

An Assessment of Individual and Institutional Research Productivity in MIS

**Kun Shin Im, Management Science Department,
University of South Carolina**

**Kee Young Kim and Joon S. Kim, College of Business
Administration, Yonsei University, Seoul, Korea**

Kun Shin Im

is a doctoral candidate in MIS at The University of South Carolina. He holds a DBA in accounting, MBA and B.S. in business administration at Yonsei University. His research interests include the organizational effectiveness of client/server system and the organizational impact of information technology, and the development of constructs related to MIS research. Email: ksimp9@spanky.badm.sc.edu

Kee Young Kim

is a professor of operations management at Yonsei University, Seoul, Korea. He obtained his Ph.D. and MBA from Washington University, and his B.A. from Yonsei University. He has published numerous books and articles on operations management, manufacturing strategy, and technology transfer. Email: kykim@bubble.yonsei.ac.kr.

Joon S. Kim

is a professor of accounting and information systems at Yonsei University, Seoul, Korea. He holds a DBA in accounting and MBA at Indiana University, B.S. in business administration at Yonsei University. His research interests include the impact of IT on the organizational performance and case studies on the implementation of ERP. Email: jskim@bubble.yonsei.ac.kr.

There is a widely shared perception that Management Information Systems (MIS) research has significantly improved in both quantity and quality over the past decade. Most MIS academics and practitioners have strong opinions about who the leading MIS researchers are and which institutions are on the cutting-edge with respect to MIS research. To a large extent, these opinions are subjective, based on impressions about specific MIS researchers, their work, and the institutions they represent.

To complement the subjective judgment about the leading MIS researchers and institutions, this work has ranked the leading MIS publishers and institutions according to measurable objective criteria. It is the purpose of this study to assess the research productivity of MIS researchers and institutions in the leading MIS journals for the period 1991 through 1996 using measures-normal count, adjusted count, and productivity score-suggested in the previous studies (Lindsey, 1980; Jackson and Nath, 1989; Grover et al., 1992). In particular, this paper seeks to answer:

- Who are the top researchers in the MIS area?
- Which institutions are most productive in publishing research in the leading MIS journals?
- What are the degree of contributions that these top individual and institutional researchers make to the leading MIS journals?

Methodology

To measure individual and institutional research productivity, six leading MIS journals were selected. These journals are the most highly regarded publication outlets for MIS research among MIS-specific, computer science, and management science journals. The six journals are:

- *Communications of the ACM (CACM)*
- *Decision Sciences (DS)*
- *Information Systems Research (ISR)*
- *Journal of Management Information Systems (JMIS)*
- *Management Information Systems Quarterly (MISQ)*
- *Management Science (MS)*

Except for *ISR*, all five journals were ranked in the top five MIS journals in the survey of Gillenson and Stutz (1991). *ISR*, which had just been launched at the time of the Gillenson and Stutz study, is published by INFORMS. It is regarded as one of the highest quality outlets by MIS academics (Lending and Wetherbe, 1992; Walstrom et al., 1995; Hardgrave and Walstrom, 1997).¹

All articles published in core MIS journals (i.e., *ISR*, *JMIS*, and *MISQ*) were included in the sample. In addition, MIS articles from the other three journals were chosen using keywords related to MIS such as Information Systems, DSS, Human Information Processing, Computers and Society, etc. (cf., Barki et al., 1988). However, book reviews, dissertation abstracts, letters, opinions, columns and editorials were excluded from the sample. For the selected MIS articles, a record of their authors, their

affiliated institutions, and the number of pages was compiled.

A total of 809 MIS articles were selected from the six leading MIS journals for a period 1991 through 1996. Table 1 shows a breakdown of the number of MIS articles by the selected journals. The number of articles published in *JMIS* and *CACM* account for about 49.1% of the 809 selected articles. *MISQ*, *DS*, and *ISR* have published about 43.6% of the selected articles. However, only 7.3% of 809 selected articles were published in *MS*. This figure for *MS* can be attributed to the separation of *Information Systems Research* from *Management Science*. Table 1 also shows that a total of about 135 papers were annually published in the six journals. This figure is much greater than that of previous studies (cf. Culnan and Swanson, 1986; Jackson and Nath, 1989) and reflects the growing importance of the MIS discipline to scholars and business practitioners.

To assess the research productivity of a given researcher, the normal and adjusted count approaches suggested by Lindsey (1980) were used. These methods to count the number of a given researcher's publications were also used in the study by Jackson and Nath (1989). In the normal count approach, all publications in which the researcher participates are counted. For example, an article with three co-authors provides a unit count for each of the three researchers. Most researchers unitize this approach to gauge productivity (Jackson and Nath, 1989). Compared to the normal count method, the adjusted count approach provides a more realistic representation of the accomplishments of a researcher (Lindsey, 1980). Each co-author of a paper receives a fraction of a unit count. For example, an article with four co-authors yields a 0.25 credit for each of the researchers. Besides these two counting techniques, productivity score approach was used to assess the research productivity of a researcher. This method has been used for assessing institutional research productivity (e.g., Grover et al., 1992; Malhotra and Kher, 1996). In this study, however, this approach was also used to measure individual research productivity. The productivity score considers the number of pages for each article and the importance of each journal in assessing the research productivity of a given researcher. First, the num-

	# of MIS Articles (1991-1996)	# of Articles Per Year	%
CACM	198	33.0	24.5%
DS	108	18.0	13.3%
ISR	104	17.3	12.9%
JMIS	199	33.2	24.6%
MISQ	141	23.5	17.4%
MS	59	9.8	7.3%
TOTAL	809	134.8	100.0%

Table 1: Number of MIS articles published in the six journals.

ber of pages of the selected articles is credited to their authors on the proportion of authorship. Since different journals have different sizes of page or font, the pages of each journal are then standardized using its weight that is calculated by dividing the number of words on ten pages of text for each journal by that of words on ten pages of text for the *MISQ*. Finally, the productivity score of a researcher is derived by multiplying the number of standardized pages by the weight for each journal. The mean scores for each journal in the survey by Gillenson and Stutz (1991) were used as the weight for each journal.² On the other hand, these three approaches were used to assess the research productivity of institutions.

Individual Research Productivity in MIS

In the case of individual research productivity, since normal count is the favored technique among researchers in many disciplines (Jackson and Nath, 1989), the list of authors was sorted according to their values on the normal count. There was a break after the values on the normal count of 6. It was identified that a total of 28 authors had at least the normal count of 6. Table 2 lists these authors along with their institution that they listed on their most recent article as their affiliation, their score on the three measures, and their rankings among the entire group of 1,183 researchers. When a tie occurred in the values on the normal count, the values on the adjusted count were used to list the authors in the Table 2. If a tie continued for the values on the adjusted count, the productivity score was used to list the researchers.

According to Table 2, it is clear that the three rankings for the top 28 researchers

were not considerably different from each other. The coefficient of Spearman's rank order correlation between normal count rankings and productivity score rankings was .73 with two tailed significance of .0001. However, the coefficient between normal count rankings and adjusted count rankings was .62 with two tailed significance of .0004. Based on these results, it can be concluded that productivity score rankings were relatively closer to normal count rankings than were adjusted count rankings. Compared to Jackson and Nath's study (1989), our study ranked only four researchers (Izak Benbasat, William R. King, Daniel Robey, and Blake Ives) among the top 32 most productive authors of Jackson and Nath's study in the top 28 researchers. Thus, it is clear that new researchers have recently made substantial contribution to the MIS literature.

Table 2 shows that according to the normal count, Magid Igbaria is the most productive researcher with 14 papers to his credit. Sirkka L. Jarvenpaa and Varun Grover are ranked as the second most highly productive researchers. Each has authored 13 papers, respectively. Nevertheless, if the productivity score were considered, Sirkka L. Jarvenpaa would be the most highly productive researcher. As Figure 1 demonstrates, these top 3 researchers (who represent 0.25% of the total number of researchers) provided 2% of the published articles. The top 28 researchers (who represent 2.36% of the total number of authors) produced 12% of the total articles. These figures indicate that a small group of individual researchers have produced a sizeable percentage of the published research. Table 2 also shows the university at which the top 28 researchers reside. Based on the list of these universities, it is possible to identify a set of lead-

ing MIS research universities. In particular, University of Arizona, University of South Carolina, University of Georgia, New York University, and University of Pittsburgh can be designated as leading-edge MIS research universities.

Institutional Research Productivity in MIS

There are a number of varying opinions in the academic world regarding the best research programs in the MIS field. One aspect of the "best" program can be determined by the productivity score—as has been done by many studies in several other disciplines. Similar to other studies in Management (Niemi, 1988a; Stahl et al., 1988), Marketing (Niemi, 1988b; Udell et al., 1995), Finance (Klemkosky and Tuttle, 1977; Ederington, 1979; Niemi, 1987; Borokhovich et al., 1995), and Production (Young et al., 1996; Malhotra and Kher, 1996), this study ranked institutions according to their productivity score.³ The rankings by this study will provide a useful and objective criterion of one of the most important aspects of the best programs in the MIS area. However, we recognize that these rankings are dynamic, and are contingent on a variety of factors, not the least of which is the turnover of productive faculty.

In Table 3, the top 50 MIS research institutions ranked by productivity score for a period 1991 through 1996 are listed. According to Table 3, Arizona, Minnesota, MIT, Carnegie Mellon, NYU, South Carolina, Pennsylvania, Texas-Austin, British Columbia, and Drexel were ranked in the top 10 MIS research institutions. This list of leading MIS institutions includes all universities associated with the top 28 researchers listed in Table 2. When this list of institutions is compared to that of the past studies (cf. Vogel and Wetherbe, 1984; Lending and Wetherbe, 1992; Grover et al., 1992), it seems that there has been a substantial restructuring of the leading institutions of MIS research in recent years. In particular, this study ranked 20 institutions in the top 50 institutions, which were not ranked in the list of the Grover et al's study (1992). Figure 2 also shows another interesting result: the productivity score of the top 50 institutions (that represent about 12.5% of the total number of institutions) accounted for about 54% of total produc-

RANK*			AUTHOR	INSTITUTION	SCORE		
N	A	P			N	A	P
1	1	2	Igbaria, Magid	Tel Aviv University	14	6.15	395.73
2	2	1	Jarvenpaa, Sirkka L.	University of Texas, Austin	13	5.82	427.10
2	4	3	Grover, Varun	University of South Carolina	13	5.24	358.93
4	12	14	Mukhopadhyay, Tridas	Carnegie Mellon University	11	3.76	213.24
4	26	22	Nunamaker, Jay F., Jr.	University of Arizona	11	2.58	185.75
6	5	4	Clemons, Eric K.	University of Pennsylvania	10	4.99	326.28
6	6	6	Benbasat, Izak	University of British Columbia	10	4.83	309.34
8	7	5	King, William R.	University of Pittsburgh	9	4.50	312.33
8	16	10	Dennis, Alan R.	University of Georgia	9	3.28	225.19
10	3	7	Brynjolfsson, Erik	Massachusetts Institute of Technology	8	5.25	306.32
10	9	11	Vessey, Iris	Indiana University	8	4.33	221.78
10	14	9	Higgins, Christopher A.	University of Western Ontario	8	3.49	231.82
10	25	33	Valacich, Joseph S.	Washington State University	8	2.63	150.22
10	40	29	Vogel, Douglas R.	University of Arizona	8	2.15	160.30
15	8	23	Robey, Daniel	Georgia State University	7	4.33	182.68
15	11	16	George, Joey F.	Florida State University	7	3.78	211.47
15	15	21	Baroudi, Jack J.	New York University	7	3.33	187.99
15	17	17	Todd, Peter A.	Queen's University	7	3.16	204.19
15	20	12	Bostrom, Robert P.	University of Georgia	7	2.99	219.32
15	21	13	Guimaraes, Tor	Tennessee Technological University	7	2.82	214.16
15	34	28	Kettinger, William J.	University of South Carolina	7	2.41	160.65
22	18	24	Kemerer, Chris F.	University of Pittsburgh	6	3.08	181.28
22	19	27	Sethi, Vijay	Nanyang Technological University	6	3.00	165.07
22	22	20	Ives, Blake	Southern Methodist University	6	2.66	188.26
22	22	25	Row, Michael C.	New York University	6	2.66	180.30
22	22	32	Barki, Henri	Hautes Etudes Commerciales	6	2.66	155.51
22	32	44	Rainer, R. Kelly, Jr.	Auburn University	6	2.49	128.58
22	54	30	Teng, James T. C.	University of South Carolina	6	1.99	158.17

Table 2: List of top 28 researchers and their university. (*N=Normal count; A=Adjusted count; P=Productivity score)

RANK	INSTITUTION	SCORE*	RANK	INSTITUTION	SCORE*
1	ARIZONA	1441.64	26	CASE WESTERN RESERVE	360.20
2	MINNESOTA	1121.76	27	HOUSTON	354.98
3	MIT	1116.56	28	SOUTHERN CALIFORNIA	326.43
4	CARNEGIE MELLON	1027.27	29	HAUTE ETUDES COMM.	322.75
5	NYU	1023.31	30	IBM	316.31
6	SOUTH CAROLINA	875.23	31	BOSTON U	298.64
7	PENNSYLVANIA	855.55	32	FLORIDA ATLANTIC	286.15
8	TEXAS, AUSTIN	780.47	33	SOUTHERN METHODIST	282.49
9	BRITISH COLUMBIA	744.49	34	HAWAII	278.79
10	DREXEL	696.27	35	GEORGETOWN	274.93
11	GEORGIA	651.67	36	WESTERN ONTARIO	273.72
12	NATIONAL U, SINGAPORE	595.89	37	BELLCORE	268.10
13	FLORIDA STATE	595.40	38	SYRACUSE	266.20
14	FLORIDA INT'L	586.24	39	NORTHEASTERN	261.31
15	UCLA	583.92	40	QUEENSLAND	258.78
16	CALIFORNIA, IRVINE	571.05	41	MICHIGAN	251.77
17	GEORGIA STATE	570.47	42	HONG KONG U. SCIEN. TECH	248.27
18	PITTSBURGH	553.90	43	TEL AVIV	246.46
19	TEXAS A&M	517.20	44	WASHINGTON	245.25
20	PENN STATE	503.33	45	GEORGE WASHINGTON	243.53
21	COLORADO, BOULDER	431.15	46	RUTGERS	236.25
22	QUEEN'S	409.29	47	ROCHESTER	231.27
23	INDIANA	408.43	48	COLORADO, DENVER	227.83
24	AUBURN	378.36	49	SOUTH FLORIDA	227.67
25	MARYLAND	367.09	50	HARVARD	224.72

Table 3: List of top 50 leading MIS institutions. (*Score: Productivity score)

tivity score. Thus, it could indicate that more than half of the total research papers were published by a small number of MIS institutions.

Conclusions

This study has examined individual and institutional research productivity in MIS by compiling a record of authors, institutions, and the number of pages for MIS articles published in the six leading MIS journals between 1991 and 1996. By using the normal counting technique, 28 top MIS researchers were identified. On the other hand, the top 50 MIS research institutions were also identified according to their productivity score. It is interesting to note that a sizeable percentage of MIS research papers have been published by a small group of individual or institutional researchers. It should be also noted that a lot of new individual and institutional researchers have recently made substantial contribution to the MIS literature.

Notes

1. In a recent study by Hardgrave and Walstrom (1997), all six journals were rated in the top six MIS journals

2. According to the study by Gillenson and Stutz (1991), the mean scores for *MS*, *MISQ*, *CACM*, *DS*, and *JMIS* are 3.61, 3.54, 3.39, 2.93, and 2.84, respectively. Since *ISR* is sponsored by INFORMS which also publishes *MS*, the weight equivalent to that of *MS* was assigned to *ISR*.

3. We also used the normal and adjusted counting methods for assessing institutional research productivity. However, the rankings for the three approaches were not considerably different from each other. As a result, only the rankings using productivity score were provided.

References

Barki, H., Rivard, S. and Talbot, J. "An Information Systems Keyword Classification Scheme," *MIS Quarterly*, Vol. 12, No. 2, 1988, pp. 299-322.

Borokhovich, K., Bricker, R., Brunarski, K. and Simkins, B. "Finance Research Productivity and Influence," *Journal of Finance*, Vol. 50, No. 5, 1995, pp. 1691-1717.

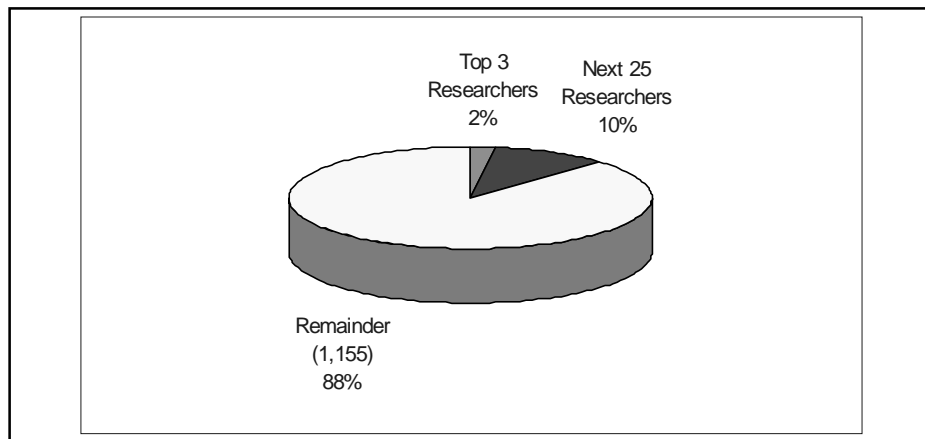


Figure 1: Percent of total published work contributed by top researchers.

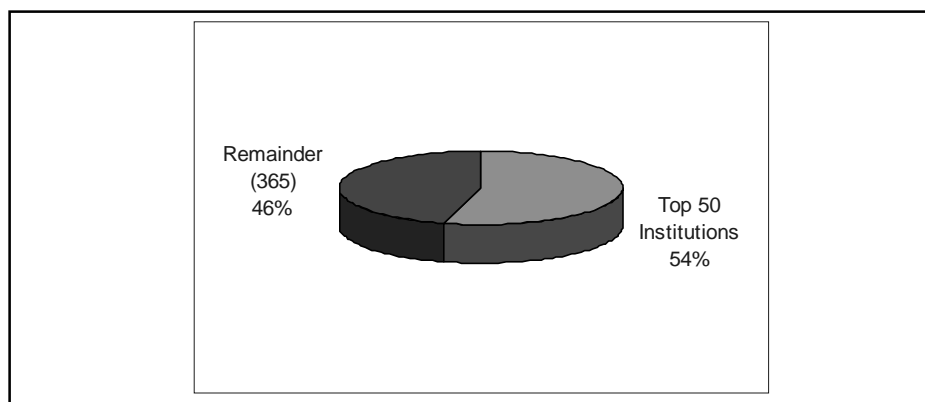


Figure 2: Percent of total productivity scores contributed by top institutions.

Culnan, M. J. and Swanson, E. B., "Research in Management Information Systems, 1980-84: Points of Work and Reference," *MIS Quarterly*, Vol. 10, No. 3, 1986, pp. 289-301.

Ederington, L. H., "Aspects of the Production of Significant Financial Research," *Journal of Finance*, Vol. 34, No. 3, 1979, pp. 777-786.

Gillenson, M. A. and Stutz, J. D., "Academic Issues in MIS: Journals and Books," *MIS Quarterly*, Vol. 15, No. 4, 1991, pp. 447-452.

Grover, V., Segars, A. and Simon, S., "An Assessment of Institutional Research Productivity in MIS," *Data Base*, Vol. 23, No. 4, 1992, pp. 5-9.

Hardgrave, B. C. and Walstrom, K. A., "Forums for MIS Scholars," *Communications of the ACM*, Vol. 40, No. 11 (1997), 119-124.

Jackson, W. M. and Nath, R., "Publication Patterns of MIS Researchers," *Interface*, Vol. 11, No. 2, 1989, pp. 15-20.

Klemkosky, R. and Tuttle, D., "The Institutional Source and Concentration of Financial Research," *Journal of Finance*, Vol. 32, No. 3, 1977, pp. 901-907.

Lending, D. and Wetherbe, J., "Update on MIS Research: A Profile of Leading Journals and U.S. Universities," *Data Base*, Vol. 23, No. 3, 1992, pp. 5-11.

Lindsey, D. "Production and Citation Measure in the Sociology of Science: The Problem of Multiple Authorship," *Social Studies of Science*, Vol. 10, 1980, pp. 145-162.

- Malhotra, M. and Kher, H., "Institutional Research Productivity in Production and Operations Management," *Journal of Operations Management*, Vol. 14, No. 1, 1996, pp. 55-77.
- Niemi, A. W., "Institutional Contribution to the Leading Finance Journals, 1975 through 1986: A Note," *Journal of Finance*, Vol. 42, No. 5, 1987, pp. 1389-1397.
- Niemi, A. W., "Research Productivity of American Business Schools, 1975-85," *Review of Business and Economic Research*, Vol. 23, No. 2, 1988a, pp. 1-16.
- Niemi, A. W., "Publication Performance of Marketing Departments: 1975-1985," *Journal of Marketing Education*, Vol. 10, No. 2, 1988b, pp. 8-12.
- Stahl, M. J., Leap, T. L. and Wei, Z. Z., "Publication in Leading Management Journals as a Measure of Institutional Research Productivity," *Academy of Management Journal*, Vol. 31, No. 3, 1988, pp. 707-720.
- Udell, G., Parker, S. and Pettijohn, C., "An Examination of the Research Productivity of Marketing Faculty at Newly Minted AACSB Schools," *Journal of Marketing Theory & Practice*, Vol. 3, No. 2, 1995, pp. 106-113.
- Vogel, D. R. and Wetherbe, J. C. "MIS Research: A Profile of Leading Journals and Universities," *Data Base*, Vol. 15, No. 3, 1984, pp. 3-14.
- Walstrom, K. A., Hardgrave, B. C. and Wilson, R. L. "Forums for Management Information Systems Scholars," *Communication of the ACM*, Vol. 38, No. 3, 1995, pp. 93-107.
- Young, S., Baird, B. and Pullman, M., "POM Research Productivity in U.S. Business Schools," *Journal of Operations Management*, Vol. 14, No. 1, 1996, pp. 41-53. ■

Dr. Shawnee Vickery, Department of Management, College of Business, 239 Eppley Center, Michigan State University, East Lansing, MI 48824, (517) 353-5415, fax: (517) 336-1111.

Nolan's DIGEST

(Decision Intelligence Generic Educational Self Tutorial)

A GROUP OR INDIVIDUAL, SELF-DIRECTED FLEXIBLE LEARNING TUTORIAL PACKAGE USING MIX AND MATCH MODULES.

Authors: Tony Nolan & Colin Innes

The DIGEST is a collection of stand alone modules that cover over 300 different aspects of decision making, tools and diagrams/models. Each module is indexed with a pre-topic, co-topic and post-topic guides, as well as definitions, explanations, exercises, further references and diagrams models links.

In early 1998 this digest will be available free to any DSI who would like a copy on disk. If you would

like further details, or would like to find out more about the Decision Intelligence Group at the University of Technology, please contact Tony Nolan at the School of Management, Faculty of Business, University of Technology, Sydney, PO Box 123 Broadway, NSW 2007, Australia. Or by email: t.nolan@uts.edu.au.

Quality Award Examiners

MANY MEMBERS OF DSI ARE EXAMINERS FOR QUALITY AWARDS, either the Malcolm Baldrige National Quality Award or one of the many state-level awards. We are seeking to develop a list of all DSI members who are award examiners and might wish to participate in a special session at next year's Annual Meeting in Las Vegas chaired by Tim Bergquist and Jim Evans. If you are or have been an examiner and wish to be on this list, please contact Tim Bergquist, Northwest Christian College, 828 E. 11th Ave, Eugene, OR 97402, phone 541-684-7257, or e-mail at bergl@cyberis.net. Please include your name, address, phone, e-mail, and for each award, the award name, years served, and in what capacity.