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PUBLICATIONS AND THE USE OF THE SCIENCE CITATION INDEX

J. F. Nunamaker
University of Arizona

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SCIENCE CITATION INDEX

J. F. NUNAMAKER

College of Business and Public Administration
University of Arizona

INTRODUCTION

The objective of this paper is to discuss the role of professional journals and publications in the field of Information Systems. The list of journals presented first is not intended to be all inclusive; it should be taken as a starting point for building a comprehensive list, reflecting the author's view of the available outlets for technical papers.

The second part of the paper suggests the the Science Citation Index is a useful tool to evaluate the quality of published papers on the basis of their use as references by users of journals in Information Systems, who range from researchers and educators to practitioners. This is much more true in Information Systems than in other academic disciplines.

Any journal is produced for a particular group of professional readers. For example, the Journal of the ACM is aimed at a very mathematical and theoretical audience. The Computing Survey is intended to be a tutorial aid and Datamation is geared toward the practitioner.

PUBLICATIONS

It is clear that written communication serves as a vehicle for the dissemination of research results and ideas. A common way to enforce quality standards of a particulate publication is to submit papers for consideration to the peer review process. This approach to assurance of quality articles often is used as the criteria distinguishing research publications from other publications.

Because journals provide a means of communications among people interested in a certain discipline, their focuses often overlap with those of other journals, yet each tries to keep a distinct identity and serve the unique needs of its readers. A journal is intended to provide a forum, and is therefore important to those who receive information as well as to those who supply information by publishing in the journal. As a vehicle for communication, journals are of great importance to those in the academic profession.

While journals, especially those of recognized prestige, enjoy a significant influence within a given discipline, the exact nature of that influence changes as a field grows and matures. For example, for a newly emerging discipline such as Information Systems, a journal serves both to highlight the range of current interest and to identify some of the key individuals contributing to the field and to define the dimensions of their interests. During the developmental phase the journal serves to document the dynamic nature of the evolution of the discipline and to offer a place where proponents of new directions may voice their opinions. If a journal aims to serve the whole discipline, and does its job well, it will achieve paramount influence in the field.

As a field matures, sub-groups which tend to have narrow scope yet intense interest in increasing the depth of knowledge in their specific concentration tend to emerge. Witness the spin-off from The Communications of the ACM, the journals such as TODS (Transaction on Data Systems), TOPLAS (Transactions on Programming Language Systems) and TOMS (Transactions in Mathematical Software). Most journals, however, aim at a single group or a related group of segments within the field. Since some segments are more powerful than others, the journals serving the more powerful groups usually have more influence and greater stature within the profession than do others.

To illustrate the effects journals have, consider the influence of a host of scholarly publications on Information Systems as a discipline. It turns out that 10-15 prominent journals are considered to be of significance in the field, while others play a very minor role. Together, the "majors" and "minors"

span the field, from behavioral aspects to technology and from overview to bits and bytes.

In the field of information systems and computers there are now in excess of 130 publications. Since the field is experiencing dynamic growth, it becomes difficult to define the exact orientation of certain journals. Repositioning is continually taking place, as basic objectives are modified to achieve influence as the discipline matures. When the discipline of Information Systems and. computers matures, its journals will achieve the resolution and alignment that has occurred in other academic fields.

At this moment it may be most useful simply to survey the journals, listed in Table 1, whose primary focus is information systems and computers. A summary for each journal or publication in Information Systems is given in a working paper by Nunamaker (1). In the working paper an attempt is made to summarize the positioning and publication philosophies of a subset of the journals.

USE OF CITATIONS

The extent of citation of journal articles has considerable overall influence on a discipline. By citation we mean the procedure of citing a particular publication as a reference. The bibliography or list of references at the end of a professional journal article is the place where citation most often is positioned. In a sense, the journals reference themselves and each other, so a tally of these citations provides a measure not only of the articles' usefulness but of the way journals rank in influence. Normally a citation tabulation will indicate which journals are the "opinion leaders" and, typically, the results of such a tabulation are readily acccepted. It behooves an assistant professor desiring tenure to target his article submission to those journals most often cited in the publication of academic and research materials. Two interesting articles that deal with citation analysis have been written by Subramanyan and Hirst (3).

Science Citation Index exemplifies a source of valuable information regarding the citing of articles. It offers

numerous examples that illustrate how the significance of an article is related to the number of times a year it is cited. The number of citations may in fact turn out to be much more valuable than the quality of the journal in which the article originally appeared. The number of citations is, in effect, a broadening of the peer review process. In the review only two or three reviewers evaluate a paper. If the same paper ends up being referenced 50 times per year for years, I would conclude that a paper so often cited is a highly significant piece of work.

SCIENCE CITATION INDEX

Published every two months and then gathered into annual volumes, Science Citation Index (SCI) provides a convenient, comprehensive listing of articles used as references in the Management Information professional literature.

Science Citation Index has two components, a Citation Index and a Source Index, making it possible to determine both the number of times a particular article was cited in the literature and the bibliographic information of each citation. Science Citation Index contains two types of information: (1) Previously published articles by Nunamaker that were cited during the period covered by the index, and (2) New articles published during the period covered by the index that cited one of the Nunamaker articles.

For example, to determine the use of an article as a citation:

1. Begin with a reference.

2. Enter the appropriate Citation Index Section and find a list of current works which cite the starting reference.

3. In the Source Index, look up those current works you have found and find their full titles and complete bibliographic descriptions.

The Source Index gives the complete bibliographic reference to new articles that cite Nunamaker. An example of partial search for 1979 references to articles by Nunamaker:

TITLE	ASTI	BPI	BTI	CA	CC	CCA	CIS	CR	EI	IAA	ISA	NLA	PX	QB	SCI	SPN
Acta Informatica					X							X				
Artificial Intelligence				X				X	X			X	X			
Australian Computer Journal					X			X	X							X
Bell Systems Technical Journal	X				X	X	X	X	X	X			X		X	
Bit (Copenhagen)				X	X	X	X	X	X		X	X				
Communication/ACM				X	X	X	X	X	X		X	X	X	X	X	X
Computer					X	X		X			X	X		X	X	X
Computer Decisions					X	X		X			X	X		X		X
Computer Journal	X		X	X	X	X	X	X	X	X	X	X	X		X	X
Computer and System Sciences																
Computing Surveys					X			X	X		X	X		X		X
Data Base					X							X		X		
Data Management		X		X	X	X		X				X		X		X
Datamation		X		X	X	X		X			X	X	X	X	X	X
EDP Analyzer					X	X						X		X		
Harvard Business Review	X				X			X	X			X		X		
Honeywell Computer Journal				X	X			X	X							
IBM Journal of Research & Development				X	X	X	X	X	X		X		X		X	
IBM Systems Journal				X	X	X	X	X	X	X	X	X	X	X	X	X
IEEE Transactions on: Computers				X	X	X	X	X	X	X	X	X	X		X	X
IEEE Transactions on: Software Engineering																
IEEE Transactions on: Systems, Man & Cybernetics	X		X	X	X	X	X	X	X	X			X		X	
INFOR					X			X	X	X	X					
Information Processing Letters					X			X			X	X				
Information Processing & Management																
Information Processing in Japan																
Information Sciences					X			X	X					X		
Information Systems																
Information and Control																
Infosystems	X				X	X	X				X	X	X	X		X
International Journal of Computer and Information Sciences																
Journal of Computer & System Sciences				X	X	X	X	X	X	X	X	X	X			X
Journal of Educational Data Processing					X	X	X					X			X	
Journal of Systems Management			X		X	X	X					X		X	X	
Journal of the ACM	X			X	X	X	X	X	X	X	X		X		X	X
Journal of the ASIS					X	X	X	X	X	X		X	X	X		X
Management Datamatics																
Management Science	X				X	X	X	X			X	X		X		
MIS Quarterly																
Modern Data				X	X			X				X		X		X
Operations Research		X		X	X	X	X	X	X		X	X	X	X	X	
Operational Research Quarterly	X	X		X	X	X		X				X	X		X	
Output												X				
SIAM Journals on: Computing								X								
Simulation				X	X	X	X	X	X	X		X	X		X	
Software--Practice and Experience				X		X		X				X				
SOS (Systems, Objectives, Solutions)																
Transactions on Data Base Systems (ACM)																

KEY:

ASTI	-	Applied Science & Technology Index (CA 8)
BPI	-	Business Periodicals Index (CA 16)
BTI	-	British Technology Index (CA 12)
CA	-	Computer Abstracts (CA 24)
CC	-	Current Contents: Engineering & Technology edition (CB 8)
CCA	-	Computer and Control Abstracts (CA 28)
CIS	-	Computer and Information Systems (CA 32)

CR	-	Computing Reviews (CA 36, CC 4)
EI	-	Engineering Index (CA 48)
IAA	-	International Aerospace Abstracts (CA 72)
ISA	-	Information Science Abstracts (CA 64)
NLA	-	New Literature on Automation (CA 80)
PX	-	Pandex (CA 84)
QB	-	Quarterly Bibliography of Computers & Data Processing (CA 86)
SCI	-	Science Citation Index (CA 83)
SPN	-	SIGPI AN Notices (CA 112, JBA 344)

By following this procedure for all published articles by a particular author, it is possible to construct an accurate and objective picture of that author's contribution to the body of knowledge on the discipline in a given year. Such a picture has, furthermore, a dimension lacking in a mere listing of an author's Curriculum Vitae; it clearly indicates the extent to which an author's ideas have been used by fellow scholars.

Acceptance of an article by a recognized journal, particularly a prestigious one, is, of course, a recognition of the quality of the research reported. Evidence that the article has been read and used by other researchers is another form of recognition, made possible by an index like Science Citation Index. Such an index is helpful not only in tracing the influence of a given line of thought within the discipline but also in evaluating the contribution of a researcher to the field by a criterion that is blind to editorial bias.

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COMMUNICATION OF MIS RESEARCH:
AN ANALYSIS OF JOURNAL STRATIFICATION

SCOTT HAMILTON

University of Minnesota

BLAKE IVES

State University of New York at Binghampton

ABSTRACT

The stratification among journals constituting the formal communication system for MIS research is described and analyzed on the basis of MIS experts' opinions, published MIS articles, and citation frequency. Implications of the research results are discussed for authors seeking suitable publication outlets, for academic administrators making promotion decisions, for editors wishing to establish coverage policy, and for librarians making journal acquisition decisions.

INTRODUCTION

As part of the formal communication system, journals play an important role in the exchange of scientific information. However, the extent to which journals communicate information and contribute to a discipline is affected by journal stratification in terms of quality and prestige. Journal stratification influences the degree to which articles are noticed, read, used, and cited, and is directly observable in manuscript submission decisions of individual researchers and tenure/promotion decisions of academic administrators.

In the emerging discipline of MIS, communication of research findings has been hampered by the poorly defined stratification among the emerging MIS journals and established journals in related disciplines. There has been a lack of consensus on a major MIS journal, several established journals have not been receptive to MIS research, and journals receptive to MIS often lack prestige and readership (Keen, 1980). The purpose of this study is to demonstrate that stratification exists among those journals constituting the communication system for MIS research and to characterize the nature of that stratification.

Journal stratification is important to individual researchers, academic administrators, journal editors and publishers, and librarians.

1. For MIS researchers, it is important to know where to find published MIS research and which journals to publish in. Because of prestige differentiation between journals, long review times, and high rejection rates, MIS researchers must select journals for submitting manuscripts by a deliberate and conscious process.

2. Academic administrators are concerned about prestige differentiation between journals when evaluating research efforts for tenure and promotion decisions.

3. Journal editors and publishers need to evaluate their performance and editorial policies for MIS research.

4. Chief librarians and acquisition librarians need to set journal selection policies for the MIS field.

To examine journal stratification, the research approach employed several different measures since "no one criterion used in isolation can give a realistic indication of the relative importance of journals" (Subramanyan, 1975). A journal's contributions to the MIS discipline provides one means to assess journal quality (Hamelman and Mazze, 1974), and also indicates the importance of the journal in communicating MIS research. The research approach to measure journal contributions involved three steps: