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* N E W D O C *

COMMUNICATION OF MIS RESEARCH:
AN ANALYSIS OF JOURNAL STRATIFICATION

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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:

1. The perceptions of MIS experts were obtained on the extent to which 37 different journals have made important contributions to the MIS field.
2. The research identified the extent to which MIS articles were actually published over the last 10 years (1970-79) in 16 journals rated as making important contributions.
3. Citation analysis was performed on the bibliographic references attached to the MIS articles published during 1979 in the 16 selected journals.

Citation frequency correlates well with other indicators of journal quality (Garfield, 1972; Cole and Cole, 1972; Salton and Bergmark, 1979), and citation indexes of journal quality are preferred over simple publication counts as weighted measures of research performance by university researchers and department chairmen (Jauch and Glueck, 1975). However, citation patterns are not equivalent to readership patterns as highly useful journals may not be cited frequently (Scott, 1969; Vichery, 1969). Since readership also reflects journal use and contributions (Baughman, 1974; Satariano, 1978), readership patterns were measured by asking MIS experts to rate the extent to which they read the 37 different journals.

Journal stratification in terms of prestige is directly observable in the manuscript submission decisions of MIS researchers. To measure prestige differentiation between journals, MIS experts were asked to indicate which journals would be the most prestigious place to publish academic and practitioner oriented MIS articles.

The next section summarizes the research methodology and discusses potential measurement limitations. The data analysis section briefly describes the results for each measure and the problems in the communication of MIS research identified by MIS experts. The review and discussion section summarizes the existing journal stratification.

RESEARCH METHODOLOGY

An initial set of 37 journals was selected that the authors believed to be making important contributions to the MIS discipline. Many of the journals, presented in Exhibit 1, had been identified as core journals based on prior citation analysis in computer science (Culnan, 1978; Hirst and Talent, 1977; Subramanyan, 1976), accounting (McRae, 1974), and management (Durand, 1974;

Hamelman and Mazze, 1974). Journals which had been discontinued or had been published less than two years were not considered.

A questionnaire (shown in Appendix) was mailed to MIS experts (in June, 1980) to assess their opinions of the selected journals. A group of 291 knowledgeable and recognized experts in the academic MIS field that held a doctorate and were involved with MIS research efforts were identified. We reasoned that these generally active and experienced MIS academics could make more informed judgments about journal contributions to MIS research than a sample drawn from MIS practitioners. The experts were asked to rate the extent to which each of the 37 selected journals had contributed to the MIS field and the extent to which they read the journal over the past few years. Similar approaches have been used by others for business journals (Coe and Weinstock, 1967), management journals (Durand, 1974), and accounting journals (Benjamin and Brenner, 1974).

One hundred and ten questionnaires were returned completed and usable, a response rate of 37.8 percent. The survey respondents were primarily (77%) university teachers/researchers, with earned doctorates in MIS (43%), management science (20%) or computer science (12%). The median professional age (i.e., years since graduation) was six years, and the respondents were generally active academicians in terms of publication record (69% had published in one or more of the 37 journals) and professional affiliations (88% were members of one or more professional societies). The journals published in and personally subscribed to by the respondents are indicated in Exhibit 2.

Sixteen journals, indicated by an asterisk next to the journal title in Exhibit 1, were selected for further analysis. These journals were selected because they provided a representative sample of journals publishing MIS research and were rated as making the most important contributions to the MIS field. The EDP Analyzer and the IBM Systems Journal were also included even though they represent closed publication outlets for most MIS researchers.

For each issue of these sixteen journals published between 1970 and 1979, the table of contents was examined. Based on the table of contents, the authors independently rated the degree to which each article was within the MIS discipline. Interviews, book reviews, editorials, regular columns, general correspondence, summaries of conferences,

EXHIBIT 1. MAJOR JOURNALS IN THE MIS DISCIPLINE (AND AFFILIATION)

<u>Management Information Systems:</u>	Data Management (DPMA) Datamation* Database (ACM, SIGBDP)* EDP Analyzer* Information and Management (IFIPS)* Infosystems Journal of Systems Management (ASM)* MIS Quarterly (SMIS)*
<u>Management Science:</u>	Decision Sciences (AIDS)* Infor (Canada) Interfaces (TIMS)* Management Science (TIMS)* Omega Operations Research (ORSA)
<u>Computer Science:</u>	Communications of the ACM (ACM)* Computing Surveys (ACM) Computer (IEEE) IBM Systems Journal* Journal of the ACM (ACM) Transactions on Computers (IEEE) Transactions on Database Systems (ACM)* Transactions on Programming Languages and Systems (ACM) Transactions on Software Engineering (IEEE)
<u>Behavioral Science:</u>	Human Relations Journal of Applied Psychology Organizational Behavior and Human Performance Psychological Bulletin
<u>Management:</u>	Academy of Management Journal (A of M)* Academy of Management Review (A of M) Administrative Science Quarterly Harvard Business Review* Sloan Management Review*
<u>Accounting:</u>	Accounting Review (AAA) Journal of Accountancy (AICPA) Journal of Accounting Research Management Accounting (NAA)
<u>Library Science:</u>	Information Processing and Management

*The asterisk identifies the 16 journals selected for citation analysis. See research methodology section.

EXHIBIT 2. JOURNAL CONTRIBUTIONS TO THE MIS FIELD

Rank	Journal Title (and Affiliation)	Published MIS Articles			Perceptions of MIS Experts		Readership Pattern		Respondent Characteristics	
		Publication Time Period	# MIS Articles	% MIS Articles	Mean Rating	Standard Deviation	Mean Response	Percent of N	Personal Subscription (Percent of N)	Had Published in Journal (Percent of N)
1	MIS Quarterly	1977-79	49	98%	3.99	.93	3.89	82%	41%	26%
2	EDP Analyzer	1970-79	118	98%	3.61	.99	3.38	76%	20%	N/A ^e
3	Database (ACM-SIGBDP)	1970-79	99	96%	3.59	.95	3.48	78%	40%	12%
4	Management Science (TIMS)	1970-79	26	2%	3.46	1.00	3.70	83%	38%	21%
5	Datamation	1970-79	412	43%	3.44	.99	4.02	94%	59% ^d	13%
6	Harvard Business Review	1970-79	33	4%	3.36	.99	3.33	94%	21%	3%
7	Computing Surveys (ACM)	1970-79	14	11%	3.25	1.01	3.78	79%	49%	7%
8	Communications of the ACM	1970-79	39	4%	3.18	.91	3.66	85%	52%	19%
9	Transactions on Database Systems (ACM)	1976-79	6	7%	3.06	1.29	2.95	55%	25%	4%
10	Information and Management (IFIPS) ^a	1973-79	134	53%	3.04	.85	2.85	50%	13%	6%
11	Sloan Management Review ^b	1970-79	22	11%	3.01	.85	2.90	77%	8%	4%
12	Data Management (DPMA)	1970-79	No Data ^c	No Data	2.98	.98	2.34	67%	10%	4%
13	IBM Systems Journal	1970-79	9	5%	2.93	.97	2.80	76%	31% ^d	2% ^e
14	Journal of Systems Management (ASM)	1970-79	430	53%	2.88	.89	2.59	72%	11%	12%
15	Interfaces (TIMS)	1970-79	17	4%	2.81	.85	3.42	74%	40%	10%
16	Decision Sciences (AIDS)	1970-79	17	3%	2.74	.82	2.99	83%	44%	6%

^aThe IAG Journal (1970-71), Management Informatics (1972-74), and Management DataMatics (1975-1976) were utilized as the predecessors to Information and Management (1977-79).

^bIndustrial Management Review (1970) was used as the predecessor to Sloan Management Review (1971-79).

^cThe article selection procedure was not performed for Data Management.

^dDatamation and the IBM Systems Journal provide personal subscriptions free of charge to those who qualify.

^eThe EDP Analyzer and the IBM Systems Journal are closed publication outlets for most MIS researchers.

and bibliographies were specifically excluded from consideration. A four point rating scale was used to rate the degree to which each article was within the MIS discipline: "3" meant the reviewer considered the article was definitely within the MIS discipline, "2" meant probably, "1" meant possibly, and "0" meant the reviewer considered the article not to be within the MIS discipline. Article quality was not considered in these ratings. The two rating scores were merged, and the articles receiving a single score of three, or a total score of four to six, were included in the pool of MIS articles. Articles receiving a score of two or three were re-examined by both reviewers and in some cases included, otherwise articles with total score of three or less were dropped from the subsequent analysis. A similar methodology was employed by Ives, Hamilton, and Davis (1980) to rate MIS dissertation research.

To validate the author's procedure for identifying MIS articles, four MIS experts used the same procedure to rate the 732 articles appearing in the 1979 issues of the 16 selected journals. Each expert rated one half of the journal articles, and the two scores obtained for each article were merged. Articles receiving a single score of three or a total score of four to six were included in the validation pool of MIS articles. The experts were advised to avoid rating the quality of the articles and to use their own definition of the MIS discipline. Comparison of the two pools of MIS articles indicated agreement between the authors and experts on categorizing 682 (93%) articles (112 were categorized as MIS in both pools). With respect to disagreements on the remaining 50 articles, 23 were rated as MIS-related by the authors while 27 were rated MIS-related by the experts. Two journals (Datamation and Journal of Systems Management) accounted for most (29) of the disagreements. The validation results reflect the poorly defined boundaries of the emerging MIS discipline and also suggest the article selection procedure was reasonably reliable in identifying MIS articles.

The authors' article selection procedure identified 135 MIS articles published during 1979 in the 16 selected journals. The bibliographic references attached to each article were recorded: multiple references in an article to the same work were counted once, different works by a cited author were each counted separately, and bibliographic references suggesting what one ought to read (rather than actual sources) were not included. Of the 1733 references, 809 (47%) were to journals. Citation frequency, based on

the journal references, was then used to measure a journal's contribution to the MIS discipline.

Though a useful surrogate measure of a journal's contributions to a discipline, citation frequency has several limitations (Hirst and Talent, 1977; Salton and Bergmark, 1979).

1. Journals change focus over time as a result of editorial policy. Sections of a journal may treat different subfields, and the journal itself may only focus on a subfield of a discipline.
2. Journal size in terms of the number of articles will influence the number of potentially citable items.
3. Longer established journals will tend to have more citations than recently established journals.
4. Journal prestige differentiation will influence citation patterns.
5. Journal circulation, dissemination of reprints, availability in library collections, and coverage by secondary indexing and abstracting services will influence citation patterns.
6. Journal self citation practices may influence citation patterns.
7. The reputations of authors and the controversiality of subject matter published in the journal will influence citation patterns.
8. A few articles that are highly cited may distort the citation patterns for a journal.
9. Journal article length and number of references may influence citation patterns.
10. Growth in the literature (e.g., changes in the number of journals) will influence citation patterns.
11. Errors in bibliographies may distort citation patterns.

The first two limitations, journal focus and size, have been partially corrected for by only utilizing bibliographies from articles within the MIS discipline for the citation analysis. The third limitation, length of publication time period, has been partially corrected for by utilizing MIS articles published recently (in 1979). The fourth limitation, journal prestige differentiation, is examined as part of this study.

DATA ANALYSIS

Journal contributions to the MIS discipline, reflecting the extent to which the journals communicate MIS research, were measured on the basis of published MIS articles, perceptions of MIS experts, readership patterns, and citation frequency. Exhibit 2 summarizes the data analysis for the first three measures, listing the journals in descending order based on the mean rating of MIS experts' perceptions of the journal's contributions to the MIS field. Exhibit 3 summarizes the data analysis for citation frequency. Manuscript submission preferences of MIS experts were used to measure prestige differentiation between journals, as shown in Exhibit 4. Problems in the communication of MIS research are then discussed based on comments of MIS experts.

PUBLISHED MIS ARTICLES

For the publication time period examined, Exhibit 2 indicates the extent to which MIS articles were published in each journal as a number and as a percent of total articles. Of the journals representing the MIS discipline (see Exhibit 1), the MIS Quarterly, the EDP Analyzer, and Database had the highest percentage of published MIS articles. The other journals representing the MIS discipline had relatively lower percentages of published MIS articles. One reason why some MIS journals had lower percentages of published MIS articles is that articles with technical orientations (e.g., database search algorithms, programming standards) or model orientations (e.g., optimization models) were not rated as being within the MIS discipline.

PERCEPTIONS OF MIS EXPERTS

The perceptions of MIS experts, shown in Exhibit 2, indicate two major dimensions of journal contributions to the MIS field (see question 3 in Appendix). The mean rating is essentially an indicator of the intensity of contribution, whereas the standard deviation provides a rough indicator of dissensus on the journal's contribution (Glenn, 1971). In terms of intensity, four of the five journals rated highest represent the MIS discipline: the MIS Quarterly, the EDP Analyzer, Database, and Datamation.

Three possible bases of dissensus or variation in the respondent ratings are (1) diverse criteria, (2) uneven knowledge of the journals and consequent variation in evaluation, and (3) biased perceptions.

There is no way to ascertain the relative importance of the first base of variation, but the uneven knowledge might be accounted for by considering only those ratings of senior academics in the MIS discipline. The mean ratings of journal contributions of 17 fairly senior MIS respondents (of 32 that attended the planning meeting at UCLA for this Conference on Information Systems) were compared to the mean ratings of all the respondents. The top six journals were the same, and Kendall's tau of .81 indicates high agreement between the two sets of rankings.

One might suspect that a respondent's perceptions of journal contributions would be biased by journals in which the respondent had published or was otherwise identified by graduation from the affiliated institution. Therefore a separate analysis was performed to calculate mean ratings for each journal which excluded perceptions of respondents who had published in the particular journal or who had graduated from the university affiliated with the journal (i.e., Harvard for HBR, Minnesota for MISQ, MIT for SMR). Comparison with the total group indicated the same ranking for the first three journals and high agreement overall (Kendall's tau was .85).

READERSHIP PATTERNS OF MIS EXPERTS

The readership patterns of MIS experts, shown in Exhibit 2, indicates on the average how intensely a journal is read and how well a journal is known among respondents (see question 4 in the Appendix). Of the MIS journals, Datamation and the MIS Quarterly are read the most intensely. Two computer science journals (Computing Surveys, Communications of the ACM) and two management science journals (Management Science, Interfaces) affiliated with ACM and TMS, respectively, were among the 7 journals read the most intensely by the MIS experts.

The ranking of journals most widely known among the MIS experts (percent of N) differed slightly from the ranking of journals rated as contributing the most to the MIS discipline: Datamation and the Harvard Business Review (both known by 94% of the respondents), the Communications of the ACM (85%), Management Science (81%), the MIS Quarterly (77%), and Computing Surveys (75%) were the most widely known among the respondents. One reason that Datamation is widely known is that the majority of respondents (51%) receive a personal copy, although this probably stems from the journal's free

EXHIBIT 3. RANK ORDERING OF JOURNALS ACCOUNTING FOR 60 PERCENT OF CITATIONS BY MIS ARTICLES PUBLISHED DURING 1979 IN 16 SELECTED JOURNALS

RANK	JOURNAL TITLE	CITATION FREQUENCY	
		NUMBER OF CITATIONS	PERCENT OF TOTAL
1	Management Science	81	10.1%
2	Datamation	66	8.2
3	Harvard Business Review	56	7.0
4	Communications of ACM	45	5.6
5	Journal of Systems Management	33	4.1
Cumulative Percent of Total:		35.0%	
6	Database	31	3.9
6	IBM Systems Journal	31	3.9
8	MIS Quarterly	29	3.6
9	Information and Management	21	2.6
10	Computing Surveys	20	2.5
Cumulative Percent of Total:		50.6%	
11	Sloan Management Review	15	1.9
11	Transactions on Database Systems	15	1.9
13	Data Management	12	1.5
13	Interfaces	12	1.5
15	Computer Journal	11	1.4
16	Academy of Management Journal	9	1.1
16	Decision Sciences	9	1.1
Cumulative Percent of Total:		61.0%	

EXHIBIT 4. SUBMISSION PREFERENCES FOR JOURNALS TO PUBLISH MIS ARTICLES IN

ACADEMIC MIS ARTICLES					PRACTITIONER MIS ARTICLES			
RANK	JOURNAL TITLE	WEIGHTED VOTES	FIRST PREF. VOTES	TOTAL VOTES	JOURNAL TITLE	WEIGHTED VOTES	FIRST PREF. VOTES	TOTAL VOTES
1	Management Science	293	45	65	Datamation	203	18	55
2	MIS Quarterly*	212	12	60	Harvard Business Review	187	30	41
3	Communications of the ACM	142	39	17	MIS Quarterly*	159	21	37
4	Decision Sciences*	103	2	33	Journal of Systems Management	108	7	35
5	Trans. on Database Systems	48	8	11	Interfaces	69	5	20
6	Information and Management*	42	0	20	Infosystems	57	0	21
7	Sloan Management Review*	39	0	13	Sloan Management Review*	47	1	13
8	Academy of Management Journal	38	1	13	Decision Sciences*	40	3	10
9	Computing Surveys	27	2	10	Information and Management*	39	1	10
10	Accounting Review	26	1	8	Data Management	30	2	12

*Journal appears in the top ten submission preferences for both academic and practitioner oriented MIS articles.

subscription policy for those who qualify (e.g., university faculty). Decision Sciences and Interfaces are widely known, probably because of the large number of respondents affiliated with AIDS (44%) and TMS (40%) who have personal subscriptions to these journals. However, they both rated very low in terms of contributions to the MIS field.

CITATION FREQUENCY

The fourth measure of journal contributions to the MIS field is provided by citation analysis of the 809 journal references in bibliographies of MIS articles published during 1979 in the 16 selected journals. As shown in Exhibit 3, more than one third of the citations are to five journals -- Management Science, Datamation, the Harvard Business Review, Communications of the ACM, and the Journal of Systems Management -- and ten journals accounted for more than one half of the citations. Bradford's law of scattering (1950) suggests that a small percent of the journals will account for a large percent of the significant articles in a discipline. As confirmed by Exhibit 3, relatively few journals are the primary nodes in the formal communication system for MIS research.

MANUSCRIPT SUBMISSION PREFERENCES

Prestige differentiation among journals is easily observable in manuscript submission decisions of MIS researchers and tenure/promotion decisions of academic administrators (discussed by Jauch and Glueck, 1975, for science department administrators). Prestige may not always be the primary criterion used in deciding where to send an article, since editorial and publishing policies will also influence the characteristics of manuscripts submitted and accepted (discussed by Kerr, *et. al.*, 1977, for management journals). Manuscript orientation -- academic versus practitioner, management versus technician, quantitative versus qualitative -- is one important characteristic influencing submission decisions. This study investigated submission preferences for academic and practitioner oriented MIS articles based on data collected in the survey of MIS experts.

MIS experts were first asked to identify the most prestigious place to publish an academic and a practitioner oriented MIS article (see question 1 in Appendix). A scoring methodology was employed to weight submission preference votes: "5" points were awarded to a journal for a first preference vote, "4" for a second, "3" for a third, "2" for a

fourth, and "1" for a fifth preference vote. Exhibit 4 lists the journals in descending order of submission preferences based on the weighted votes, and also depicts the number of first preference votes and total number of unweighted votes.

For academic MIS articles, the (weighted) submission preferences of MIS experts indicate that Management Science, the MIS Quarterly, and Communications of the ACM are the most prestigious places to publish. For practitioner oriented MIS articles, Datamation, the Harvard Business Review, and the MIS Quarterly are the most prestigious places to publish. Comparison of these (weighted) submission preferences to those of 17 fairly senior MIS respondents (that had attended the planning meeting of the First International Conference on Information Systems) indicated fairly high agreement on prestigious journals for practitioner (Kendall's tau of .69) and academic (Kendall's tau of .66) MIS articles.

COMMUNICATION OF MIS RESEARCH: PROBLEMS

Problems in the communication of MIS research findings were the major impetus for this research study. To supplement the authors' opinions of major problems, the survey questionnaire solicited insights from the MIS experts on problems encountered in publishing MIS research. Although several experts suggested no problems existed, four major problems were identified by the MIS experts making comments. In the following discussion, actual comments are in quotation marks.

1. Definition of MIS Research

The ill-defined boundaries of the MIS field make it "difficult to publish an article in a specific journal as the article might be important for MIS but not very attractive in the journal's respective area." It is often necessary to "orient work toward the computer science aspects of MIS research," since "editors, especially of ACM publications, seem reluctant to decide where MIS research falls in the range of available communications vehicles.

2. Journal Editors and Referees

De Grazia (1963) suggested that journal editors and referees are the "gatekeepers" of science, screening the information which is permitted to circulate widely among researchers in their discipline and supporting the currently orthodox views in their fields. Based on the frequency of

comments from researchers in the MIS discipline, journal editors and referees are a major source of problems in the communication of MIS research. The referees were characterized as "poor" and "inconsistent," and "many editorial boards lack competent MIS reviewers." "The editorial boards do not have members representing the MIS area," and there is a "strong resistance from the editorial boards of prestigious journals to publish applied MIS articles."

3. Slow Turnaround Times

Review times, acceptance rates, and publication lag times after acceptance influence the efficiency of the MIS journal communications system. These operational aspects of journals, examined in the management literature by Weber (1972) and Moyer and Crockett (1976), constituted a third problem area that is closely related to the editorial and referee processes. Turnaround times were characterized as "slow"; one respondent's manuscript submitted 6 years ago still has not been returned and another respondent's manuscript was outdated by the conclusion of the review processes. Some respondents suggested that editorial policies have had discernible influences on the dissemination of research in the MIS discipline, but the evidence to date in other disciplines had not proved this point conclusively (Coats, 1971).

4. Lack of a Major MIS Journal

Respondent's comments suggested that there is "no central well-accepted journal in the MIS field." "Most journals emphasize other disciplines or are interdisciplinary at best," hence there are "few avenues for publishing MIS research except in the computer science or behavioral disciplines." "The more academically prestigious journals are not very MIS oriented and the other journals are usually too 'nuts and boltsy' regarding hardware/software or too trivial regarding managerial interfaces."

REVIEW AND DISCUSSION

Journal stratification was considered along several different yet related dimensions: the extent of published MIS articles, the perceived contributions to the MIS field, the extent known by MIS experts, the extent read by MIS experts, citation frequency in MIS articles, and manuscript submission preferences of MIS

experts for academic and practitioner articles. For each of these dimensions, Exhibit 5 descriptively summarizes the data analysis for selected journals grouped by discipline area. Percentages are indicated in parentheses for the dimension of "published MIS articles," otherwise the numbers in parentheses represent rankings of journals within each dimension.

DISCUSSION OF MAJOR MIS JOURNALS

Database rated very high in terms of perceived contributions to the MIS field and was known, read, and cited by many MIS researchers, yet was rated low in terms of submission preferences for prestigious places to publish.

Datamation ranked first as a prestigious place to publish practitioner articles and fifth in perceived contributions to the MIS field. It was the most widely known and read journal and the second most frequently cited journal, even though the extent of published MIS articles over the 1970-79 time period was relatively low (43%).

The EDP Analyzer rated very high in terms of perceived contributions and was known and read by many MIS researchers, yet was not cited very often. Two possible explanations for the lack of citations may be that few MIS experts (20%) have a personal subscription and that the journal has a newsletter orientation.

The MIS Quarterly ranked highly along every dimension and was highly preferred for both academic and practitioner MIS articles.

The other four journals representing the MIS discipline have been receptive to MIS research but lack prestige, visibility, readership, and citations. One exception was the Journal of System Management, which was cited frequently and identified as a prestigious place to publish practitioner oriented MIS articles.

Of the journals representing the computer science discipline, the Communications of the ACM (CACM) was rated highly as a prestigious place to publish an academic MIS article. As an established journal, the CACM was also widely known, read, and cited. The very low percentage of MIS articles helps to explain its relatively lower perceived contributions to the MIS field. Computing Surveys was perceived as a major contributor to the MIS field and was extensively known and read, but ranked lower in terms of citation frequency and

submission preferences, possibly because of its tutorial type articles. The IBM Systems Journal, primarily an outlet for IBM staff, was highly known and cited. The Journal of the ACM and ACM's Transactions on Database Systems (TODS) were rated medium to low on every dimension except one; the MIS experts did perceive TODS' contributions to the MIS field as high.

As an established journal in the management science discipline area, Management Science ranked as the most prestigious place to publish an academic MIS article and was cited the most by MIS researchers. Management Science also ranked in the top 4 journals in terms of perceived contributions, extent known and readership, even though it published few MIS articles in the past 10 years. Interfaces, another TMS journal, was identified as a relatively prestigious place to publish practitioner oriented MIS articles. Even though Interfaces was extensively read, it was cited infrequently. Decision Sciences was rated as a relatively prestigious place to publish academic and practitioner articles and was widely known among the MIS experts, but ranked lower along the other dimensions.

The Harvard Business Review (HBR), established as one of the important journals in the management discipline by prior citation analysis (Durand, 1974; Hamelman and Mazze, 1974), was rated the second most prestigious place to publish practitioner oriented MIS articles. The HBR's reputation is reflected in the third highest citation frequency and the extent it is known by MIS experts. However, only 21% receive personal copies, only 3% have published in it, and the journal has published very few MIS articles over the past 10 years. The Academy of Management Journal was rated as a relatively prestigious place to publish academic MIS articles, but generally ranked low on the other dimensions. MIS experts rated the Sloan Management Review relatively highly in terms of perceived contributions, extent known and read, and submission preferences, yet cited it less frequently.

Journals representing the accounting discipline were ranked "low" in MIS experts' submission preferences: the Accounting Review ranked tenth for academic MIS articles and the Journal of Accountancy (ranked 13th) and Management Accounting (ranked 15th) were suggested for practitioner MIS articles. However, these journals have published few MIS articles and ranked "very low" along the other dimensions and are not shown in

Exhibit 5. These results are surprising, since accounting has been an important reference discipline for the emerging MIS field and has also been one of the most fruitful areas for MIS applications.

Journals representing the behavioral science discipline also ranked "very low" or "low" along all of the dimensions, and are not shown in Exhibit 5. Despite the acclaimed importance of behavioral science literature for MIS, the data analysis (especially citation frequency) indicates that behavioral science journals have not been an important source or outlet for MIS researchers.

DISCUSSION OF JOURNAL STRATIFICATION MEASURES

Each journal stratification measure indicates a different aspect of journal importance to the communication of MIS research. A combination of the measures via a scoring methodology might be used to further characterize the stratification. For example, each journal stratification measure might be weighted to derive an overall journal importance score.

While the first strata of journals may be relatively easy to derive from the journal stratification measures, determining the second and third strata becomes more difficult, especially when multiple measures offer contradictory measures on journal importance. The literature suggests explanations for two of the major discrepancies in the journal stratification measures.

1. Readership versus Citation Patterns

As Scott (1969) suggested, certain journals are widely known and intensively read but are not cited for a number of reasons (e.g., "news," column, or tutorial orientation). Articles in Computing Surveys tend to be tutorial, the EDP Analyzer tends toward a newsletter orientation, and Infosystems and Interfaces tend to be news and column oriented. In general, MIS researchers read these journals for reasons other than (and in addition to) using them as sources of original research.

In contrast, several journals were not widely known or read, but were cited frequently (i.e., IBM Systems Journal, Journal of Systems Management). While this result is difficult to interpret, one reason for the discrepancy is that articles published in these journals may be selectively accessed in the process of following up prior research on an MIS topic.

EXHIBIT 5. SUMMARY OF JOURNAL STRATIFICATION MEASURES

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Journal Title Within Discipline Area	Extent of Published MIS Articles	Perceived Contributions To MIS Field	Extent Known By MIS Experts	Extent Read By MIS Experts	Citation Frequency (1979 MIS Articles)	Submission Preference	
						Academic MIS Articles	Practitioner MIS Articles
<u>MIS Discipline</u>							
Data Management Database	No Data	Medium (12)	Medium (17)	Low (21)	Low (13)	Very Low	Medium (10)
Datamation	Very High (96%)	Very High (3)	High (8)	High (6)	High (6)	Low (16)	Low (11)
EDP Analyzer	Low (43%)	High (5)	VERY HIGH (1)	VERY HIGH (1)	VERY HIGH (2)	Very Low	VERY HIGH (1)
	VERY HIGH (98%)	VERY HIGH (2)	High (10)	High (8)	Low (18)	N/A	N/A
Information and Management	Medium (53%)	High (10)	Low (26)	Medium (13)	Medium (9)	Medium (6)	Medium (9)
Infosystems	No Data	Medium (17)	High (12)	Medium (10)	Very Low (32)	Very Low	Medium (6)
Journal of Systems Management	Medium (53%)	Medium (14)	Medium (14)	Medium (19)	High (5)	Low (13)	High (4)
MIS Quarterly	VERY HIGH (98%)	VERY HIGH (1)	High (6)	VERY HIGH (2)	High (8)	VERY HIGH (2)	VERY HIGH (3)
<u>Computer Science Discipline</u>							
Communications of the ACM	Very Low (4%)	High (8)	High (3)	Very High (5)	Very High (4)	High (3)	Low (12)
Computing Surveys	Low (11%)	High (7)	High (7)	Very High (3)	Medium (10)	Medium (9)	Very Low
IBM Systems Journal	Very Low (5%)	Medium (13)	High (11)	Medium (14)	High (6)	N/A	N/A
Journal of the ACM	No Data	Low (27)	Medium (15)	Low (25)	Very Low (50)	Low (11)	Very Low
Trans. on Database Systems	Very Low (7%)	High (9)	Low (24)	Medium (11)	Low (11)	Medium (5)	Very Low
<u>Management Science Discipline</u>							
Decision Science	Very Low (3%)	Medium (16)	High (5)	Medium (10)	Low (16)	High (4)	Medium (8)
Interfaces	Very Low (4%)	Medium (15)	Medium (14)	High (7)	Low (13)	Very Low	Medium (5)
Management Science	Very Low (2%)	High (4)	High (4)	Very High (4)	VERY HIGH (1)	VERY HIGH (1)	Very Low
<u>Management Discipline</u>							
Academy of Management Journal	Very Low (3%)	Low (26)	Medium (21)	Medium (19)	Low (16)	Medium (8)	Very Low
Harvard Business Review	Very Low (4%)	High (6)	VERY HIGH (2)	High (9)	Very High (3)	Very Low	VERY HIGH (2)
Sloan Management Review	Low (11%)	High (11)	High (9)	Medium (12)	Low (11)	Medium (7)	Medium (7)

DESCRIPTIVE ADJECTIVES: CATEGORIES

Very High	More than 90%	More than 3.5	More than 90%	More than 3.5	More than 5%	More than 150	More than 150
High	74% to 90%	3.0 to 3.5	75% to 90%	3.0 to 3.5	3.5% to 5%	100 to 150	100 to 150
Medium	50% to 75%	2.5 to 3.0	50% to 75%	2.5 to 3.0	2.0% to 3.5%	25 to 100	25 to 100
Low	10% to 50%	2.0 to 2.5	25% to 50%	2.0 to 2.5	.5% to 2.0%	5 to 25	5 to 25
Very Low	Less than 10%	Less than 2.0	Less than 25%	Less than 2.0	Less than .5%	0 to 5	0 to 5
N/A	Not Applicable						

2. Perceived Contributions versus Submission Preferences

As Keen (1980) suggested, several established journals have not been receptive to MIS research, and journals receptive to MIS often lack prestige. One effect is that MIS manuscripts submitted to the prestige journals are often rejected, reducing the journals' potential contribution to the MIS field. The discrepancy between the submission preferences for prestige journals and the perceived contributions of these journals confirms this effect (i.e., Academy of Management Journal, Decision Sciences, Infosystems, Interfaces, the Journal of Systems Management).

A second effect is that second and third strata journals (publishing rejected MIS articles) may make major contributions. For example, Database was frequently cited and perceived as making very important contributions to the MIS field even though its low prestige rating suggests that it is a second tier journal.

In summary, the analysis of journal stratification indicates the emergence of a major MIS journal and the reliance on major journals in reference disciplines of computer science, management, and management science to communicate MIS research. The major journals in the accounting and behavioral science reference disciplines rated surprisingly low in communication of MIS research given their importance to the MIS field. Several anomalies were noted concerning different uses of journals (i.e., for reading versus for citing original research) and the effect of the poorly defined journal stratification on manuscript submission decisions and perceived contributions.

IMPLICATIONS

Several implications can be drawn from the analysis of stratification among journals constituting the formal communication system for MIS research. The major implications are defined for individual researchers, academic administrators, journal editors, and librarians.

1. Implications for MIS Researchers

For individual MIS researchers, the journals making the most important contributions to the MIS field form an essential reading list, especially for students of the discipline, e.g., Ph.D. students. When attempting to publish

MIS articles, prestige differentiation among journals (Exhibit 4) influences manuscript submission decisions. The survey of MIS experts indicated submission preferences for Management Science, the MIS Quarterly, and Communications of the ACM for academic MIS articles, and Datamation, the Harvard Business Review, and the MIS Quarterly for the practitioner oriented MIS articles.

2. Implications for Academic Administrators

In measuring research performance, effectiveness can be measured by a simple count of publications weighted by a journal quality index. For academic administrators involved in tenure and promotion decisions for MIS related faculty, the demonstrated stratification among journals (Exhibit 5) provides the basis for creating a journal quality index.

3. Implications for Journal Editors

As a result of editorial policies, many established prestige journals have published few MIS articles, and many articles are found in second and third tier journals. There is a need to state the definition of the MIS field and reflect the definition in editorial policies. One suggested means is for journal editors to confer on and communicate the scope of the MIS field, as exemplified by the 1978 AIDS Conference discussion of "What Kinds of MIS Research are Publishable?" by the editors of Decision Sciences, Information and Management, Management Science, and the MIS Quarterly. It may also be helpful to identify the major topical areas in MIS as King et al. (1978) did in management science and, as one survey respondent suggested, "parcel out pieces of the MIS field among journals."

4. Implications for Librarians

The core journals (Exhibit 4) utilized by MIS researchers should be reflected in library acquisition policies to support further MIS research efforts. The importance of journals from related disciplines (Exhibit 5) should also be noted.

"Can we improve the communication of MIS research?" The data on journal stratification presented in this study provides a basis for personal decisions and institutional policies that can make MIS research results more available to the academic and practitioner communities.

REFERENCES

1. Baughman, J.C. A structural analysis of the literature of sociology. Library Quarterly, 44, (October, 1974), 293-308.
2. Benjamin, J.J. and Brenner, V.C. Perceptions of journal quality. Accounting Review, 49, (April, 1974), 360-362.
3. Bradford, S.C. Documentation. Washington, D.C.: Public Affairs Press, 1950.
4. Coats, A.W. The American Economic Associations publications: An historical perspective. Journal of Economic Literature, 7, (March, 1969), 57-68.
5. Coe, R.K. and Weinstock, I. Editorial policies of major economic journals. Quarterly Review of Economics and Business, 7, (October, 1967), 37-43.
6. Cole, J.R. and Cole, S. Social Stratification in Science, Chicago, Ill.: University of Chicago Press, (1973).
7. Culnan, M.J. An analysis of the information and usage patterns of academics and practitioners in the computer field: A citation analysis of a national conference proceedings. Information Processing and Management, 14, (December, 1978), 395-404.
8. De Grazia, A. The scientific reception system and Doctor Velikovsky. American Behavioral Scientist, 7, (January, 1963), 38-56.
9. Durand, D.E. Citation count analysis of behavioral science journals in influencing management literature. Academy of Management Journal, 17, (September, 1974), 579-583.
10. Garfield, E. Citation analysis as a tool in journal evaluation. Science, 178, (November, 1972), 471-479.
11. Glenn, N.D. American Sociologist's evaluations of sixty-three journals. American Sociologist, 6, (November, 1971), 298-303.
12. Hamelman, P.W. and Mazze, E.M. Measuring the research impact of business journals; the CASPER model. Journal of Economics and Business, 25, (March, 1974), 164-167.
13. Hirst, G. and Talent, N. Computer science journals -- an iterated citation analysis. IEEE Transactions on Professional Communication, 20, (December, 1977), 233-238.
14. Ives, B., Hamilton, J.S., and Davis, G.B. A framework for research in computer-based management information systems. Management Science, 27, (September, 1980), 1-25.
15. Jauch, L.R. and Glueck, W.F. Evaluation of university professors' research performance. Management Science, 22, (September, 1975), 66-75.
16. Keen, P.G.W. MIS research: Reference disciplines and a cumulative tradition. Paper submitted to the First International Conference on Information Systems, (May, 1980).
17. King, W.R., Kilmann, R.H. and Sochats, K. Designing scientific journals: Issues and survey results. Management Science, 24, (March, 1978), 774-785.
18. Kerr, S., Tolliver, J. and Petree, D. Manuscript characteristics which influence acceptance for management and social science journals. Academy of Management Journal, 20, (March, 1977), 132-141.
19. McRae, T.W. A citational analysis of the accounting information network. Journal of Accounting Research, 6, (Spring, 1974), 80-92.
20. Moyer, R.C. and Crockett, J.H. Academic journals: Policies, trends, and issues. Academy of Management Journal, 19, (September, 1976), 489-495.
21. Salton, G. and Bergmark, D. A citation study of computer science literature. IEEE Transactions on Professional Communication, 22, (September, 1979), 147-158.
22. Satariano, W.A. Journal use in sociology: Citation analysis versus readership patterns. Library Quarterly, 28, (March, 1978), 293-300.
23. Scott, C. The science of science: What scientists read and why. Discovery, 7, (March, 1969), 110-112.
24. Subramanyam, K. Criteria for journal selection. Special Libraries, 66, (August, 1975), 367-71.
25. Subramanyam, K. Core journals in computer science. IEEE Transactions on Professional Communication, 19, (December, 1976), 22-25.
26. Vichery, B. Indicators of the use of periodicals. Journal of Librarianship, 1, (July, 1969), 170-181.
27. Weber, J.A. Editorial and publishing policies of major management journals. Academy of Management Journal, 15, (June, 1972), 240-246.