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Research

On the nationality balance of authors and references in selected MIS journals

Reima Suomi

Turku School of Economics and Business Administration, Turku, Finland

Citation analysis is an established technique in literature analysis. It can be used to reveal citation patterns and thus results stemming from the analysis, including co-citation patterns and groupings of researchers, even reveal paradigmatic schools within a certain field. In this article, twelve major MIS journals – six European and six American – are studied to find out whether there are any differences in author selection and referencing patterns. It was discovered that the American MIS community is much more self-sustaining than the European one, which relies heavily on work by American authors. This points either to the superiority of the American MIS community, or the under-appreciation of foreign research, or possibly both. On the European side, the result might be interpreted as a sign of low-quality research, lack of self-esteem and pride, or again both. Clear differences between the editorial policy of the journals can be discerned: some journals accept the American hegemony; some try to maintain a balance between contributions from different countries; and some favour European research.

Keywords: Diffusion of IS research; Diffision of MIS research; IS literature; MIS literature; Bibliometrics; Nationality issues; IS journal orientation; MIS journal orientation; IS research; Journal stratification; Citation analysis; Reference analysis; Communication of research.

1. Introduction

The author (from a peripheral European country, both geographically and culturally) has often wondered whether he is at a disadvantage in getting his MIS research results published, especially when compared to his American colleagues. Unrewarding trials to discover any evidence from current literature led to a decision to undertake this analysis. By examining established publication and reference patterns in journals, it was hoped that some indication might emerge regarding the possible balance or imbalance of the author selection and referencing base. The task seemed likely to be especially rewarding, since the techniques employed are quite straightforward and the results obtainable leave little room for debate.

The operative techniques relate to either citation analysis or journal stratification. These have been used in other areas, but not, for some reason, to detect trends in the geographical balance of authors and references. Current research

Reima Suomi is Vollamtlicher Dozent in Hochschule St. Gallen (Switzerland). He is the author of three books about different topics within information management (in Finnish) and has his articles published in over ten international journals. His primary areas of interest cover the strategic importance of information systems, interorganizational information systems and case-tools. Practical experience he has gained from the insurance industry, and from this industry sector he has his dissertation (1990) and several articles, too. This article is a document of his current trials to understand the international research community. His newest book is on "different paradigmatic approaches to information resource management" and in St. Gallen he leads a research group studying information systems controlling and business process redesign issues.

Correspondence to: Reima Suomi, currently at Hochschule St. Gallen, Dufourstrasse 50, CH-9000 St. Gallen, Switzerland.

efforts regarding the MIS publication system include:

1. Studies to decide the most important issues and topics, approaching the problem from the viewpoint of practitioners (e.g. Grover and Sabherwal [10]) or academics (such as Keen [12], Culnan and Swanson [7] and Farhoomand [9]).
2. Attempts to establish keyword classification schemes, such as those of Barki and Rivard and Talbot [2] and Barki and Rivard and Sauve and Talbot [3].
3. Attempts to assess the esteem enjoyed by these journals, both in academia and by practitioners, such as Davis [8], Ives and Hamilton [11] and Vogel and Wetherbe [15].
4. Studies into co-citation, 'most cited articles', and citation indexing, Culnan [5,6] and Nunamaker [13].
5. Establishing criteria for evaluating submissions, Straub and Ang and Evaristo [14].
6. Ranking the research method preferences of journals, such as Alavi and Carlson and Brooke [1], Farhoomand, Straub and Ang and Evaristo and Vogel and Wetherbe.
7. Studies evaluating journals from the viewpoint of authors, Boyer and Carlson [4].

It is worth noting and thus perhaps prophesying the outcome of this study that most of the journal articles (except the one by Grover and Sabherwal) are published in American journals by American authors. Are we to conclude that Europeans and others are not interested, or even aware of, the problem areas studied here?

2. Problem formulation

Nationality issues can, of course, be analyzed in detail. For example, citing only European and American references, and considering Europe as an homogeneous whole may appear to be very basic stratification. In the authors view, however, the main tension is between the scientific communities of Europe and of (the United States of) America.

The research questions to be tackled in this article are as follows:

1. Do major MIS journals have a balanced set of authors both from Europe and America, or do American journals favour American writers and European journals European writers?
2. Is there a balanced set of references both from Europe and America, or do European and American writers favour their own references?

3. Data collection

Data was collected from six American and six European journals, as presented in *Table 1*. All are in the MIS field, though their profiles vary greatly: some have a more practical orientation and some a more academic orientation. Determining which journal is American and which European is, of course, not easy nowadays, when publishing houses and editorial boards tend to be international. In all cases, though, the views of the publisher and the chief editor undoubtedly take precedence on the editorial line of the journals. In ascribing nationality to a particular jour-

Table 1
The journals studied.

Journal	Issues per year	Publisher	Editor	Volume studied
Communications of the ACM	12	American	American	33
Data Base	4	American	American	21
Education & Computing	4	European	European	6
Expert Systems	4	European	European	7
IBM Systems Journal	4	American	American	29
Information & Management	10	European	American	18
information & Software Technology	10	European	European	32
Journal of Management Information Systems	4	American	American	7
Journal of Software Maintenance	4	Amer./Eur.	European	2
Journal of Systems Management	12	American	American	33
MIS Quarterly	4	American	American	14
Scandinavian Journal of Information Systems	1	European	European	2

Table 2
The sample.

	Articles	References
Total number of	403	8756
of which in European Journals	185	4430
of which written by Americans	69	1624
of which written by Europeans	89	2176
of which written by other	20	491
of which written in co-operation	7	139
of which in American Journals	218	4326
of which written by Americans	182	3447
of which written by Europeans	13	262
of which written by other	14	252
of which written in co-operation	9	365
of which written by Americans	251	5071
in European Journals	182	1624
in American Journals	69	3447
of which written by Europeans	102	2438
in European Journals	89	2176
in American Journals	13	262
of which written by other	34	743
in European Journals	20	491
in American Journals	14	252
of which written in co-operation	16	504
in European Journals	7	139
in American Journals	9	365

nal, the address given for correspondence was used to assess the 'home country' of the journal. American journals are clearly American, but their European counterparts are more difficult to judge, since their publishers have offices in the United States and their editors are often American, too.

The analysis includes one volume of each journal, either for the year 1990 or beginning in that year. The journals are very different in nature, and their selection should be considered more as a sample than the result of any systematic method. A single nominating factor is that all of the journals are highly esteemed by MIS researchers or those in related fields.

The total sample was 403 articles with 8756 references therein. Some of the 403 articles considered to have undergone a refereeing process had no references at all. More detailed data on the sample can be found in *Table 2*.

The first round of analysis counted the number of articles in sections of the journals that should, at least in principle, have undergone a refereeing process, or that at least represented the scientific articles of the journal. Articles under headings which suggested the absence of the refereeing process, such as "discussion", "editorial", "columns" etc., were excluded. The articles were classified as follows:

1. author(s) American (from the United States)
2. author(s) European (including Israel)
3. author(s) from other countries
4. article written in co-operation by authors from at least two countries.

The second round of analysis concentrated on the referencing base. Only those articles in round 1 that had references were included in the second round. Many articles, however, did not have any references. Articles with references may have appeared in a journals' other sections, but were not included in the analysis because of the absence of a refereeing process.

The references were categorized as follows:

1. reference to a source published in the United States of America
2. reference to a source published in Europe (including Israel)
3. reference to a source published
   (a) in any other country
   (b) at an international conference
   (c) in a source too difficult for the author to identify

Unfortunately, some references were too vague to tie down. These do not exceed 5.5% of the total sample (in fact they represent a small fraction of that percentage) and thus do not significantly alter the results.

Some rules had to be established during the analysis, the most important concerning international sources. There were easier and more difficult cases.

Organizations such as Unesco or ISO are clearly international (in a 'standard' sense), no matter where their publications might be printed.

Conferences are more difficult to judge. Conferences having the word "international" in their name were counted as international, but not if they were always held in one country. Some examples cast light on the judgement: The ICIS conference, for example, only became properly international by this definition in 1990 (when it was held in Copenhagen). However, all articles

published at ICIS proceedings were counted as international. On the other hand, according to our criteria, the Hawaii International Conference on System Sciences cannot be considered to be international, since it is permanently resident in the United States.

A typical measure of the international character of a conference would surely be the distribution of its participants into different countries. This criteria, however, is vague and impossible to judge on the basis of the references.

4. Data analysis

The following is a more detailed analysis of the results, which were in detail presented in *Tables 3, 4* and *5*.

We will start with the question

1. *Do major MIS journals have a balanced set of authors from Europe and America, or do European and American journals favour their own writers?*

Table 3
Total numbers of articles and writers from different countries in the journals.

	Articles	Writers			
		European	American	Other	Cooperation
Absolute figures					
EUROPEAN JOURNALS					
Education & Computing	23	19	1	3	0
Expert Systems	18	12	5	1	0
Information & Management	54	4	36	10	4
Information & Software Technology	71	43	20	6	2
Journal of Software Maintenance	13	5	7	0	1
Scandinavian Journal of Inf. Systems	6	6			
	185	89	69	20	7
	100%	48,1%	37,3%	10,8%	3,8%
AMERICAN JOURNALS					
Communications of the ACM	73	7	57	6	3
Data Base	9	1	8	0	0
IBM Systems Journal	35	1	29	5	0
Journal of Management Inf. Systems	25	0	22	0	3
Journal of Systems Management	53	3	48	1	1
MIS Quarterly	23	1	18	2	2
	218	13	182	14	9
	100%	6,0%	83,5%	6,4%	4,1%
ALL JOURNALS	403	102	251	34	16
	100%	25,3%	62,3%	8,4%	4,0%
Percentages					
EUROPEAN JOURNALS					
Education & Computing	100,0	82,6	4,3	13,0	0,0
Expert Systems	100,0	66,7	27,8	5,6	0,0
Information & Management	100,0	7,4	66,7	18,5	7,4
Information & Software Technology	100,0	60,6	28,2	8,5	2,8
Journal of Software Maintenance	100,0	38,5	53,8	0,0	7,7
Scandinavian Journal of Inf. Systems	100,0	100,0	0,0	0,0	0,0
AMERICAN JOURNALS					
Communications of the ACM	100,0	9,6	78,1	8,2	4,1
Data Base	100,0	11,1	88,9	0,0	0,0
IBM Systems Journal	100,0	2,9	82,9	14,3	0,0
Journal of Management Inf. Systems	100,0	0,0	88,0	0,0	12,0
Journal of Systems Management	100,0	5,7	90,6	1,9	1,9
MIS Quarterly	100,0	4,3	78,3	8,7	8,7

Table 4
Amount and percentages of references in individual journals.

	Amount	Writers	References		
			% European	% American	% other
European Journals					
Education & Computing	594	All	34,2	62,5	3,4
	576	Europeans	34,9	62,0	3,1
	8	Americans	0,0	100,0	0,0
	10	Others	20,0	60,0	20,0
Exert systems	363	All	29,2	64,5	6,3
	229	Europeans	33,6	59,0	7,4
	96	Americans	13,5	82,3	4,2
	38	Other	42,1	52,6	5,3
Information & Management	1459	All	13,6	80,5	5,9
	97	European	40,2	54,6	5,2
	988	American	9,8	85,0	5,2
	292	Other	14,7	79,1	6,2
	82	Co-op	24,4	61,0	14,6
Information and Software Techology	1567	All	25,5	64,3	10,2
	961	European	30,4	58,6	11,0
	409	American	16,6	76,0	7,3
	151	Other	17,9	66,2	15,9
	46	Co-op	28,3	71,7	0,0
Journal of Software Maintenance	277	All	15,9	81,2	2,9
	143	Europeans	29,4	67,1	3,5
	123	Americans	1,6	95,9	2,4
	11	Co-op	0,0	100,0	0,0
Scandinavian Journal of Information Systems	170	All	37,6	58,8	3,5
	170	Europeans	37,6	58,8	3,5
American Journals					
Communications of the ACM	1892	All	6,9	86,8	6,3
	189	European	18,5	71,4	10,1
	1379	American	2,8	92,9	4,3
	188	Other	10,6	76,6	12,8
	136	Co-op	27,2	60,3	12,5
Data Base	109	All	15,6	80,7	3,7
	28	European	39,3	57,1	3,6
	81	American	7,4	88,9	3,7
IBM Systems Journal	325	All	6,5	90,2	3,4
	34	European	32,4	61,8	5,9
	232	American	3,0	94,0	3,0
	59	Other	5,1	91,5	3,4
Journal of Management Information Systems	1012	All	9,4	87,3	3,4
	908	American	9,6	88,1	2,3
	104	Co-op	7,7	79,8	12,5
Journal of Systems Management	189	All	7,8	91,8	0,4
	7	European	0,0	100,0	0,0
	168	American	4,8	94,6	0,6
	14	Co-op	100,0	0,0	0,0
MIS Quarterly	799	All	5,4	93,4	1,3
	4	European	25,0	75,0	0,0
	679	American	4,9	94,1	1,0
	5	Other	20,0	60,0	20,0
	111	Co-op	7,2	91,0	1,8

Detailed analysis of the authors' home countries can be found in Table 3.

Not surprisingly, the largest group of writers in American journals was American, and the largest group in European journals was European. Cooperatively written articles accounted for around

4% in both American and European journals. Writers from outside the United States or Europe wrote 10.8% of the articles in European journals and 6.4% of those in American journals. This difference is already quite significant.

The most astonishing result (and the one that fully validates the original premise leading to this study) was the small number of European writers in American journals. Only 6% of articles in American journals were written by European writers, whereas Americans had a 37.3% share in European journals.

In this respect, European journals in the sample seem to fall into three groups:

1. Journals that are obviously European;
   Scandinavian Journal of Information Systems
2. Journals giving space to European research;
   Education & Computing
   Expert Systems
   Information & Software Technology
3. Journals trying to maintain a balance between contributions from different countries, with an American point of gravity;
   Information & Management
   Journal of Software Maintenance

The American journals are more homogeneous; a more detailed analysis and some imagination breaks these down into three groups:

1. Strictly American journals;
   Journal of Management Information Systems
2. Journals giving some space to European contributions;
   Data Base
3. Journals with various contributions from other countries but with an American hegemony;
   Communications of the ACM
   IBM Systems Journal
   Journal of Systems Management
   MIS Quarterly.

Interestingly, there are no co-operative contributions in the *IBM Systems Journal* (publishing mostly articles by IBM staff). Since IBM is a multinational, one might have expected co-operation between the various research units of the company.

2. *Is there a balanced set of references from Europe and America, or do European and American writers favour their own references?*

The refereeing patterns are presented in detail in Table 4 and as a summary in Table 5.

Whereas in all journals, 25.3% of articles were written by Europeans, only 15.4% of all the references were to European sources, while 79.1% were to American sources. In American journals as many as 88.3% of all references were to American sources. However, even in Europe, researchers seem to rely on American sources, as they represent 70.2% of all references.

Only 5.5% of references in all journals were to "international" or other non-American and non-European sources. There was a difference of about a third (4.1% versus 6.8%) between European and American journals, the European ones being more open to these references.

Some conclusions can be drawn from the study of individual journals:

1. American writers in American journals collectively make more than 88% of their references to American sources.
2. In no category does the share of American references fall under 54%.

Table 5
Percentages of references, total.

	Total references	Refereed source		
		European	American	Other
European Journals	4430	1016	3111	303
	100%	22,9	70,2	6,8
American Journals	4326	329	3818	179
	100%	7,6	88,3	4,1
All journals	8756	1345	6929	482
	100%	15,4	79,1	5,5

Table 6
Average number of references per article by journal and writer type.

	Writers														
	All			European			American			Other			Co-operative		
	Refer.	Art.	Ratio	Refer.	Art.	Ratio	Refer.	Art.	Ratio	Refer.	Art.	Ratio	Refer.	Art.	Ratio
European Journals															
Education & Computing	594	23	25,8	576	19	30,3	8	1	8,0	10	3	3,3			
Expert systems	363	18	20,2	229	12	19,1	96	5	19,2	38	1	38,0			
Information & Management	1459	54	27,0	97	4	24,3	988	36	27,4	292	10	29,2	82	4	20,5
Information and Software Techology	1567	71	22,1	961	43	22,3	409	20	20,5	151	6	25,2	46	2	23,0
Journal of Software Maintenance	277	13	21,3	143	5	28,6	123	7	17,6				11	1	11,0
Scandinavian Journal of Information Systems	170	6	28,3	170	6	28,3									
All European	4430	185	23,9	2176	89	24,4	1624	69	23,5	491	20	24,6	139	7	19,9
American Journals															
Communications of the ACM	1892	73	25,9	189	7	27,0	1379	57	24,2	188	6	31,3	136	3	45,3
Data Base	109	9	12,1	28	1	28,0	81	8	10,1						
IBM Systems Journal	325	35	9,3	34	1	34,0	232	29	8,0	59	5	11,8			
Journal of Management Information Systems	1012	25	40,5				908	22	41,3				104	3	34,7
Journal of Systems Management	189	53	3,6	7	3	2,3	168	48	3,5	0	1	0,0	14	1	14,0
MIS Quarterly	799	23	34,7	4	1	4,0	679	18	37,7	5	2	2,5	111	2	55,5
All American	4326	218	19,8	262	13	20,2	3447	182	18,9	252	14	18,0	365	9	40,6
All journals	8756	403	21,7	2438	102	23,9	5071	251	20,2	743	34	21,9	504	16	31,5

3. There is a considerable difference between European and American writers: whereas many US authors use no European contributions as references, the Europeans refer mostly to American literature.

It was also possible to derive data on the average number of references in different journals, as a byproduct of (and external to) the original research schedule. A detailed analysis of the number of references can be found in *Table 6*.

The number of references per article varied between zero and 161. Four articles with more than 100 references were found in the sample.

In the sample as a whole, there were an average of 21.7 references per article. American authors used fewer references than Europeans, both in European and American publications, but the difference was not particularly significant. In all categories except co-operatively written articles the European journals contained more references than the American. It was thus clear that articles written in co-operation and published in American journals tended to contain more references than other articles. In European journals, on the contrary, a co-authored article meant fewer references. One might conclude that writers from outside the United States, having once gained access to American readers, take the chance to present their own references in a more detailed way than would otherwise be the case.

5. Discussion

While the results leave back an impression of American hegemony in this field of science, we have to discuss some aspects of aspirations and daily practical work of researchers in the USA and Europe before arriving to our conclusions.

First, the aspirations may vary. The American academic tradition of "Publish or Perish" is well known, and the pressures for publishing are huge. In Europe, while important, publishing is not, at least in all countries, the only and maybe not the most important way to professional success.

One important aspect is the language used, of course. Americans have the privilege to publish in their mother tongue, a delight which is not granted for Europeans but Englishmen in the journals studied. It is clear that the language problems can both lower the quality of European contributions and cause relatively more work for the Europeans.

An aspect of daily research activities is the availability of literature and sources. Here the Europeans have a tradition of adopting American inputs, not only in the field of science. To the another direction the flow of information is maybe not so fluent, and it may be the case that American researchers simply don't have access to European sources.

One aspect, of course, is the size of the research activity in general. While the population of Europe is even bigger than that of the USA, especially in the field of information technology and particularly MIS research the American universities have been pioneers. It must too be remembered that many important computer and software manufactures have their origins in the USA: this may describe a part of the greater activity at the American side.

Best research should be cumulative. This means that when one research tradition has gained a dominant position there are mechanisms to keep it there too. So, the American hegemony is likely to go on for a long time in the future, too.

Last but not least: the published articles don't tell the whole truth. We could get nearer to it by having an overview of the submission and rejection rates. Unfortunately, this data seems impossible to obtain for an outside observer.

6. Conclusions

From the results it seems clear that the American MIS community is much more self-sustaining than its European counterpart, which relies heavily on work by American authors. One or more of the following conclusions may be reached:

1. The American MIS community is of superior quality, and their ignorance of research in other countries is therefore understandable. In fact, when introducing an author many American journals used wording such as "... *has published in several European and international journals*", from which wording one might im-

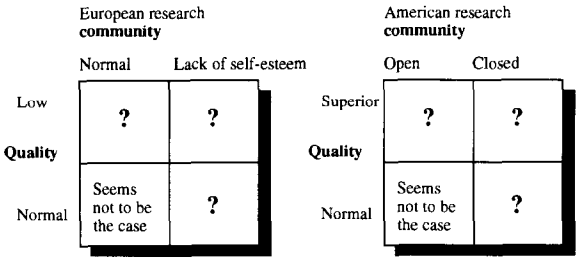

Fig. 1. Possible interpretations of the study.

ply that in their opinion only American journals are truly international.

2. The American MIS community has little knowledge of, or regard for, foreign research and refuses to consider the results of other research, however informative it may be.
3. From the European point of view, the result might be interpreted as a sign of low quality research.
4. Another conclusion in the case of the Europeans might be a lack of self-esteem and pride. Even though good research is done, insufficient references to it are made.

Figure 1 presents the possible states of American and European research as discussed above.

Clear differences may be discerned between the journals' editorial policy: some clearly accept the American hegemony; others try to maintain a balance between contributions from different countries, and some clearly favour European research.

An overall view of the study leaves, however, the myth of the "international research community" in doubt. Perhaps the research community is not as international as might at first sight have been hoped.

This sort of problem setting is, for some reason, ignored in traditional citation analysis research efforts. Even acknowledging categorization problems, they should not be used as an excuse for not doing this kind of research. The results surely indicate that further research, with bigger samples and open discussion on categorization rules, is clearly needed.

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