

## Supporting decision support: where information on DSS is located

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### Abstract

DSS professionals may differ in their opinion and practice as to where they locate the most useful information relevant to their work. Online and other electronic form databases are increasingly becoming the key resource for literature searches. This study empirically compared 31 online databases identified as promising for DSS relevant information according to their coverage of DSS. Rankings for recent years and temporally unconstrained conditions were obtained and discussed. INSPEC was the highest ranked database overall and for recent information. INSPEC was also the highest rated database for coverage of major DSS journals. However, there are many other databases that also provide coverage of DSS materials. It is hoped that DSS professionals will use these results to improve the effectiveness of their information search process.

*Keywords:* Decision support systems; DSS; Management information systems; MIS; Expert systems; Executive support systems; ESS; Model management systems; MMS; Simulation; DSS research methods; Online databases; Information sources; Bibliometrics

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### 1. Introduction

In this information age [1,2] obtaining and effectively using information is central to success in innumerable organizational activities. DSS developers and users face such challenges as professionals. In developing, applying, and assessing decision support systems (DSS) software, information on the related efforts of others can often

be helpful. Online information retrieval is one approach to locate articles, books, presentations, new software, etc. related to DSS.

However, the sophistication of the use of this technology by DSS users is questionable. Indeed, many DSS users are subject to the same hesitancy to use unfamiliar information technologies as the general population. In addition, it appears that many users hold misconceptions about online information search strategies. Problems also arise from uncertainty concerning both indexing and search approaches [6]. Hundreds of online databases are available [15]. However, those which are most likely to have the most information related to topics such as DSS are a limited number. Which databases a DSS user might utilize is

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related to their background and professional location. Some are inclined to look in engineering databases, others only in business databases, still others might only consult directory format databases, while others might employ electronic book catalogue online files.

We sought to address such uninformed information search procedures by undertaking a formal empirical comparison of DSS related online databases to determine their relative potential helpfulness. It is our hope that the availability of such rankings will be helpful to many DSS users [8].

## 2. Related studies

A survey of the literature confirmed that a previous systematic empirical comparison of databases for their support of DSS had not been undertaken. An examination of comparative studies of online databases in other areas suggested several methodological approaches [6,13]. A number of bibliometric studies conducted in the fields of MIS and DSS [9–12,14] used manual searches through selected journals or reference books like the Business Periodical Index or CD-ROM searches through individual databases like ABI/INFORM to identify DSS articles. We believe that these studies could have benefited enormously from the use of online searches through DSS relevant databases.

A 1990 study by Eom and Lee [12] identified the top fifteen journals that published DSS applications research. A more recent paper [9] identified the twenty one journals that published the largest number of the most influential DSS research papers in both application and non-application areas. Twelve of the original fifteen journals are common to both lists.

Bibliometric research approaches and online environmental scanning are currently finding increasing favour in organizations. A recent *Business Week* article [5] described the use of bibliometric data by individual firms to track patents and papers, assess their technological competitiveness, and identify trends in various technological and financial arenas. A *Datamation* article

[22] described online services that are directly linked to LAN servers and allow managers to carry out their own searches rather than depend on librarians.

## 3. Methodology

To accomplish our aim of developing an empirical ranking of databases supporting DSS we selected 5 key terms that would identify items in databases likely to be related to DSS. We then coded them into appropriate syntax for online searching, selected appropriate databases, collected data through executing a series of online searches under two differing conditions, and developed rank orderings for each condition over each of the key terms, and for DSS overall. In a second search we used the list of the 21 most influential DSS journals from [9] to identify which databases covered these journals.

The key terms we used were selected from a comprehensive classification scheme for the MIS area [3]. Even though the original scheme did not group these terms under the DSS label, the DSS field now encompasses many research tracks such as MMS and Expert Systems [17]. We compared our list of key terms with DSS topic listings in such widely used MIS texts as [19] and [16] as a validity check. Table 1 lists the key terms we used.

Online information retrieval through such systems as DIALOG's require that terms be coded in a standardized syntax. This provides, for example, such elements as truncation symbols to allow

Table 1  
List of DSS-Related Key Terms

DECISION SUPPORT SYSTEMS
DECISION SUPPORT SYSTEM? OR DSS
EXPERT OR KNOWLEDGE-BASE? SYSTEM?
EXECUTIVE SUPPORT SYSTEM? OR ESS
MODEL MANAGEMENT SYSTEM? OR MMS
SIMULATION? AND MODELLING INFORMATION SYSTEM?

NOTE: '?' is a wild card symbol. Other elements of online searching syntax have been removed.

for: (1) the efficient selection of plural and adjectival forms of prime concepts, (2) accounting for common word order patterns and variations, and (3) the elimination of extraneous items to a certain extent [20]. For example, using the question mark to represent a truncated stem (as it does in DIALOG search syntax), using the search term MANAG? would match items containing the terms MANAGE, MANAGEMENT, MANAGERIAL, or MANAGING. Where two or more words comprised different conceptual components of a key term, location was deemed to exist when they occurred within the proximity of several words of each other. Further discussion of online searching vocabularies are provided in [21].

Although DSS relevant online databases are produced by numerous institutions they are largely available from a relatively limited number of major vendors. A database from any particular producer may be loaded rather differently by different vendors (for instance, in years covered or in dimensions indexed). In order to assure a somewhat equal basis for each database in our study, we decided to compare them using the loadings of the world's largest online database vendor, DIALOG Information Services. Information on locating and contacting vendors and producers of the databases in this study can be obtained in [15] a triennial publication. Brief descriptions of the highest ranking databases in this

Table 2  
Coverage of DSS-Related Key Terms

Rank	DATABASES	
	Unconstrained	Recent Years
1	INSPEC	INSPEC
2	TRADE AND INDUSTRY ASAP	TRADE AND INDUSTRY ASAP
3	COMPENDEX PLUS	ABI/INFORM
4	ABI/INFORM	PROMT
5	PROMT	COMPENDEX PLUS
6	PASCAL	SCISEARCH
7	SCISEARCH	NEWSLETTER DATABASE
8	NTIS	PASCAL
9	NEWSLETTER DATABASE	COMPUTER DATABASE
10	COMPUTER DATABASE	NTIS
11	MATHSCI	DISSERTATION ABSTRACTS ONLINE
12	AEROSPACE	SOCIAL SCISEARCH
13	DISSERTATION ABSTRACTS ONLINE	BUSINESS DATELINE
14	INFORMATION SCIENCE ABS	BUSINESS SOFTWARE DATABASE
15	SOCIAL SCISEARCH	AEROSPACE
16	BUSINESS DATELINE	INFORMATION SCIENCE ABS
17	CONFERENCE PAPERS INDEX	LCMARC -BOOKS
18	BUSINESS SOFTWARE DATABASE	ISMEC: MECHANICAL ENGINEERING
19	LCMARC -BOOKS	NEWSEARCH
20	GLOBALBASE	GLOBALBASE
21	ERIC	MATHSCI
22	MANAGEMENT CONTENTS	ERIC
23	FEDERAL RESEARCH IN PROGRESS	LISA
24	ISMEC: MECHANICAL ENGINEERING	MANAGEMENT CONTENTS
25	LISA	MICROCOMPUTER INDEX
26	MICROCOMPUTER INDEX	NATIONAL NEWSPAPER INDEX
27	NATIONAL NEWSPAPER INDEX	CONFERENCE PAPERS INDEX
28	NEWSEARCH	FEDERAL RESEARCH IN PROGRESS
29	LEGAL RESOURCE INDEX	LEGAL RESOURCE INDEX
30	MICROCOMP SOFTWARE GUIDE	MICROCOMP SOFTWARE GUIDE
31	GPO PUBLICATIONS REFERENCE	GPO PUBLICATIONS REFERENCE

Table 3  
Unconstrained Rankings for 5 Key Terms of DSS

DATABASES	DSS	Expert System	ESS	MMS	SIM/Model	DATABASES	Overall (Unconstrained)
ABI/INFORM	3	11	6	9	2	ABI/INFORM	6.2
AEROSPACE	15	9	13	10	9	AEROSPACE	11.2
BUSINESS DATELINE	22	25	11	12	16	BUSINESS DATELINE	17.2
BUSINESS SOFTWARE DATABASE	16	17	21	19	19	BUSINESS SOFTWARE DATABASE	18.4
COMPENDEX PLUS	2	2	4	7	6	COMPENDEX PLUS	4.2
COMPUTER DATABASE	5	6	10	13	13	COMPUTER DATABASE	9.4
CONFERENCE PAPERS INDEX	18	15	17	18	21	CONFERENCE PAPERS INDEX	17.8
DISSERTATION ABSTRACTS ONLINE	11	14	12	11	15	DISSERTATION ABSTRACTS ONLINE	12.6
ERIC	20	24	16	24	14	ERIC	19.6
FEDERAL RESEARCH IN PROGRESS	23	23	24	21	18	FEDERAL RESEARCH IN PROGRESS	21.8
GPO PUBLICATIONS REFERENCE	31	31	31	29	31	GPO PUBLICATIONS REFERENCE	30.6
GLOBALBASE	21	21	15	15	26	GLOBALBASE	19.6
INFORMATION SCIENCE ABS	13	12	18	22	4	INFORMATION SCIENCE ABS	13.8
INSPEC	1	1	1	4	5	INSPEC	2.4
ISMEC: MECHANICAL ENGINEERING	24	18	23	23	23	ISMEC: MECHANICAL ENGINEERING	22.2
LCMARC -BOOKS	19	20	19	14	24	LCMARC -BOOKS	19.2
LEGAL RESOURCE INDEX	28	27	29	30	29	LEGAL RESOURCE INDEX	28.6
LISA	25	21	26	28	21	LISA	24.2
MANAGEMENT CONTENTS	17	26	21	27	17	MANAGEMENT CONTENTS	21.6
MATHSCI	14	5	5	20	7	MATHSCI	10.2
MICROCOMP SOFTWARE GUIDE	30	29	28	30	28	MICROCOMP SOFTWARE GUIDE	29
MICROCOMPUTER INDEX	26	19	26	26	25	MICROCOMPUTER INDEX	24.4
NATIONAL NEWSPAPER INDEX	29	28	25	16	29	NATIONAL NEWSPAPER INDEX	25.4
NEWSEARCH	27	30	29	25	27	NEWSEARCH	27.6
NEWSLETTER DATABASE	10	13	7	2	11	NEWSLETTER DATABASE	8.6
NTIS	8	7	14	6	3	NTIS	7.6
PASCAL	9	4	9	5	8	PASCAL	7
PROMT	7	10	3	3	10	PROMT	6.6
SCISEARCH	4	3	8	8	12	SCISEARCH	7
SOCIAL SCISEARCH	12	16	20	17	20	SOCIAL SCISEARCH	17
TRADE AND INDUSTRY ASAP	6	8	2	1	1	TRADE AND INDUSTRY ASAP	3.6

Table 4  
Recent Years Rankings for 5 Key Terms of DSS

DATABASES	DSS	Expert Systems	ESS	MMS	SIM/Model	DATABASES	Overall (Unconstrained)
ABI/INFORM	2	4	6	5	1	ABI/INFORM	3.6
AEROSPACE	23	15	12	18	16	AEROSPACE	16.8
BUSINESS DATELINE	15	19	14	9	11	BUSINESS DATELINE	13.6
BUSINESS SOFTWARE DATABASE	12	14	22	18	14	BUSINESS SOFTWARE DATABASE	16
COMPENDEX PLUS	3	2	4	7	7	COMPENDEX PLUS	4.6
COMPUTER DATABASE	8	7	10	13	10	COMPUTER DATABASE	9.6
CONFERENCE PAPERS INDEX	28	29	17	24	28	CONFERENCE PAPERS INDEX	25.2
DISSERTATION ABSTRACTS ONLINE	13	13	11	15	13	DISSERTATION ABSTRACTS ONLINE	13
ERIC	24	22	16	24	17	ERIC	20.6
FEDERAL RESEARCH IN PROGRESS	28	29	22	21	28	FEDERAL RESEARCH IN PROGRESS	25.6
GPO PUBLICATIONS REFERENCE	28	28	31	24	28	GPO PUBLICATIONS REFERENCE	27.8
GLOBALBASE	17	24	15	16	24	GLOBALBASE	19.2
INFORMATION SCIENCE ABS	18	12	18	24	12	INFORMATION SCIENCE ABS	16.8
INSPEC	1	1	1	6	8	INSPEC	3.4
ISMEC: MECHANICAL ENGINEERING	20	17	21	18	18	ISMEC: MECHANICAL ENGINEERING	18.8
LCMARC -BOOKS	16	16	18	16	21	LCMARC -BOOKS	17.4
LEGAL RESOURCE INDEX	26	26	29	22	29	LEGAL RESOURCE INDEX	26.4
LISA	21	20	26	18	22	LISA	21.4
MANAGEMENT CONTENTS	19	25	24	24	19	MANAGEMENT CONTENTS	22.2
MATHSCI	25	22	5	24	22	MATHSCI	19.6
MICROCOMP SOFTWARE GUIDE	28	29	28	24	28	MICROCOMP SOFTWARE GUIDE	27.4
MICROCOMPUTER INDEX	21	18	26	22	24	MICROCOMPUTER INDEX	22.2
NATIONAL NEWSPAPER INDEX	26	27	25	13	24	NATIONAL NEWSPAPER INDEX	23
NEWSEARCH	14	21	29	12	19	NEWSEARCH	19
NEWSLETTER DATABASE	7	10	7	2	4	NEWSLETTER DATABASE	6
NTIS	11	9	13	10	9	NTIS	10.4
PASCAL	9	5	9	8	5	PASCAL	7.2
PROMT	6	8	2	3	3	PROMT	4.4
SCISEARCH	4	3	7	4	6	SCISEARCH	4.8
SOCIAL SCISEARCH	10	11	20	11	15	SOCIAL SCISEARCH	13.4
TRADE AND INDUSTRY ASAP	5	6	3	1	2	TRADE AND INDUSTRY ASAP	3.4

study are provided as Appendix A. A world-wide listing of vendors of these databases appears as Appendix B.

We reviewed the documentation of database producers and vendors for 372 online databases and selected 31 as appearing most relevant. Our selection criteria included indications that MIS topics such as DSS were covered in listings of their special focuses. We also used a list of 21 journals that were identified as most influential in other studies [9,12].

To obtain the data, we executed a series of online searches crafted off-line and uploaded them using a communications software specifically developed for online information retrieval. We first executed search statements without date constraints for the items to be retrieved (the 'total' condition), and in a second series of 'runs,' constrained to the previous year and a half (the 'recent' condition).

We developed rankings for the 31 databases for each of the 5 key terms using the ordering principle 'number of items with the key term in the database.' Then, we averaged the rankings of each database over all 5 key terms to obtain second order or global overall rankings of the databases for each of the two conditions.

Finally, we contacted the various database producers to determine which databases contained articles or abstracts from each of the 21 most influential DSS journals. Selection of the journals

was based on [9]. We used this study as it was more recent and broader in scope than [12]. All the database producers were responsive with the exception of the producer of MATHSCI, which we therefore have not included in this part of the study.

#### 4. Findings

From our online searches we derived rankings of 31 focal databases over each of the 5 keywords and for DSS as a discipline overall. We also ranked the databases under two conditions –unconstrained and recent years. These rankings are presented as Tables 2, 3, and 4.

We found that only 12 databases from our list of 31 covered one or more of the 21 journals. One reason for this was that many databases do not cover periodicals. Instead, they may focus on newspapers, conference proceedings, books, research projects, government publications, or software. The percentage of journals covered by these 12 databases is presented as Table 5. This table also shows, in summary form, the number of journals covered by each database. Table 6 presents the database coverage for each specific journal. Blank entries indicate that the journal was not covered by that database.

Table 5  
Coverage of DSS Journals

DATABASES	Number of Journals	Percent Covered	Average Rank
INSPEC	19	90%	0.05
ABI/INFORM	18	86%	0.05
SCISEARCH	12	57%	0.05
SOCIAL SCISEARCH	10	48%	0.05
PASCAL	9	43%	
INFORMATION SCIENCE ABSTRACTS	8	38%	
TRADE & INDUSTRY ASAP	6	29%	
ISMEC	5	24%	0.05
COMPUTER DATABASE	4	19%	0.05
COMPENDEX PLUS	4	19%	0.05
MANAGEMENT CONTENTS	3	14%	0.05
ERIC	2	9%	0.05

Table 6  
DSS Journal Locations in Online Databases

JOURNALS	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
Communications of the ACM	*		*		*	*			*	*		
Computers & Industrial Engineering	*				*	*	*		*	*		
Computers & Operations Research	*		*		*	*	*		*	*		*
Data Base		*		*	*	*			*	*		*
Decision Sciences	*				*	*					*	
Decision Support Systems	*				*	*				*		
European Journal of Operational Research	*				*	*	*		*	*		
IEEE Transactions on Systems, Man, and Cybernetics	*	*			*	*			*	*		
INFOR	*	*			*	*			*	*		
Information & Management	*				*	*			*	*		
Information Systems Research	*				*	*			*	*		*
Interfaces	*				*	*				*		
International Journal of Man-Machine Studies					*	*				*		
Journal of MIS	*				*	*				*		
Journal of Systems Management	*		*		*	*				*		*
Journal of the Operational Research Society	*				*	*	*			*		
Management Science	*				*	*	*	*	*	*		*
MIS Quarterly	*		*		*	*			*	*		*
Omega	*				*	*			*	*		*
Operations Research	*				*	*			*	*		*
Sloan Management Review	*	*			*	*		*	*	*	*	*

LEGEND: #1: ABI/INFORM  
 #2: COMPENDEX PLUS  
 #3: COMPUTER DATABASE  
 #4: ERIC  
 #5: INFORMATION SCIENCE ABS  
 #6: INSPEC  
 #7: ISMEC  
 #8: MANAGEMENT CONTENTS  
 #9: PASCAL  
 #10: SCISEARCH  
 #11: SOCIAL SCISEARCH  
 #12: TRADE & INDUSTRY ASAP

## 5. Discussion

We found that two databases, INSPEC and TRADE AND INDUSTRY ASAP, were particularly excellent sources of items mentioning DSS key terms in one of their searchable fields. Other good sources of information were found to be COMPENDEX PLUS, ABI/INFORM, and PROMT. Some databases that proved to be good sources for DSS items when publication time was not an issue such as MATHSCI were found to be ranked much lower when recent items were desired. However, most databases seemed to have roughly comparable overall and recent rankings.

Differences among databases in the recent and temporally unconstrained conditions might be due to lags in crafting abstracts and entering items into their databases by some producers. Also, some databases cover decades of material while others are relatively new or intentionally focus on only recent material.

For the five subareas of DSS, we found that in the temporally unconstrained condition that INSPEC had the greatest number of items for 'Decision Support Systems,' 'Expert Systems,' and 'Executive Support Systems.' TRADE AND INDUSTRY ASAP was highest for the constellation of terms involving 'Simulation, Modelling, Information Systems' and 'Model Management Systems.' For recent items we found that INSPEC ranked highest in numbers of articles mentioning the key terms crafted to index the subareas for 'DSS,' 'Expert Systems' and 'Executive Support Systems.' TRADE AND INDUSTRY was top ranked for recent items on 'Model Management Systems' while ABI/INFORM was best for recent items on 'Simulation, Modelling, Information Systems' terms.

The diversity of disciplines represented by databases ranking high for DSS information was impressive. The top half included engineering databases (INSPEC, COMPENDEX PLUS, NTIS, AEROSPACE), business databases (PROMT, TRADE AND INDUSTRY ASAP, NEWSLETTER, ABI/INFORM, GLOBAL-BASE, BUSINESS DATELINE), a mathematics database (MATHSCI), multidisciplinary science databases (PASCAL, SCISEARCH), and a doc-

toral dissertations database (DISSERTATION ABSTRACTS ONLINE). We suspect that DSS developers and users may tend to be parochial, albeit unconsciously, in information searches. That is, those with engineering backgrounds might tend to look for information on DSS topics largely in engineering-oriented databases, those with business backgrounds in business-oriented databases, those with information science background in library and information science, and so on. However, all thereby ignore leading sources of DSS information.

An engineering database, INSPEC, proved to be the highest ranked database under both conditions. This database is produced by the Institution of Electrical Engineers located in the U.K. and is widely available from nine different vendors from around the world (see Appendix B). Compendex Plus, also an engineering focused database, finished third in the unconstrained condition and fifth in the recent condition. Other strong performing engineering and scientific databases include SCISEARCH, PASCAL, and NTIS which clustered in the second half of the top ten under both conditions.

A business database, Trade and Industry ASAP was very strong. Its strong showing is in part due to its full-text searching option that allows one to find articles that have relevant information even when that article is not indexed on the subject. When one is interested in a narrow swathe of information, such as articles within the last year on DSSs used in the hotel industry applications this ability can be highly useful. At the same time, one still has the option of tightly limiting articles referenced in full-text databases only to indexed key terms or to terms appearing in the title or abstract. Two other business databases, ABI/INFORM and PROMT also performed extremely well and appeared in the top five ranks under both conditions. ABI/INFORM is one of the most widely available databases in both online and in CD-ROM format at most university libraries. PROMT covers marketing and technology news for all major industries and is international in scope. It contains four times as many citations as ABI/INFORM.

We had postulated that computer-focused



databases such as COMPUTER DATABASE would provide the greatest number of DSS relevant items. However, contrary to this expectation, we found that COMPUTER DATABASE ranked tenth under the unconstrained condition and ninth under the temporally constrained condition. Others such as BUSINESS SOFTWARE DATABASE and MICROCOMPUTER INDEX fared no better than fourteenth.

A surprising finding was the high ranking of the Newsletter Database. Produced by Information Access Company, this database covers over 600 business newsletters from about 40 industries (including the computer industry). It was less strong in the temporally unconstrained condition, however.

Our data on journal coverage is particularly useful for academic researchers looking for the most important and influential papers in the field. No database covered all 21 DSS journals. The widest DSS journal coverage was INSPEC which covered 19 of the 21 journals. Our previously noted findings that INSPEC also obtained the best overall rank for DSS items under both temporal conditions is a validation of its premier standing in the DSS area. Clearly, if a researcher wished to minimize the number of databases to search, he or she would pick INSPEC. The only other database that is roughly equivalent in its coverage of DSS journals is ABI/INFORM. In fact, a researcher could limit his or her search to just these two databases and still cover all 21 DSS journals.

Using the empirical rankings obtained in this study, we hope that DSS professionals will be enabled to more comprehensively survey the relevant literature on subjects of interest to them, and hopefully locate more and better information than they might otherwise.

The distribution of information in scientific literature has been the subject of bibliometrics. Our findings generally support the bibliometric theory called Bradford's Law of Scattering. Bradford [4] empirically found that the literature of any discipline is located in a vastly greater number of journals beyond a small core of key journals. This finding has been replicated in many disciplines. To the extent that DSS is a multidisciplinary

field the results of this research might have been anticipated in their broader outlines. So, for example, beyond databases in the area of business, engineering, and computer science, we found numerous articles in databases focused upon such fields as education (ERIC) and the social sciences (SOCIAL SCISEARCH), as well as multi-disciplinary databases (DISSERTATION ABSTRACTS, LC MARC, CONFERENCE PAPERS INDEX, FEDERAL RESEARCH IN PROGRESS, and others). It is important to assess this finding, however, in the light of bibliometric research [9,12] that located the most influential papers in a few of the field's best journals.

## 6. Limitations of the study

A problem that one encounters in using online textual databases is what has been called the 'unification problem.' This refers to the problem associated with the use of different names for a particular object [21]. In online databases descriptors vary over the various database producers. Thus, a study of the relative usefulness of such databases may be severely biased if a term that is a descriptor in one is used in a comparison with a database not using that descriptor in its indexing. We attempted to overcome this bias to a certain extent by not limiting the location of items to the descriptor fields but including items located through the title field, the abstract field, and all others offered by each database. This, of course, introduces biases towards databases offering abstracts or full-text of items. However, we felt that such breadth provides opportunities for locating potentially helpful, but normally less prominent information.

In our initial collection of data on DSS journal coverage, we searched Dialog's database of journal sources called the Journal Name Finder. We found, for each database, the number of items loaded from each journal. This approach provided us with the ability to generate ordinal data on journal coverage. However, due to different codings for journals in each database, this data proved to be incomplete and sometimes inaccurate.

rate. We decided to sacrifice the cardinal aspect of data collected in this fashion in favour of more accurate but strictly nominal data collected directly from the database producers. Future studies of this type might endeavour to address this issue.

## Appendix A

### Brief descriptions of top ranking databases in this study

Note: Vendor codes are presented in Appendix B.

**ABI/INFORM.** Produced by UMI/Data Courier. Covers principal articles from more than 1200 national and international periodicals. Foci include business, economics, computers, information science, and management science. Vendors: 3,5,7,9,10,13,15,17,18,20,21,27,28.

**AEROSPACE.** Produced by the American Institute of Aeronautics and Astronautics/NASA. Covers 76 subject areas. Contains citations and abstracts from journals, books, theses and conference proceedings on technical and managerial advances in the aerospace industry with very good coverage of computer related topics. Vendor: 10.

**BUSINESS DATELINE.** Produced by UMI/Data Courier. Provides full-text articles from more than 350 regional U.S. and Canadian business publications with expansive coverage of companies, products, and industries. Vendors: 10,12,18,21,25,27.

**BUSINESS SOFTWARE DATABASE.** Produced by Information Sources, Inc. Contains detailed descriptions of software products and their producers. Also includes citations for more than 150 trade publications. Vendors: 3,9,10,13,18.

**COMPENDEX PLUS.** Produced by Engineering Information, Inc. Sources from 4500 journals on international coverage of engineering and technology corresponding to the print publication *Engineering Index*. Focal subjects include electronics, computers, and communications. Approximately 25 percent of the documents are not in English. Vendors: 4,9,10,14,28,30,32.

**COMPUTER DATABASE.** Produced by Information Access Company. Provides literature and abstracts from over 150 journals on computer and telecommunications related topics. Vendors: 5,8,9,10.

**CONFERENCE PAPERS INDEX.** Produced by Cambridge Scientific Abstracts (CSA). Details scientific and technical papers presented at regional, national and international meetings. Specifically covers the life sciences, medicine, chemistry, physical sciences, and engineering. Vendors: 10,13,30.

**DISSERTATION ABSTRACTS ONLINE.** Produced by UMI. Contains accepted dissertations in 3000 subject areas. Includes dissertations from American, Canadian and selected other nations. Vendors: 3,7,9,10,23,27,30,32.

**ERIC.** Produced by the Office of Educational Research and Improvement (OERI). Contains citations and abstracts of articles and books on education topics including many items on information science. Vendors: 3,5,9,10,23,27,32.

**FEDERAL RESEARCH IN PROGRESS.** Produced by U.S. National Technical Information Service (NTIS). Includes 138,000 research projects sponsored by federal agencies. Mainly covers the physical, life, and earth sciences. Vendors: 10.

**GPO PUBLICATIONS REFERENCE FILE.** Produced by the U.S. Government Printing Office. Includes 27,000 public documents published by the executive, judicial, and legislative branches of the U.S. federal government. Vendors: 10.

**GLOBALBASE.** Produced by Information Access Company (IAC). Sources include over 600 newspapers, business journals and trade magazines worldwide.

Covers general business news and summaries of reports on various business sectors often including forecasts. Vendors: 9,10,17.

**INFORMATION SCIENCE ABSTRACTS.** Produced by IFI/Plenum Data Company. Contains citations and abstracts of studies from journals, conference proceedings and government reports on studies on information science and library science. It corresponds to the hard-form publication of the same name. Focal subjects include: computer science, information manage-

ment, online information retrieval, and systems design. Vendor: 10.

**INSPEC.** Produced by the Institution of Electrical Engineers. Offers citations and abstracts of articles from journals, books and dissertations with a focus on technical matters in computer science, information science, physics, engineering, and information technology. Vendors: 3,4,6,9,10,13,14,28,30.

**ISMEC.** Produced by Cambridge Scientific Abstracts. Focal topics cover mechanical engineering, production engineering, and engineering management. Sources include journals, books, technical reports, and conference proceedings. Corresponds to the printed publication *ISMEC: Mechanical Engineering Abstracts*. Vendors: 10,13,30.

**LC MARC.** Produced by the U.S Library of Congress. Contains bibliographic and cataloguing information on more than 4 million monographs published worldwide since 1968. Also covers books in a variety of languages. Vendors: 2,10,31,32,34.

**LEGAL RESOURCE INDEX.** Produced by Information Access Company (IAC). Covers law-related topics from more than 800 law journals, bar association publications, and legal newspapers. Also has articles from more than 3000 additional publications. Vendors: 5,9,10,22,33.

**LIBRARY AND INFORMATION SCIENCE ABSTRACTS (LISA).** Produced by Bowker-Saur Ltd. Contains citations and abstracts for journals and report literature worldwide in the areas of library and information science. Corresponds to the printed publication of the same name. Vendors: 3,10,32.

**MANAGEMENT CONTENTS.** Produced by Information Access Company (IAC). Contains articles from over 130 business and management journals published worldwide. Covers such topics as banking, finance, accounting, human resources, training, sales, marketing, and management. Vendors: 9,10.

**MATHSCI.** Produced by the American Mathematical Society. Provides citations and abstracts of mathematical and statistical articles including wide coverage of computer science. Vendors: 1,10,13,24.

**MICROCOMPUTER SOFTWARE GUIDE ONLINE.** Produced by R.R. Bowker. Includes descriptions of 16,000 microcomputer software programs from more than 4000 publishers. Gives detailed descriptions of software capacity and compatibility. Corresponds to the printed publication *Software Encyclopedia*. Vendors: 10.

**MICROCOMPUTER INDEX.** Produced by Learned Information, Inc. Covers more than 70 microcomputer journals and most popular computer magazines. Deals with articles on microcomputers, book reviews, software and hardware reviews, and discussions of computer applications. Corresponds to the printed publication of the same name. Vendors: 10.

**NATIONAL NEWSPAPER INDEX.** Produced by Information Access Company (IAC). Contains articles, news items and other current events covered in the Christian Science Monitor, Los Angeles Times, New York Times, Wall Street Journal, and Washington Post as well as information from the PR Newswire. Vendors: 3,5,9,10.

**NEWSEARCH.** Produced by Information Access Company (IAC). Provides citations of articles from current newspapers, magazines, trade journals, law journals, and various academic periodicals. Vendors: 10.

**NEWSLETTER DATABASE.** Produced by Information Access Company (IAC). Covers items from over 600 business newsletters from about 40 industries including computers and electronics. Vendors: 9,10,12,23.

**NTIS.** Produced by the National Technical Information Service. Covers government-sponsored research and, increasingly, non-US government reports. Topics include the Sciences, communications, computers, and library science. Vendors: 3,4,6,9,10,13,23,30.

**PASCAL.** Produced by France Institut de l'information Scientifique et Technique (INIST). Includes international literature on science, technology, applied sciences, biological sciences and medicine. Mostly in French with titles and keywords in English. Vendors: 10,13,29.

**PROMT (Predicasts Overview of Markets and Technology).** Produced by Information Access Company (IAC). Provides broad, international coverage of business markets and technology with

abstracts from 1200 newspapers, trade journals, business magazines, and government reports from throughout the world. Studies of particular companies and industries from regional, national, and international sources are provided. Focal subjects include computers and communications. Vendors: 9,10,15,16,19,23,25,26,29.

**SCISEARCH.** Produced by the Institute for Scientific Information. Offers citations from approximately 4,500 journals covering the gamut of information from academic periodicals in scientific fields. Vendors: 9,10,11.

**SOCIAL SCISEARCH.** Produced by the Institute for Scientific Information. Contains complete bibliographic data plus citations and abstracts. Includes 1400 of the world's most important social science journals. Also contains 3200 journals of the world's leading scientific and technical journals. Corresponds to the printed publication *Social Sciences Citation Index*. Vendors: 9,10,11.

**TRADE AND INDUSTRY ASAP.** Produced by Information Access Company (IAC). Covers a huge number of business periodicals with particular noteworthy coverage of trade journals. Vendors: 9,10,25.

## Appendix B

### List of vendors of top ranking databases in this study

- (1) American Mathematical Society (AMS), P.O. Box 6248, Providence, RI 02940, 401-455-4166.
- (2) BLAISE-LINE, Division of British Library, National Bibliographic Service, Boston Spa, Wetherby, W. Yorks. LS23 7BQ, England, 0937-546585.
- (3) BRS Information Technologies (BRS), Division of Maxwell Online, 8000 Westpark Drive, McLean, Va 22102, 703-442-0900.
- (4) CAN/OLE, Canada Institute for Scientific and Technical Information (CISTI), Montreal Rd, Ottawa, ON, Canada K1A 052, 613-993-1210.
- (5) Carl Systems Network, CARL Systems, Inc, 3801 East Florida Ave., Suite 300, Denver, CO 80203, 303-758-3030.
- (6) CEDOCAR, France Ministry of Defence, Delegation Generale pour L'armement Centre de Documentation l'Armement 26 Blvd. Victor, F-00460 Paris-Armees, France, 33-1-45524501.
- (7) Citadel Service, Research Libraries Group, Inc., 1200 Villa St., Mountain View, CA 94041.
- (8) Compuserve Information Service, 5000 Arlington Center Blvd., Columbus, OH 43220, 614-457-8600.
- (9) Data-Star, Plaza Suite, 114 Jermyn St., London SW1Y 6HJ, England, 44-71-930-5503.
- (10) DIALOG Information Services, Inc., 3460 Hillview Ave., Palo Alto, CA 94304, 415-858-3785.
- (11) DIMDI, Deutsches Institut fuer Medizinische Dokumentation und Information, Weisshausstr. 27, Postfach 420580, D-50899 Cologne, Germany, 0221-47241.
- (12) Dow Jones News/Retrieval, Dow Jones and Co, Inc., P.O. Box 300, Princeton, NJ 08543, 609-520-4000.
- (13) ESA-IRS, European Space Agency, Information Retrieval Service, ESRIN, Via Galileo Galilei, 1-00044 Frascati, Rome, Italy, 06-941801.
- (14) FIZ Technik, Ostbahnhofstr. 13, Postfach 600547, D-6000 Frankfurt am Main 60, Germany, 069-43080225.
- (15) FT Profile, P.O Box 12, Sunbury-on-Thames, Middlesex TW16 7UD, England, 0932-761444.
- (16) GENIOS, Handelsblatt GmbH., GEMOS Wirtschaftsdatenbanken, Kasernenstr. 67, Postfach 10 11 02, D-4000 Dusseldorf I, Germany, 0211-887-1542.
- (17) GBI, Gesellschaft fuer Betriebswirtschaftliche Information, Freischutzstr. 96, D-81927, Munich, Germany, 089-9570064.
- (18) HRIN, Human Resources Information Net-

work, 1200 Quince Orchard Blvd., Gaithersburg, MD 20878, 301-590-2300.

- (19) I/Plus Direct, DRI/McGraw-Hill, 1200 G St. NW 10F, Washington, DC 20005, 202-862-3720.
- (20) Info Globe Online, Globe Information Services, 444 Front St. W, Toronto, ON, Canada M5V 2S9, 416-585-5250.
- (21) Infomart Online, 1450 Don Mills Rd., Don Mills, ON, Canada M3B 2X7, 416-442-2198.
- (22) LEXIS, Mead Data Central, Inc., 9443 Springboro Pike, P.O. Box 933, Dayton, OH 45401, 513-865-6800.
- (23) Life Science Network, BIOSIS, 2100 Arch St., Philadelphia, PA 19103, 215-587-4800.
- (24) Maruzen Scientific Information Service, Maruzen Company Ltd., P.O. Box 5335, Tokyo International, Japan, 03-327-16068.
- (25) NEXIS, Mead Data Central, Inc., 9443 Springboro Pike, Dayton, OH 45401, 513-865-6800.
- (26) NIFTY Serve, NIFTY Corporation, 26-1, Minami-oi 6-chome, Shinagawa-ku, Tokyo 140, Japan, 03-547-15800.
- (27) OCLC Online/EPIC, 6565 Frantz Rd., Dublin, OH 43017, 614-764-6000.
- (28) ORBIT Online, InfoPro Technologies, 8000 Westpark Dr., McLean, VA 22102, 703-442-0900.
- (29) Questel, Le Capitole, 55, Ave des Champs Pierreux, F-92029 Nanterre-Cedex, France, 01-461-45660.
- (30) STN International, FIZ Karlsruhe, P.O. Box 2465, D-76012 Karlsruhe 1, Germany, 07247-808555.
- (31) U.S. Library of Congress Information System, 101 Independence Ave, Washington, DC 20540, 202-707-5114.
- (32) University of Tsukuba, Science Information Processing Center, 1-1-1 Tenno-dai, Tsukuba-shi, Ibaraki-ken 305, Japan, 0298-532450.
- (33) WESTLAW, West Publishing Company, 610 Opperman Dr., Eagan, MN 55123, 612-687-7000.
- (34) WILSONLINE, H. W. Wilson Company, 950 University Ave, Bronx, NY 10452, 718-588-8400.

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