

Journal Self-Citation IV: Citations Analysis of IS Journals – Separating Facts from Fiction

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This article is inspired by a recent posting on the AISWorld listserv eliciting thoughts on the practice of self-citations by journals in the IS field. While emotions ran high in the ensuing online discussion, we try to provide an objective and informed analysis of the actual citation patterns of both top tier journals and non-top tier journals. Results show that the practice of self-citation is fairly common among both types of journals. Additional analyses showed that the preference for top-tier citations was more prevalent in top-tier journals than in non-top-tier journals. Supported by the data, we provide several arguments for these practices.

Keywords: self-citation | IS journals | top tier journals | non-top tier journals

Article:

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Communications of the Association for Information Systems



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Abstract:

This article is inspired by a recent posting on the AISWorld listserv eliciting thoughts on the practice of self-citations by journals in the IS field. While emotions ran high in the ensuing online discussion, we try to provide an objective and informed analysis of the actual citation patterns of both top tier journals and non-top tier journals. Results show that the practice of self-citation is fairly common among both types of journals. Additional analyses showed that the preference for top-tier citations was more prevalent in top-tier journals than in non-top-tier journals. Supported by the data, we provide several arguments for these practices.

Keywords: IS research, citation analysis, self-citation, top-tier and non-top tier journals, knowledge dissemination

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I. INTRODUCTION

In March 2009, the AISWorld listserv hosted an intellectual discussion of the citation practices of Information Systems (IS) journals, inspired by a rather innocuous query posted by Paul Gray, a well known IS scholar and founding editor of CAIS. Various academicians provided intellectual arguments about the ethics of promoting self-citations by the stakeholders of a journal. The discussion also considered the role of different types of journals in the field including top-tier journals, other quality journals, and niche journals. Sometimes emotions ran high depending on the perspectives of the authors, editors, reviewers, and publishers. Our objective in this article is to provide an objective and informed analysis of the citation patterns of top-tier as well as non-top-tier journals in the IS discipline and answer some of the questions that arose in the electronic forum.

II. BACKGROUND

Since the beginning of the IS discipline in the 1960s, the number of IS journals have proliferated and now number more than 100. Before there were any IS journals researchers published their work in other allied discipline journals such as *Management Science*, *Decision Science*, *Communications of the ACM (CACM)*, management journals, and IEEE journals. *MIS Quarterly* was the first IS journal, initiated by the MIS Research Center at the University of Minnesota in 1977 and quickly recognized as a top-tier journal. Since then, many journals have been launched and have attained various levels of perceived¹ quality.

The very best journals in the field are generally **called top-tier journals and include such journals as *MIS Quarterly (MISQ)*, *Information Systems Research (ISR)*, and the *Journal of MIS (JMIS)***. There is some debate as to which journals constitute the top-tier category and which do not. It is not our intention in this article to enter this debate except to say that we will rank *MISQ*, *ISR* and *JMIS* as among the top-tier journals in the IS discipline.

After its beginning, IS as an academic discipline expanded rapidly in the U.S. and throughout the world. With its continued growth and in order to serve the expanding research community, many journals were initiated at different levels of rigor and relevance as well as in specialty areas. Journals that are regarded as emphasizing theory and rigor include *MISQ*, *ISR*, *Decision Sciences (DS)* and *JMIS*. Journals that focus more on practical and immediate relevance² include *Communications of the AIS (CAIS)*, *Communications of the ACM (CACM)*, *MISQ Executive* and European journals, such as the *European Journal of Information Systems (EJIS)*. General interest journals besides the top-tier journals include *Information & Management (I&M)*, *Journal of AIS (JAIS)*, and *Data Base for Advances in Information Systems*. Specialty journals focusing in sub-areas of Information Systems, also called niche journals, include *Decision Support Systems (DSS)*, *Journal of Global Information Technology Management (JGITM)*, *International Journal of Electronic Commerce (IJEC)*, *Journal of Information Privacy and Security (JIPS)*, and *Human Computer Interaction (HCI)*. There are also journals that emphasize particular methodologies, e.g., quantitative, qualitative, and design science methodologies. As an example, the *Journal of Information Technology Cases and Applications Research (JITCAR)* focuses on case research.

Each journal has its own mission and objectives and strives to make its mark on the academic and practitioner community. However, given the large number of journals, there are real and perceptual differences in quality. Many articles rank the quality of the journals on a continual basis; many are based on the perceptions of the IS academic community [Katerattanakul et al., 2003; Lowry et al., 2004; Mylonopoulos and Theoharakis 2001; Peffers and Tang 2001; Rainer and Miller 2005]. Another surrogate for "quality"³ is the journal's impact factor. The impact factor is based on the frequency of citation of its articles by its own journal as well as other journals. It has been noted that some journal editors and reviewers encourage authors to cite papers from their own journals. Although this practice exists, we do not know how prevalent it is and whether it can even be accurately determined. A more important question is whether the practice is professional or ethical and whether it is motivated by genuine scholarly reasons or the desire to enhance the image of the journal. Furthermore, is the practice universal or is it limited to non-top-tier or new journals?

¹ Many of the statements made in this article about journal quality are based on commonly held perceptions. We acknowledge that others will have different perceptions and will disagree with us on at least some of the statements.

² Within each category, many journals exist. These examples are based on common knowledge as well as the authors' own experiences.

³ While impact factor simply measures the extent to which articles in a journal are cited, it is frequently used as a measure of "perceived quality."

While we cannot answer the above questions unequivocally, we conducted an analysis of the citation patterns of several top-tier journals and non-top-tier journals. Interesting patterns are revealed and insights are gained into some of the above questions.

III. METHODOLOGY

We examined three top-tier journals: *Management Information Systems Quarterly (MISQ)*, *Journal of MIS (JMIS)*, and *Information Systems Research (ISR)*. From the remaining more than 100 journals, which we will call non-top-tier, we selected two with which two of the authors are extremely familiar: *Journal of Global Information Technology Management (JGITM)* and *Journal of Information Technology Cases & Applications Research (JITCAR)*. Prashant Palvia is the founding and current editor of *JGITM*, which is in its twelfth year of publication. Shailendra Palvia is the founding editor and remained editor for the first nine years of *JITCAR*, which is in its eleventh year of publication. *JGITM* focuses on global issues of information technology management, while *JITCAR* emphasizes the case methodology in research and teaching. Both journals are well regarded by the IS community of researchers. In a study by Peffers and Tang [2001] only a few years after they were founded, *JGITM* was ranked 23rd and *JITCAR* 33rd among over 110 IS journals.

We collected citation data for information systems articles published during the last two years: 2007 and 2008. The number of articles published during these two years in *MISQ*, *JMIS*, and *ISR* were 64, 56, and 32 respectively. The counts for *JGITM* and *JITCAR* were 24 and 23 respectively. To increase the sample sizes for *JGITM* and *JITCAR*, we included articles published in the last two issues of 2006. This inclusion increased the number of articles from these two journals to 30 and 29 respectively. For each article in these five journals, citation counts were collected in the following categories: *MISQ*, *JMIS*, *ISR*, *DS*, *CACM*, *I&M*, *CAIS*, *JAIS*, *JGITM*, *JITCAR*, books, Web sites, conferences/reports/working papers, and other journals.

IV. FINDINGS

Overall Patterns

Table 1 shows the overall citation patterns in the five journals. Some observations are noteworthy. Clearly, the three top tier journals contain far more total number of citations per article than the two non top tier journals. *MISQ* has the highest number of citations at 89 per article, followed by *ISR* and *JMIS*. The number of citations in *JGITM* and *JITCAR* is almost half that of the top tier journals, in the 35-40 range. All journals cite books, with *MISQ* having the largest share. All journals were citing web sites; however, *JGITM* and *JITCAR* cite them more heavily. While the web site information is not refereed and perhaps not as rigorous as books and journals, it is generally more current. The same can be said about conferences, about which *JITCAR* includes a decidedly higher proportion than the other journals.

Table 1. Overall Citation Patterns						
Journal	# of articles	Total citations	Journals	Books	Websites	Conferences
<i>MISQ</i>	64	5689	4626	770	103	190
- per article		88.9	72.3	12.0	1.6	3.0
<i>JMIS</i>	56	3469	2968	335	58	108
- per article		61.9	53.0	6.0	1.0	1.9
<i>ISR</i>	32	2359	1993	227	45	94
- per article		73.7	62.3	7.1	1.4	2.9
<i>JGITM</i>	30	1236	925	169	109	33
-per article		41.2	30.8	5.6	3.6	1.1
<i>JITCAR</i>	29	1043	562	172	128	181
-per article		36.0	19.4	5.9	4.4	6.2

Journal Citation Patterns

Table 2 focuses solely on the journal citations of each of the five journals. While there are many journals both inside and outside IS that are cited by the five journals in Table 1, we limited our search to the more well known journals. The following journals were included for the citation analysis: *MIS Quarterly (MISQ)*, *Journal of MIS (JMIS)*, *Information Systems Research (ISR)*, *Decision Sciences (DS)*, *Communications of the ACM (CACM)*, *Information & Management (I&M)*, *Communications of AIS (CAIS)*, *Journal of JAIS (JAIS)*, *Journal of Global Information Technology Management (JGITM)*, and *Journal of Information Technology Cases and Applications Research (JITCAR)*. Table 2 provides the total citations in these journals as well as the average number of citations per article.

Table 2. Journal Citation Patterns

Journal	# of articles	Citations in									
		<i>MISQ</i>	<i>JMIS</i>	<i>ISR</i>	<i>DS</i>	<i>CACM</i>	<i>I&M</i>	<i>CAIS</i>	<i>JAIS</i>	<i>JGITM</i>	<i>JITCAR</i>
<i>MISQ</i> - per article	64	510 8.0	107 1.7	260 4.1	54 0.8	116 1.8	48 0.8	29 0.5	23 0.4	5 0.1	1 0.0
<i>JMIS</i> - per article	56	221 3.9	257 4.6	119 2.1	26 0.5	93 1.7	31 0.6	22 0.4	15 0.3	2 0.0	1 0.0
<i>ISR</i> - per article	32	122 3.8	40 1.3	93 2.9	0 0.0	27 0.8	0 0.0	2 0.1	0 0.0	0 0.0	0 0.0
<i>JGITM</i> - per article	30	37 1.2	16 0.5	15 0.5	8 0.3	18 0.6	23 0.7	12 0.4	9 0.3	35 1.1	0 0.0
<i>JITCAR</i> - per article	29	37 1.3	21 0.7	20 0.7	3 0.1	24 0.8	20 0.7	1 0.0	1 0.0	2 0.1	30 1.0
All journals - per article	211	927 4.4	441 2.1	507 2.4	91 0.4	278 1.3	122 0.6	66 0.3	48 0.2	44 0.2	32 0.2

Citations of Top-Tier Journals

Referring to Table 2, it is apparent that all journals cite the top-tier more than any of the other journals. The most cited journals for all of the five journals in descending order are: *MISQ*, *ISR*, *JMIS*, and *CACM*, after which the citations in other journals drop rapidly. Thus if citation is used as an index of journal quality, the three top journals in the Information Systems discipline are *MISQ*, *ISR*, and *JMIS*, which is consistent with many published rankings and our own selection in this article. This trend is more apparent in the top-tier journals than in the non-top-tier ones. In addition to top-tier citations and citing itself, *JGITM* cites *CACM*, *I&M*, and *CAIS*, and *JITCAR* cites *CACM* and *I&M* often.

Note that many universities and academicians, ourselves included, regard *Decision Sciences (DS)* as a top-tier journal. We were surprised that in these two years of data, *ISR* had no citations of *DS*. The same is true for *Information & Management* not being cited by *ISR*, which is generally ranked quite high by most surveys. Is it just an accident or a bias among *ISR* authors, editors, and reviewers? We do not know the answer but it certainly raises a flag. Could it be that researchers are missing out on some very good and relevant articles by bias or oversight? Does it have something to do with journal "fit"?

Another example is that *JAIS* articles are not at all cited by *ISR*. *JAIS* is generally regarded as a high quality journal but is published entirely in electronic form. Is it possible that electronic journals are considered less favorably than hard copy journals? We raise it as a question which needs to be investigated carefully, as it has implications for electronic journals in general.

Own Journal Citations

There is a discernible pattern of each journal heavily citing its own journal articles (Table 2). In two of the five journals in our analysis, *MISQ* and *JMIS*, their own journal was the top citation recipient. For *ISR*, *JGITM*, and *JITCAR*, their own journal was the second highest citation recipient. Thus, the tendency to cite their own previous articles exists in both top-tier and non-top-tier journals.

We tested the hypothesis that there is a difference in proportion of own journal citations by the top-tier journals versus the non-top-tier journals. The hypothesis testing, of course, assumed that our samples were representative of all information systems articles published in these journals. There were six hypotheses comparing each journal in the top-tier category to each journal in the non-top-tier category. A representative null hypothesis is:

$$\text{Proportion of MISQ citations in MISQ articles} = \text{Proportion of JGITM citations in JGITM articles}$$

All six null hypotheses were statistically rejected at the 99 percent confidence interval and indicated that the top-tier journals had higher proportion of own-journal citations than the non-top-tier journals.

Citations by Top-Tier Vs. Non-Top-Tier Journals

Examining the proportion of different journal citations depicts interesting patterns. Table 3 lists each journal's citations for each cited journal, the total number of journal citations (excluding "other" journals), and the percentage by each cited journal.

Once again, the preference for top-tier citation is confirmed for all journals. But there seems to be a lop-sided distribution. The three top-tier journals cite the three top-tier journals (i.e., themselves) more than three-fourths of the time of the journals considered in this analysis. *ISR* appears to be most exclusive with its percentage for the three journals at 90 percent, followed by *MISQ* and *JMIS* both at 76 percent. In comparison, the non top-tier journals are more inclusive. While they still cite the three top-tiers among the highest, their percentages are 39 percent and 49 percent for *JGITM* and *JITCAR* respectively. In other words, the non-top-tier journals cite the collection of non-top-tier journals more often than they cite the collection of top-tier journals.

Table 3. Citations as Percent of Total

Journal	Citations in										Total
	<i>MISQ</i>	<i>JMIS</i>	<i>ISR</i>	<i>DS</i>	<i>CACM</i>	<i>I&M</i>	<i>CAIS</i>	<i>JAIS</i>	<i>JGITM</i>	<i>JITCAR</i>	
<i>MISQ</i> percent	510 44%	107 9%	260 23%	54 5%	116 10%	48 4%	29 3%	23 2%	5 0%	1 0%	1153
<i>JMIS</i> percent	221 28%	257 33%	119 15%	26 3%	93 12%	31 4%	22 3%	15 2%	2 0%	1 0%	787
<i>ISR</i> percent	122 43%	40 14%	93 33%	0 0%	27 10%	0 0%	2 1%	0 0%	0 0%	0 0%	284
<i>JGITM</i> percent	37 21%	16 9%	15 9%	8 5%	18 10%	23 13%	12 7%	9 5%	35 20%	0 0%	173
<i>JITCAR</i> percent	37 23%	21 13%	20 13%	3 2%	24 15%	20 13%	1 1%	1 1%	2 1%	30 19%	159
<i>All Journals</i> percent	927 36%	441 17%	507 20%	91 4%	278 11%	122 5%	66 3%	48 2%	44 2%	32 1%	2556

Again six hypotheses were tested comparing the proportion of the three top-tier journal citations in a top tier journal versus a non-top-tier journal. A representative null hypothesis is:

Proportion of MISQ+JMIS+ISR citations in MISQ articles = Proportion of MISQ+JMIS+ISR citations in JGITM articles

Once again, all six null hypotheses were rejected at the 99 percent confidence level indicating that all top-tier journals cite top-tier journal articles more than the non-top-tier journals.

V. DISCUSSION AND CONCLUSIONS

Several patterns and conclusions can be inferred from the above data and subsequent analyses. We discuss four of them: self-citations, self fulfilling prophecy, inclusivity, and ethical and professional issues.

Self-Citations

Self-citation or own journal citation is a common practice among all the journals investigated in this analysis. It is true for both top-tier and non-top-tier journals. Whether it is done voluntarily by the authors or encouraged by journal editors and reviewers, the point remains that the phenomenon exists. In our view, "what's good for the goose is good for the gander" and the non-top-tier journals should not be chastised for indulging in this practice, as long as it is done ethically and professionally. Furthermore, the issue of ethical and professional practice applies to all journals, not just non-top-tier ones. Moreover, self-citations as suggested by the editors and reviewers can lead to discovery of new knowledge by the authors who may otherwise be unaware of such knowledge and it can only improve their manuscripts. There is no one in a better position to recommend self-citations than the journal editors and reviewers themselves, as they are the ones intimately familiar with the contents of the journal. For a manuscript to be a good "fit" with the theme and methodology of a journal, it makes sense that own journal citations are recommended, since authors may not be necessarily familiar with previously published relevant articles.

Self Fulfilling Prophecy

Is the IS discipline trapped in a self fulfilling prophecy? If the top-tier journals over- cite their own journals and other journals follow suit, then the top-tier journals perpetually remain top-tier based on impact factors and perceptions. In such a scenario, other journals do not even have a fighting chance to rise to higher levels of quality, certainly not based on citation indexes. Is the set of top-tier journals an elite club where permission is not granted to others? We know these are rhetorical and provocative questions, but there has to be some element of truth in them. As a profession, are we not better off expanding our domain and knowledge base by reading and citing more journals, both in terms of number and variety? We believe there is a strong need for balance in citations and knowledge creation in the IS discipline. Authors need to read and cite relevant articles from all types of journals: top-tier journals, specialty journals, as well as other quality journals in IS. Note that the habit of citing only top-tier journals may well start in graduate school when professors assign readings to their students. Therefore, we recommend that doctoral students be encouraged to read articles from all relevant IS journals, not just the top-tier journals, in order to enhance their domain of knowledge and enrich the dissertation.

Inclusivity

If we accept the premise that inclusivity is a good thing for the IS discipline, then we need to examine the citation patterns of top-tier journals and non-top tier journals in this light. As we have seen in the tables, the top-tier journals tend to cite top-tier journals. Our data shows non-top tier journals are more open and inclusive in their citations. Not only do they cite non-top-tier journal articles, but they also cite more web sites and, in the case of *JITCAR*, conferences. Thus, the non-top-tier journals have access to a wider domain of knowledge and one that is more current. On the contrary, while Web site and conference articles are more current, an argument can be made about the accuracy and reliability of such information. The question of rigor and relevance once again becomes critical. However, we argue that rigor is captured more by the research methods used in a journal article and can usually be evaluated by the journal reviewers.

Ethical and Professional Issues

As we pointed out at the beginning of Section 5, if the editor and the reviewers are doing a good job they should point out articles which the authors might have missed in any journals, whether in their own or someone else's. They are likely to recommend articles from their own journal for at least two reasons: (1) they are intimately familiar with the contents of their own journals, and (2), the subject matter of the manuscript is likely to be in the journal's domain. We could go so far as to say that they would be professionally irresponsible if they did not recommend relevant articles from their own journal. This could be considered yeoman's service to the research community, since authors are likely to focus more on the top tier journals to the possible exclusion of relevant articles in other journals. Although editors and reviewers are generally aware of the articles already published in their journal, they

may not be familiar with all articles relevant to a specific paper. In that case, they may make general recommendations to review past issues. Therefore, *per se*, there is absolutely nothing wrong in making self-citation recommendations.

The question of self-citation recommendations can be analyzed on ethical grounds based on whether the recommendations are mandatory or voluntary for final publication. Clearly, when the recommendations are to be complied with on a voluntary basis, there is no ethical issue. Mandatory compliance may seem unethical, but let us be careful before passing this judgment. Consider an article on technology acceptance which did not cite the seminal work of Fred Davis, or a national culture article which did not cite the seminal work of Gert Hofstede. Will the editor and the reviewers not be abrogating their responsibility by not mandating the inclusion of these seminal articles? It is only in rare cases where even mandating inclusion of specific articles could be considered unethical. The only time such practice would be unethical is when a self-citation recommendation is mandatory, completely arbitrary and without any justification. For example, imposing a mandatory requirement for a specific number of self-citations is highly questionable. Fortunately, we believe such cases are rare in our discipline.

In the end, we must reiterate that the IS discipline will only be enriched if authors, editors, reviewers, and readers expand their knowledge base beyond the top-tier journals and pay attention to other quality and specialty journals. This is not to say that every single journal in the field represents high quality. However, in a field with over 100 journals, there are bound to be many gems if one only looks for them.

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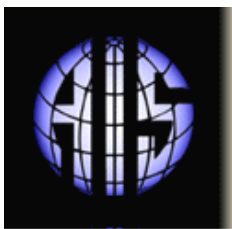
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