calculating and analyzing citations with a Uniform Resource Locator (URL). The focus was the citation habits of the UNISA academic researcher as a user group and their use of Web resources.

For the purpose of this study, Web-based information resources cover academic library and non-library open Web-based information resources, available by searching or browsing the Web via Web browser software and using the Hypertext Transfer Protocol (HTTP). It includes fee-based (commercial e-sources accessed via the Web but with charges associated) as well as free-based information (Hoggan 2002:2). Academic library resources include Web-accessible information resources purchased, leased, licensed and financed by the academic library as well as consortia-acquired, s ubscription-based electronic resources. Electronic resources include m aterials in digital format such as the library Web site, online public access catalogue (OPAC), e-books, e-journals and e-reference sources, bibliographic and full-text databases, and other Web-based resources (ODLIS).

top

2 Purpose of the study

The aim of the study was to assess the impact of Web information resources on citation patterns of academics in UNISA. In addition, it was determined to what extent academics cite the Web and how frequently Web sources are cited (bibliographic reference lists) compared to traditional print sources. The importance of Web-based electronic format vs. traditional print-based sources in selection of information resources was established.

2.1 Objectives of the study

- To explore how the availability of Web information resources affected the scholarly citation behaviour of UNISA academics
- To measure to what extent academics currently cite Web information resources
- To determine if academics prefer to cite print or electronic Web information resources
- To identify the differences in Web citation patterns between academics from different subject disciplines.

top

3 Literature review

Webometrics and Web-citing patterns in scholarly communication are fields that are

increasingly being researched (Casserly and Bird 2003:301). Bibliometrics are concerned with the mathematical and statistical analysis of bibliographies (Davis and Cohen 2001:310). With the advent of the Web, these print-based information analysis techniques are also being applied to the measurement and counting of electronic Web citations.

Citations are a fundamental part of the scholarly communication process and can be a valuable tool to evaluate the impact of the Web on scholarly research (Harter 1998:508). Citations and the composition of bibliographies reflect changes in the information-seeking behaviour of academics.

The results of some citation studies reported in the literature are summarized in Table 1. Previous research indicates low numbers of Web citations in bibliographies, with scholars showing a preference to cite traditional print resources. Nevertheless, overall Web citations in bibliographies are increasing.

Table 1 Citation analysis studies 1996–2005

Researcher	Publication format examined	Total number of articles	Total number of references	Total number of Web references	% of total references
Harter and Kim (1996)	Electronic journals	279	4317	83	1,9%
Zhang (1998)	Journals	1175	29397	333	1,1%
Herring (2002)	Electronic journals	175	4289	685	16,0%
Budd and Christensen (2003)	Journals	164	9947	69	0,7%
Casserly and Bird (2003)	Journals	1425	35689	3582	10,0%
Sellito (2004)	Conference papers	123	2162	1041	48,1%
Kushkowski (2005)	Theses	141	8813	312	3,5%

Tonta (1996) examined the use of networked information sources in scholarly print journals published in 1993 and 1994. Only 2 (2%) of the 97 articles examined contained references to networked information sources.

A citation study was conducted by Harter and Kim (1996) where 4317 references in 279 scholarly peer-reviewed articles, appearing in 74 electronic journals, were analysed. Of the references examined, 83 (1,9%) were online sources and only 9 (0,2%) were to electronic journals. Of the 74 electronic journals in the sample, only 12 cited one or more online sources.

Zhang (1998) examined how frequently e-sources were cited in library and information science journal articles for the period 1994 to 1996. Of the articles surveyed, 7,5% had e-references. The average number of e-references per article was 3,8. The proportion of e-references out of the total references was 1,1%. Results of this study showed that at the time the study was conducted, electronic publications were not accepted as a legitimate medium

by the scholarly community.

Herring (2002) studied the use of electronic resources in 12 scholarly peer-reviewed electronic journals. The journals represented areas of active interdisciplinary research available through the Web without subscription or registration. A total of 175 articles published from 1999 to 2000 were examined. The 175 articles had a total of 4289 unique references. Over 55% of the articles (97) cited electronic resources. In addition 658 citations, or 16% of the total, were to electronic resources. The 97 articles that referenced electronic resources had a total of 2584 unique citations, 26,5% of which were to electronic resources.

Budd and Christensen (2003) conducted a citation analysis of scholarship in the social sciences. The 2001 volume of six social science journals were selected. Each issue of each of the journals was examined and 9947 citations were recorded to enable the researchers to study the dispersion of citations by format. It was evident that the overwhelming majority of items cited were journal articles (47%) and books (42%). Less than 1% of citations were explicitly to Web sites. Of the journal article citations in the study, 40% were potentially available in full text. Results indicated that the academic world adhered to formal and traditional media for communication.

Casserly and Bird (2003) examined 1425 articles published in 34 core, refereed library and information science journals during 1999 to 2000 to determine the frequency with which authors cited digital resources. Of the 35 682 citations examined, 10% (3582) were Web citations and 90% were non-digital resources. The average number of Web citations per article was 2,5 (Casserly and Bird, 2003:312).

Sellito (2004) examined the bibliographic references of online academic articles in the AusWeb conference archive from 1995 to 2003 to determine the number of cited Web-located bibliographical references. A total of 123 articles were examined that contained 2162 references in total, of which 48,1% (1041) were Web references. The number of Web references per article ranged from a low of 3,5 in 1997 to a high of 12,3 in 2001. The average number of Web references per article was 8,5 across all articles assessed. The greatest number of Web references cited by an article was 41 with numerous authors not citing any Web references.

Kushkowski (2005) studied Web citation behaviour by examining 141 print and electronic theses in the field of economics at the Iowa State University and Virginia Polytechnic Institute/State University from 1997 to 2003. Results showed that Web citations were only a small percentage of the overall number of Web citations. Most of the Web citations were to freely available non library-held documents, not database and other electronic information purchased and licensed by academic libraries. Only 312 citations (3,53%) of the total 8813 citations were Web citations. There was an increase in the total number of Web citations for the two institutions from 11 in 1997 to 103 in 2002.

In conclusion, the literature review revealed that there is no research available in South Africa that documents the information-seeking behaviour of academics in the cyberspace environment or how academics use or cite easily accessible Web information resources.

top

4 Methodology

The citation analysis technique employed in this study was bibliographic reference examination. Bibliographic references are defined by Sellitto (2004) as 'references that appear as a list at the end of the article'. This procedure is unobtrusive, the data are

conveniently localised in one area of the document, and it is easy to count the number of citations (Okrent 2001:8).

The main source of data for this research was all the citations contained in bibliographies, endnotes and footnotes of accredited research journal articles submitted by UNISA to the Department of Education for subsidy purposes. The 2004 research output, compiled by the Bureau for Management Information at UNISA, was selected because it was the first comprehensive and integrated list that combined the research output produced as a merged institution.

At the time the research was conducted, a merger was in progress. UNISA, a distance higher education institution converged after a merger between Technikon Southern Africa, Vista-Vudec and the University of South Africa. The new UNISA is a large multi-site institution, geographically dispersed, with four main campuses located in Florida (Roodepoort), Midrand (Graduate School of Business Leadership), Muckleneuk and Sunnyside in Pretoria and regional offices countrywide. As indicated in Table 2, of the 1437 academics, 1209 are located at the Pretoria campus and 228 at the Florida campus.

Table 2 Academic staff grouped by college

College	**Pretoria campus**	**Florida campus**	**Total number of academic staff**
Agriculture, Natural Resources and Environmental Sciences	16	21	37
Economic and Management Sciences	325	73	398
Human Sciences	557	25	582
Law	148	43	191
Science, Engineering and Technology	163	66	229
Total	**1209**	**228**	**1437**

The new academic structure of the merged institution consists of five colleges, 17 schools, 75 departments and various institutes and bureaus. The 17 academic schools consist of:

- Law
- Criminal Justice
- Agriculture
- Environmental Science
- Indigenous Technological Knowledge
- Natural Resources
- Arts and Humanities
- Social Sciences
- Education
- Language and Literary
- Religion and Theology
- Management Sciences
- Accounting Sciences
- Applied Accountancy
- Economic Sciences
- Computing
- Natural Science and Engineering.

The total study population consisted of 458 peer reviewed academic research articles authored by UNISA academic staff. The citation analysis was carried out on 9 and 10 June 2005.

The citation format of the journal articles varied, with some articles containing footnotes or endnotes and/or bibliographies. For the purpose of this article, the term bibliography is used throughout the remainder of this article and includes footnotes and endnotes. During the examination of the bibliographies, a Web citation was identified as a Web resource if a URL was present or the reference indicated WWW or Internet or online.

The references listed for each article were analysed and the data were gathered by manually counting the total number of references that appeared in the bibliographies. Thereafter the bibliography of each article was checked to determine if it contained references to Web-based information resources such as URLs of Web pages or Web sites. A citation count was done of the total number of Web references cited in the article.

Data concerning each article were entered into a spreadsheet. For every article, the following information was recorded: title of the journal, volume and issue of the journal, total number of citations, total number of Web citations, author and subject discipline (college affiliation). Many articles had multiple authors, but only the first (main) author and affiliation was captured in the spreadsheet.

A total of 57 articles were discarded from the study for the following reasons:

- The print copy of the article was not available.
- The photocopy available was incomplete or of very poor quality.
- There were no reference lists or bibliographies in the articles.
- Journal articles (mostly the law subject discipline) could not be used due to the reference style of articles containing in-text references, that is, the references formed part of the article text. These references were not numbered and very difficult to identify and count.

The research design enabled the researcher to compare and contrast results by subject discipline. The data were analysed by broad subject discipline, based on the UNISA academic college structure, to identify any differences in patterns of use and preferences between the groups.

top

5 Research results

A total of 458 journal articles were examined, of which 159 (34,7%) contained Web references and 299 (65,3%) had no Web references. Collectively, the journal articles contained a total of 20825 references of which 734 (35%) were Web references and 20091 (96,5%) were non Web references. There were an average of 45,5 references per article and an average of 1,6 Web references per article. The greatest number of Web references cited in a paper was 26 and the lowest one. The relevant tables derived from the data are included below for reference.

Table 3 Number of Web references out of the total references grouped by college

College	Total references	Number of non-Web references	Number of Web references

Agriculture, Natural Resources and Environmental Sciences	53	53	0
Economic and Management Sciences	1898	1773	125
Human Sciences	8244	7999	245
Law	9329	8992	337
Science, Engineering and Technology	1301	1274	27
Total	**20825**	**20091 (96,5%)**	**734 (3,5%)**

Table 3 shows the proportion of Web references and non Web references out of the total references per UNISA college. Web references made up a small percentage of the total citations. The 3,5% (percentage of Web references) reported above are similar to the recent study by Kushkowski (2005), which found that only 3,5% of the total references were Web citations.

The sources cited might have been electronically accessed via the Web, but are cited as the print equivalent. Academics use the Web to access and download information, but prefer to cite the print counterpart instead of the Web resource. In Table 4, the proportion of journal articles that contain Web references, out of the total number of journal articles, are presented by UNISA disciplinary grouping (college). A third of the journal articles contained Web references, compared to two-thirds that did not have any Web references.

The data in Table 4 suggest that the College of Human Sciences was the most active in terms of number of research articles published. The College of Agriculture, Natural Resources and Environmental Sciences (CANRES) has a low researcher output in contrast to the other UNISA colleges. CANRES consists of Technikon SA and Vista-Vudec academics. These merger partners did not have a strong research focus and were relatively new institutions, compared to the old established UNISA Pretoria campus with a longstanding tradition of research .

Table 4 Comparison of the number of journal articles with Web references grouped by college

College	**Total number of journal articles**	**Number of journal articles without Web references**	**Number of journal articles with Web references**
Agriculture, Natural Resources and Environmental Sciences	2	2	0
Economic and Management Sciences	60	31	29
Human Sciences	229	165	64
Law	121	61	60
Science, Engineering and Technology	46	40	6
Total	**458**	**299 (65,3%)**	**159 (34,7%)**

Table 5 indicates the average number of Web references per journal article in the different UNISA colleges. The College of Law cited the most URLs per article, followed by the College of Economic and Management Sciences.

Table 5 Average number of Web references per article grouped by college

College	Average number of Web references per article
Agriculture, Natural Resources and Environmental Sciences	0,00
Economic and Management Sciences	2,08
Human Sciences	1,07
Law	2,79
Science, Engineering and Technology	0,59

In Table 6, the percentage of Web references overall per college are reported. The frequency of Web citation at the UNISA colleges can be classified into heavy, moderate and light user groups. The College of Economic and Management Sciences is using Web citations the most (heavy) followed by the College of Law. The College of Human Sciences and the College of Science, Engineering and Technology are moderate users, while CANRES can be seen as a light user.

Table 6 Percentage of Web references grouped by college

College	Percentage Web references
Agriculture, Natural Resources and Environmental Sciences	0,0%
Economic and Management Sciences	6,7%
Human Sciences	3,3%
Law	6,1%
Science, Engineering and Technology	1,6%
Average	**4,3%**

top

6 Findings and discussion

The picture that emerges is that UNISA academics have not fully embraced the Web as a scholarly resource. Academics are citing Web sources, but the Web citation rate is low. The findings indicate that academics tend to rely heavily on static, print-based sources when citing the literature.

The Web is cited in conjunction with other sources and used as a supplement to print and other academic library resources, not a replacement. Print and digital media will coexist in the bibliographies of researchers and academics for the foreseeable future. Listed below are possible issues and barriers that contribute to the reluctance of academics to cite Web resources:

- The Web is perceived as an unstable impermanent medium for scholarly

communication and publication, making future retrieval of the cited content problematic. The Web cannot be trusted as a scholarly medium if readers cannot gain retrospective access to the original sources of the cited material.

- Uncertainty concerning the correct citing conventions in terms of digital content can be a barrier to using Web resources.
- There is a perception that Web information is inferior and lacks quality control. Academics prefer citing accurate peer-reviewed information.
- There is a lack of skills and confidence in terms of criteria being used to evaluate Web information resources.
- The subject field that the researcher operates in could limit the use and citation of the Web. The Web as a medium is not suitable for all types of data and subject matter. In disciplines such as religion, history, language, philosophy and literature, most of the seminal sources are in print format and is not electronically available. Electronic information is less important and usually not available for historical and archival research.
- Academics are unaware of Web information resources. The Web is a vast, chaotic and unstructured environment. It is time consuming and complex to retrieve relevant and reliable information without assistance.
- Academics use the Web for research, but decide not to cite all documents used to prepare the article (reading list vs. reference list).
- The level of computer literacy and Web competencies are linked to general attitudes to and use of networked electronic resources. Lack of Web search and retrieval skills can be impediments to usage.
- Demographic characteristics such as gender, age, seniority and ethnicity of the researcher can influence usage and citation of the Web.
- Technological factors can be barriers to usage. Network breakdowns, congestion and downtime, access problems and slow transmission times can inhibit use of the Web.

This study suggests that the academic library and traditional print sources continues to be relevant in the global networked information society. It seems that the usage of the academic library and print resources is changing, but definitely not diminishing. The academic library continues to be an important, stable and trusted partner in the information intensive research process.

top

7 Conclusions

This study demonstrated to what extent UNISA academics cite Web documents in scholarly academic articles by comparing Web vs. non Web citations. The researcher quantitively analysed Web usage patterns by determining citations.

The number of citations to the Web can be seen as an indicator of the impact of the Web on the UNISA academic community. The research shed light on how Web citation behaviour varies between the different subject disciplines (colleges) in UNISA. Possible explanations for the low Web citation rate were also offered.

The analysed data from this study suggest that the most highly cited works overall were formal publications such as books, journal articles and other printed matter. UNISA academics cite Web-based information resources less frequently than print resources. At present it seems that the Web has a low status as a scholarly resource when compared to results of other research studies reported in the literature review (Table 1).

The research has implications for the academic library. Academics should be sensitized to

use and cite quality scholarly Web resources to maximize future availability and accessibility of research materials. In cases where articles appear in print and electronic format, academics should cite the print format as well as the Web equivalents (Kushkowski 2005:272; Casserly and Bird 2003:316; Malone and Videon 1997). Academics should be encouraged to use the Web sources in tandem with print sources, complementing each other. User education programmes should place emphasis on the effective retrieval of Web information, the evaluation thereof and the correct citation of these documents.

top

8 Future research

Citation analysis in general does not give a true overall picture of Web use. T he motivation and reasons for citing or not citing Web resources are not addressed (Kushkowski 2005:261). The academic may use the Web extensively in the research process for discovery of new information, serendipitous browsing for ideas, searching, locating, accessing, downloading and on-screen reading of articles, but exclude Web citations from the final reference list.

A more detailed and in-depth research investigation into this topic is needed. In this study citations were sorted into two broad categories of Web vs. non Web citations, without analysing the type and format of the citation in great detail, for example print citations (monographs, journals, theses, etc.) or Web resources (e-journals, Web pages, conference pages, home pages, etc). In addition, t he study did not differentiate between library and non library-located Web-based information sources. In the seamless Web environment, a study that compares freely available, open Web references to academic library Web-based information references will be valuable.

This study is part of a larger investigation into academic use and acceptance of the WWW as a suitable tool for scholarly research. The research project will determine to what extent the Web and the knowledge economy transformed the information environment, information-seeking behaviour, needs, preferences and expectations of academic library users. The outcome of the citation study will be compared to the results of the qualitative questionnaire-based survey to achieve an overall view of Web usage in UNISA.

top

9 References

Bane, A.F. and Milheim, W.D. 1995. Internet insights: how academics are using the Internet. *Computers in Libraries* 15(2):32-36.

Budd, J.M. and Christensen, C. 2003. Social sciences literature and electronic information. [Online]. Available WWW: www.ala.org/ala/acrl/acrlevents/budd.PDF. (Accessed 21 July 2005).

Casserly, M.F. and Bird, J.E. 2003. Web citation availability: analysis and implications for scholarship. *College and Research Libraries* 64(4):300-317.

Christensen, E.D. 1997. An experimental inquiry into the effectiveness and choice of the library and Internet for acquiring company information. (Ph.D. dissertation) New Jersey: Graduate School Newark of Rutgers, The State University of New Jersey.

Davis, P.M. and Cohen, S.A. 2001. The effect of the Web on undergraduate citation behaviour: 1996–1999. *Journal of the American society for information science and*

technology 52(4):309-314.

De Beer, J.A. 2005. Open access scholarly communication in South Africa: a role for national informaton policy in the national system of innovation. (M.Phil. dissertation) Stellenbosch: University of Stellenbosch.

Goldstuck, A. 2004. *The Goldstuck report:Internet access in South Africa, 2004.* Blairgowrie: World Wide Worx.

Harter, S.P. 1998. Scholarly communication and electronic journals: an impact study. *Journal of the American Society for Information Science* 49(6):507-516.

Harter, S.P. and Kim, H.J. 1996. *Electronic journals and scholarly communication: a citation and reference study*. [Online]. Available WWW: http://ezinfo.ucs.indiana.edu/~harter/harter-asis96midyear.html . (Accessed 21 July 2005).

Herring, S.D. 2002. Use of electronic resources in scholarly electronic journals: a citation analysis. *College and Research Libraries* 63(4):334-340.

Hoggan, D.B. 2002. Challenges, strategies, and tools for research scientists: using Web-based information resources. *Electronic Journal of Academic and Special Librarianship* 3 (3). [Online]. Available WWW: http://southernlibrarianship.icaap.org/content/v03n03/Hoggan_d01.htm (Accessed 21 July 2005).

Kushkowski, J.D. 2005. Web citation by graduate students: a comparison of print and electronic theses. *Portal: Libraries and the Academy* 5(2):259-276.

Malone, D. and Videon, C. 1997. Assessing undergraduate use of electronic resources: a quantitative analysis of works cited. *Research Strategies* 15(3):151-158.

Noam, E.M. 1997. *Electronics and the future of the research library.* [Online] Available WWW: http://archive.ala.org/acrl/invited/noam.html. (Accessed 21 July 2005).

ODLIS *seeOnline Dictionary of Library and Information Science.*

Online Dictionary of Library and Information Science. [Online]. Available WWW: http://lu.com/odlis/ (Accessed 6 September 2005).

Okrent, N. 2001. Use of full-text electronic resources by philosophy students at UNC-Chapel Hill: a citation analysis. (M.A. dissertation) North Carolina: University of North Carolina at Chapel Hill.

Sellito, C. 2004. Web cit(ation)es in scholarly articles. [Online]. Available WWW: http://ausWeb.scu.edu.au/aw04/papers/refereed/sellito/paper.html . (Accessed 27 June 2005).

Tonta, Y. 1995. Scholarly communication and the use of networked information sources. *IFLA Journal* 22(3):240-245 [Online]. Available WWW: http://www.ifla.org/IV/ifla61/61-tony.htm . (Accessed 21 July 2005).

Zhang, Y. 1998. The impact of Internet-based electronic resources on formal scholarly communication in the area of library and information science: a citation analysis. *Journal of Information Science* 24(4):241-254.

Disclaimer

Articles published in SAJIM are the opinions of the authors and do not necessarily reflect the opinion of the Editor, Board, Publisher, Webmaster or the Rand Afrikaans University. The user hereby waives any claim he/she/they may have or acquire against the publisher, its suppliers, licensees and sub licensees and indemnifies all said persons from any claims, lawsuits, proceedings, costs, special, incidental, consequential or indirect damages, including damages for loss of profits, loss of business or downtime arising out of or relating to the user's use of the Website.

top

ISSN 1560-683X

Published by InterWord Communications for Department of Information and Knowledge Management, University of Johannesburg