



Information Systems Literature Accessibility, Use, and Preference: Overall vs Online Access & Preferences for an IS Digital Library

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ABSTRACT

An online survey of the ISWorld community was conducted to analyse the overall accessibility, use, and preferences for IS literature and to compare that to online access. The survey also sought preferences for the development of a proposed digital library system for the information systems field (an ISDL). The results identified significant dissatisfaction with accessibility of IS publications, even when online searching facilities are used. It identified overwhelming support for the development of a digital library system for IS publications. The main desired features were keyword search, field searching, advanced searching, free or low cost retrieval, and full-text searching in that order. An important difference in priorities for respondents from developing as opposed to developed countries was that free or low cost retrieval is the highest priority feature for developing countries.

INTRODUCTION

The accessibility of scholarly literature is essential to the development of an academic field. Researchers must be able to find relevant published research in order to situate and further develop their own research, and must be able to communicate the results of their own research to other researchers, as well as to teachers, students, and practitioners. Non-researchers in applied fields (such as IS) must also have access to the literature produced by researchers, but for purposes that facilitate technology and learning transfer to the community at large.

The IS field is emergent (as perhaps are all fields, but perhaps IS is newer and more dynamic than many). The IS field continues to evolve new topics and research methods. It also continues to develop new research organisations, with new schools and research centers. It also constantly develops new venues for scholarly communication, including new conferences, new working paper series, and new journals. In the past few years, we have seen the advent of computer-mediated communication (CMC) and the beginnings of its adoption as a means for scholarly communication. I say the beginnings of its adoption because there are so many unexplored possibilities. Watson (1994) discussed many possibilities for using CMC and the Internet to improve scholarly communication, but the state of the art has progressed much since then. We have seen the advent of electronic journals and much more powerful search engines. Working papers are now regularly put up on the web, as well as copies of published papers for which the author still holds electronic copyright. Many print journals are also available online, but usually only to subscribers or for a fee. Conference proceedings are now routinely put up on the Internet, sometimes with sophisticated search capabilities.

As the IS literature grows larger and more diverse, it presents more problems to the IS researcher to locate and obtain relevant publications. The main difficulty is that there is a large diversity of publication outlets with another large variety of distribution mechanisms, none of which is comprehensive (Venable *et al.*, 1996).

One technological approach that provides a possibility to overcome some of the problems of a large emergent literature is the digital

library. Venable *et al.* (1996) proposed the development of a digital library for the IS field (an ISDL), which was based on the model of the New Zealand Digital Library (NZDL) of a public library based on full-text retrieval (see <http://nzdl.org> and/or Witten *et al.*, 1998).

There are already digital libraries available to the IS community, such as the IEEE Digital Library, the ACM Digital Library (White, 1999), and the AIS eLibrary mentioned in the outgoing president's message by Blake Ives (2002), who has been a long-standing proponent of the use of technology to support the IS research community. However, none of these digital library efforts has sufficient coverage of the IS literature. What is needed is one-stop, comprehensive access to the IS literature.

The development of such a comprehensive ISDL is technologically feasible today. One prototype has been built (Venable 1999) and a second has recently been completed with the aim of exploring feasibility. The real difficulty is in organisational and economic factors, as well as in understanding the complexity of the situation and the will and preferences of the IS community. This research aims to provide information to inform the IS community and stimulate discussion about its use and preferences for IS literature, with emphasis on its online access and preferences for an ISDL. The establishment of these preferences will serve to prioritise development of ISDL features.

In the next section, I will discuss the research methodology for and conduct of the study. I will then present the results in sections on demographics, IS literature accessibility (ratings), IS literature use and preferences, online IS literature access and preferences, and preferences for the proposed digital library system. Finally, I will discuss the findings and their practical implications.

THE STUDY

As the ISWorld email list is subscribed to by much of the constituent community of the IS researchers (but also with students, teachers, and practitioners), I decided to survey that community via an email survey. In our opinion, an email survey of ISWorld would provide access to a significant percentage of the IS research community. Additionally, in our opinion, the use of an online (web-based) survey would make the task of responding simple and straightforward for most of those who subscribe to ISWorld.

An online survey also provided the opportunity to use hypertext capabilities to provide explanations of terms that the survey respondents might not know without cluttering up the survey itself. Simple pop-up windows provided within the survey code were used rather than external hyperlinks, which might cause delays in response time.

The survey was constructed with five main sections: simple demographics, IS literature accessibility (ratings), IS literature use and preferences, online IS literature access and preferences, and preferences for the proposed digital library system. The online survey can be obtained from the author.

The survey was communicated to the ISWorld mailing list in December 2001. A follow-up email was sent in March 2002 in order to gain more responses. Responses from developing countries were particularly encouraged. A total of 112 usable responses were received. This represents a response rate of only a bit over 3% (given an ISWorld population at the time of a bit over 3000). Sample bias is discussed in the next section. Issues of non-response bias will be discussed at the end of this paper.

DEMOGRAPHICS

There were 112 valid respondents to the survey, with 69% male, 30% female, and 1% unknown (not answered).

Survey respondents were primarily from the English speaking world (75.0%) and failing that from the developed world (91.1%). Despite seeking responses from the so-called developing countries, only 10 (8.9%) of the responses were from them. Responses from these countries included responses from India, South Africa, China, Mexico, and Thailand. Clearly, the non-English-speaking and particularly the developing countries are under-represented.

Respondents were also asked about their status in the IS field. The most common response (64%) was that they were both a university-level teacher and a researcher. Taken individually by category, 83% were university level teachers, 71.4% were researchers, 23.2% were students, 10.7% were practitioners, and 1.8% were other level teachers. Only 1 person reported being a practitioner and nothing else. The latter point shows that (as one would expect) practitioners are unlikely subscribers to ISWorld unless they are also university level teachers, researchers, and/or students. Thus this research does not address practitioner needs for an ISDL (if any).

INFORMATION SYSTEMS LITERATURE ACCESSIBILITY

Respondents were asked a number of questions relating to their assessment of the availability and accessibility of the IS literature, both overall and online in particular.

On average the respondents rated their satisfaction with the accessibility of the IS literature (online and otherwise) on a 5 point scale (from not satisfied to very satisfied) as 2.25, well below 3 for satisfied. Only 37.5% were satisfied or above, with none being very satisfied and 2.7% not answering that question.

When asked how easy it was for them to get sufficiently comprehensive access to the IS literature (online and otherwise), the average rating from 1 (very easy) through 3 (neutral) to 5 (very difficult) was 3.35, between neutral and difficult. The most common answer was neutral (33.9%) with the next most common being difficult (33.0%). Less than 1% answered very easy, with 11.6% assessing it as very difficult to get sufficient access. 0.9% of respondents did not answer this question.

93.8% of respondents reported that they had to consult multiple sources of information because of the low coverage of Information Systems publications in a single source. On average, those who had to consult multiple sources of information said that they had to do so often, with 40% choosing this option and 32.4% saying that they had to do it very often.

When asked whether they had ever felt discouraged in obtaining an Information Systems publication (online or otherwise) because they thought that the effort, cost and time were not worthwhile, 69.6% said yes. On average those who said yes rated how often this occurred as 3.22, much closer to 3 (sometimes) than to 4 (often). However, 26.8% of all respondents said that they felt discouraged often or very often.

As for online accessibility of the IS literature, respondents rated ease of online access (search and retrieval) on average at 2.73 (between, but closer to neutral than easy). 25% rated ease of online access to the IS literature as difficult or very difficult, while 44.6% rated it as easy or very easy. This shows that what access there is, is somewhat easy to use. However, not all of the IS literature is accessible online.

When asked about the adequacy of online coverage of the IS literature, the average rating from 1 (not adequate) through 3 (adequate) to 5 (very adequate) was 2.15, well below adequate. 67.9% of respondents

Table 1: Summary of IS Literature Type importance ratings

Type of Publication	Average Importance Rating	Percentage 1 Unimportant	Percentage 2 Somewhat Important	Percentage 3 Important	Percentage 4 Very Important	Percentage 5 Critical	Percent didn't answer
Journals	4.66	2.7	0.9	1.8	17.0	76.8	0.9
Conference Proceedings	3.72	1.8	14.3	20.5	35.7	26.8	0.9
Web sites	3.14	4.5	27.7	30.4	23.2	13.4	0.9
Books	3.05	3.6	29.5	32.1	26.8	7.1	0.9
Theses and Dissertations	2.94	9.8	30.4	25.0	24.1	9.8	0.9
Working Papers	2.93	6.3	30.4	30.4	26.8	4.5	1.8
Magazines	2.77	6.3	36.6	34.8	17.0	4.5	0.9
Usenet or Newsgroups	2.26	28.6	36.6	17.0	13.4	3.6	0.9
Newsletters	2.12	31.3	39.3	16.1	10.7	1.8	0.9

reported coverage below adequate, while none rated it as very adequate. This indicates that important portions of the IS literature are not accessible online.

INFORMATION SYSTEMS LITERATURE USE AND PREFERENCES

Respondents were asked to rate the importance of nine types of publications that can be considered to be part of the IS literature. Ratings were on a five-point scale from unimportant to critical. Table 1 shows the different types, the average rating, and the percentages of respondents giving each rating, sorted with the highest average rating first.

As expected, journals top the list with conference proceedings second. Perhaps surprisingly, web sites are rated on average third most important, more highly than books or theses and dissertations. Journals are the only publication type rated on average between very important and critical and also were the only publication type with more than one half of respondents (actually 76.8%) rating it as critical. The next closest (conference proceedings) is only 26.8%.

ONLINE ACCESS USE AND PREFERENCES

Respondents were asked to rate the importance of ten types of online search facilities. Table 2 presents a summary of the responses, sorted with the online search facility type with the highest important rating first.

Table 2: Online search facility importance ratings

Type of Online Search Facility	Average Importance Rating	Percentage 1 Unimportant	Percentage 2 Somewhat Important	Percentage 3 Important	Percentage 4 Very Important	Percentage 5 Critical	Didn't answer
Digital Libraries	4.14	0.0	8.0	16.1	27.7	45.5	2.7
Search Engine	3.94	0.9	8.9	25.0	23.2	39.3	2.7
Online Public Access Catalog (OPAC)	3.72	6.3	6.3	25.9	24.1	31.3	6.3
Meta-Search Engine	3.61	1.8	17.0	23.2	30.4	25.0	2.7
Traditional Online search service (e.g. Dialog, Proquest)	3.54	2.7	17.9	25.9	23.2	25.9	4.5
Subject Directory	3.40	5.4	15.2	27.7	23.2	19.6	8.9
Thesis Directory	2.94	11.6	24.1	28.6	18.8	11.6	5.4
Subject Guides and Gateway Page Directories	2.74	10.7	30.4	31.3	13.4	7.1	7.1
Crawlers, Robots, and Spiders	2.66	15.2	28.6	27.7	19.6	3.6	5.4
FTP Search	1.86	40.2	32.1	16.1	2.7	1.8	7.1

Perhaps surprisingly, digital libraries are rated at the top of the list, ahead of search engines and well ahead of traditional online search services. Digital libraries was the only online search facility rated on average between very important and important. None of the search facilities were rated as critical by more than half of the respondents.

PREFERENCES FOR A PROPOSED IS DIGITAL LIBRARY

The last section of the survey asked for preferences of features for the proposed Information Systems Digital Library (ISDL, Venable *et al*, 1996, Venable, 2000). The first two questions asked about attitudes towards the proposed ISDL. When asked whether a comprehensive ISDL would be useful to the IS community, 98.2% said yes, 0.9% said no, and 0.9% didn't answer. When asked whether they would use an ISDL if built, 97.3% said yes, 0.9% said no, and 1.8% didn't answer.

Table 3 shows the importance ratings of ten candidate features for the proposed ISDL. The features are sorted with the highest importance rating on average at the top.

On average, keyword search is rated most important, followed by field searching and advanced searching facilities. Free or low cost retrieval is next, followed by full-text search. All of the top five facilities are rated on average between very important and critical. All five are also rated as critical by more than half of the respondents.

The next two questions pursued the issue of cost for retrieval of publications. When asked whether they would pay a fee for access to a publication, 1.8% said always, 8.0% said often, 48.2% said sometimes, 33.0% said seldom, 7.1% said never, and 1.8% didn't answer. When asked how much they would be willing to pay for a publication, the average response was USD 8.56.

Finally, respondents were asked for comments on any issues. 39.3% of respondents gave comments. There were a very broad range of comments made. A number of comments were positive and wished the author luck and gave support. A number of additional features, issues, and priorities were also suggested. One comment in particular gave strong evidence in support of a digital library system.

"Digital libraries are a revolutionary way to do literature research. I personally have saved hundreds of hours and dollars. Journals and conferences that do not make themselves available via inexpensive subscriptions to digital libraries will not be cited and will become intellectual backwaters."

Table 3: Importance ratings of candidate ISDL features

Candidate ISDL Feature	Average Importance Rating	Percentage 1 Unimportant	Percentage 2 Somewhat Important	Percentage 3 Important	Percentage 4 Very Important	Percentage 5 Critical	Didn't answer
Keyword Search	4.66	0.9	3.6	2.7	14.3	77.7	0.9
Field Searching (e.g. author, publisher, year/date)	4.55	0.0	1.8	8.9	21.4	66.1	1.8
Advanced Search	4.42	0.9	2.7	8.0	28.6	57.1	2.7
Free or very low fee for publications retrieval	4.26	0.9	5.4	14.3	24.1	53.6	1.8
Full-text Search	4.21	2.7	7.1	9.8	26.8	52.7	0.9
Phrase and Proximity Searching	3.68	4.5	9.8	22.3	36.6	24.1	2.7
Basic No-Frills Search	3.66	8.9	8.0	22.3	18.8	33.9	8.0
Filter by type of publication (e.g. exclude working papers)	3.43	6.3	14.3	25.9	30.4	18.8	4.5
Links to Publishers	2.36	24.1	33.0	27.7	8.0	5.4	1.8
Language Translation	2.21	31.3	32.1	22.3	8.0	4.5	1.8

ANALYSIS DEVELOPED VS DEVELOPING COUNTRIES RESPONSES

Ten survey responses were received from five developing countries. When analysed separately from other responses, the major area of significant difference concerns payment for retrieval of publications. The average rating of importance for "Free or very low fee for publication retrieval" was 4.21 for respondents from developed countries and 4.80 for respondents from developing countries. This rating makes it the most important criteria on average for respondents from developing countries. Fully 80% of respondents from developing countries rated this facility as critical with the remaining 20% rating it very important. This compares to 51% of respondents from developed countries rating the facility as important. The difference is not directly born out in the figures for how much a respondent was willing to pay because of one anomalous respondent who indicated that he or she had once paid USD100 for an important publication. However, if this individual is removed from the data, the average for respondents from developed countries is USD 7.93 while the average for the remaining respondents from developing countries is only USD 3.00.

Further support for this difference is found in the text comments supplied. Several respondents from the USA noted that they had little need for an ISDL because their library paid for subscriptions to Proquest/ABI Inform and the like. E.g.,

"My comments are skewed by the fact that our university has access to Business Source Premire (Ebsco), Lexis-Nexis, and ProQuest/ABI Inform. These sources are rather comprehensive regarding leading IS journals. Less well-known journals are sometimes difficult to find, but in the rare case where I need a paper from these types of journals, I can usually find what I need via a Google search or sending a note to an author."

Several respondents from developing countries on the other hand expressed their concerns. E.g.,

"It is very difficult to pay from a foreign country for articles because of the low value of our currencies. We also do not get money or refunds from the university for that."

"Access to electronic educational resources are expensive for the majority of us in Africa. knowing where to get such resources will be invaluable. it will reduce time and probably cost as well."

The issue of cost isn't just a problem in developing countries. As one respondent noted, smaller universities in developed countries also have difficulty with access.

"A free comprehensive digital library of IS research literature is extremely necessary. For smaller universities, there is no access to such literature except by the ancient inter-library loan method."

DISCUSSION OF RESPONSE RATE AND NON-RESPONSE BIAS

At approximately 3%, response rate is an issue for this survey. The response rate has been calculated as the number of responses over the number of subscribers to ISWorld. This assumes that the survey wasn't found by others surfing the net and that members of ISWorld didn't forward the email message originating the survey to other who then filled out the survey.

Recently, Venable (2002 forthcoming) attempted to survey ISWorld about the appropriateness and usefulness of ISWorld as a place for distributing surveys. From that survey, it appears that among the main reasons for not answering surveys among ISWorld subscribers are lack of time (~63% of respondents), poorly constructed surveys (with obvious research design flaws or poorly worded questions) (~50%), and not having the appropriate knowledge to answer the survey (~80%). It is unlikely that many of the potential respondents wouldn't have the appropriate knowledge to answer the questions. Unfortunately another significant reason was "topic not interesting to me" (~60%). (Note: The figures here are preliminary and will be firmed up in the next week and before final publication.) This latter reason opens the possibility of non-response bias.

The question for non-response bias then is whether the topic of the survey was not of interest to a high enough percentage of the respondents to bias the survey results. The subject and text of the email was

about a survey about an Information Systems Digital Library. As the topic is of general interest to IS researchers and could affect their working environment, significant disinterest seems unlikely. As one prominent researcher put it, "John - Main problem is just plain old lack of time. Sid Huff". This is the most likely cause for low response rates on surveys sent out over ISWorld. As the survey reported in this paper was somewhat lengthy, it seems that potential respondents being too busy is the most likely cause in this case too.

Surveys on ISWorld generally have a poor response rate. Indeed, the *best* response rate reported by any respondent was 200 out of ~3000+, or a little less than 7%, with an average of ~2.5% (Venable, 2002 forthcoming). So, the survey reported in this paper is not out of line with those rates.

However, if there is a bias, it would seem to be toward disinterest in the topic/approach and less enthusiasm for the project. It seems unlikely that it would affect the importance of various publication types vis-à-vis each other, or the preferences for online searching facilities vis-à-vis each other, or even the preferences for ISDL facilities vis-à-vis each other. Only the overall interest in building and/or using an ISDL once built (which were rated very high) would be directly affected by a bias due to disinterest in the topic.

SUMMARY

This paper has investigated the interest in an ISDL and topics related to its potential requirements. Preferences for publications have been determined, with the aim that an ISDL should prioritise its support for different publications based on the expressed preferences. Similarly, the priorities expressed for features of an ISDL should be used to help prioritise the implementation of features in a future ISDL. This paper has also raised the issue of developed vs developing countries and their different needs for free or low-cost retrieval of IS publications.

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