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Self-Citation in PJCR's Engineering Journals and their Significance in Determining Impact Factor during 2002-2006

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Abstract

Since reference practices influence Journal Impact Factor (JIF), Author Self-Citation (ASC), number of times an author cites herself / himself, and Journal Self-Citation (JSC), number of times the journal cites itself, as a portion of total citations should be considered in citation analysis. ISI provides quantitative indicators for publications in English language. Therefore, those scientific journals in different countries that publish in national languages have less chance to be evaluated based on bibliometric indicators. For this reason, Regional Information Center for Science and Technology (RICeST) affiliated to the Ministry of Science, Research and Technology of Iran started to construct the Persian Science Citation Index (PSCI) and Persian Journal Citation Reports (PJCR) as products of ISC in 2000, and released the services from 2004. PJCR and PSCI are used to conduct the research. At the time of the study 51 Persian engineering journals were indexed in ISC with IF in PJCR. The aim of the study is to find if the JIF is affected by both ASC and JSC for Persian journals in engineering subject category during 2002-2006. The results show that within the five years mean rates for JSC and ASC are 41% and 66%, respectively. Findings also report that the correlation between JSC and ASC with IF is statistically significant (R= 0.300, sig. = 0.032; R= 0.397, sig. = 0.004, respectively). Moreover, after self-citation removal, the maximum rankings change was observed (either positive or negative). With or without inclusion of author self-citations and journal self-citations about 13.7% and 15.7% of journals maintained the position. There is also no correlation between JIF and the number of articles (R= - 0.031, sig. = 0.831). According to the findings, the study suggests that Persian journals' editorial boards in engineering field implement a policy with regard to articles selection as well as authors' citation behavior.

Keywords: Self-citation, Author Self-citation, Journal Self-citation, Islamic World Science Citation Database (ISC), Persian Journal Citation Reports (PJCR), Journal Impact Factor, Farsi Engineering Journals.

Introduction

The Journal Citation Reports (JCR) and Science Citation Index (SCI) are powerful and authoritative bibliometric tools produced by the Institute for Scientific Information (ISI) (now Thomson Scientific). ISI provides several indicators for measuring

intellectual development from international perspective just for publications in English language. Accordingly, those scientific journals in different countries that publish in national language have less chance to be evaluated based on bibliometric indicators. For this reason, Regional Information Center for Science and Technology (RICeST) affiliated to the Ministry of Science, Research and Technology of Iran started to construct the Persian Science Citation Index (PSCI) and Persian Journal Citation Reports (PJCR) as products of ISC in 2000, and released the services from 2004.

The root of Impact Factor is citation. The impact of a certain research is determined by the frequency of citations it receives. Journals with high impact factors demonstrate research findings with high impact in a scientific area. Impact factor as a quantitative tool assessed the quality of a journal through citations to articles. Out of total citations to a journal, a portion belongs to self-citation. Self-citation is treated in two ways (Hellsten et al., 2007; Yu & Wang, 2007), journal self citation (Garfield, 1972; Pichappan, 1995; Borokhhovich et al., 1994; M'cveigh, 2004) and author self-citation (Pichappan & Saravady, 2002; Glänzel & Thus, 2004; Hutson, 2006). Some studies investigate either journal self-citation or author self-citation, but present study is to determine the share of both journal and author self-citation in Persian Engineering journals via PJCR.

Of studies with regard to self-citation, the motivations for self-citation and citation to others are investigated by Bonzi and Snyder (1991). The first reason that differentiates the motivations in self-citation and citation to others is "the writer's authority in the field". Accordingly, it seems that authors are more concerned about their scientific reputation than others. The "demonstrating knowledge of important work" is another reason that an author cites to other works than his/hers. This study also showed a difference between self-citation and citation to other works with regard to previous research on which his/ her work is built. Findings stated that excluding these three differences, there were no differences between the motivations for referring to his/her work or that of others. Snyder and Bonzi (1998) examined patterns of self-citation in six disciplines (Physical and Social Sciences and Humanities). They concluded there is no citation behavior across disciplines in question. Self-citation of six aneasthesia journals (1995 and 1996) investigated by calculating the self-citing and self-cited rate (Fassoulaki et al., 2000). Findings showed the self-citing and self-cited rate ranged from 57% to 4% and 35% to 17%, respectively. The study showed a significant influence of self-citations on six journals Impact Factor in aneasthesia.

Recalculation of Impact Factor for library and information science and genetics journals after removing self-citation was done by Nisonger (2000). Since a small number of journals display large changes in rank after correction for self-citation, this study emphasizes journal collection development by librarian without considering

journal self-citation. Miguel and Marti Bonmati (2002) investigated self-citation in the official journal of the Spanish Society of Radiology (Radiologia) and compared it with the European Radiology and Radiology journals. Findings showed that Radiologia had a higher self-citation than European Radiology in the period 1997-1998. The use of self-citation and self-mention are treated in 240 research articles and 800 abstracts in eight disciplines (Hyland, 2003).

Self-citation as well as self-mention was used overly in research articles. Motivations to cite their previous work are psychological factors such as, individual writer's confidence, experience and self-esteem. Hyland also investigated self-mention which is the use of authorial pronouns. He believes self-mention brings authors a personal reputation in the text and distinguishes their own work from that of others. Author self-citation as a citation behavior investigated in the diabetes literature by Gami et al. (2004). This study showed nearly one-fifth of all citations to articles in clinical journals include author self-citation. The mean proportion of author self-citations in original articles doubled against review articles. M'cveigh (2004) showed there is a weak correlation between self citation rate and the size of a journal and also with the impact factor and subject of a journal.

Hutson (2006) recorded the rate of self-citation in archaeology and compared the results to other fields. He focused on factors such as research topics, geographic area of specialization, total number of citations, gender of citing author and professional age of citing author, that cause more self-citations in archaeology papers than others. Self-citations of 87 most productive semiconductor journals with regard to self-citing rate and self-cited rate were studied by Tsay (2006). The results showed that older journals have more tendencies toward self-citing than self-cited. Journals with high self-citing rate are more productive and receive more citations. Frandsen (2007) selected a number of variables to investigate journal self-citation. His study as a case one was based on 32 economics journals indexed in Social Science Citation Index. This study showed there is a positive correlation between self-citing rate and JIF, contrary to self-cited rate. The self-citing rate also connected with the composition of document types, geographical location, language and development over time. He concluded that self-citing rate is not a matter of egoism, but it is true to self-cited rate.

The scientific production of Norwegian scientists with regard to self-citation is examined by Aksnes (2003). Of all citations 36% represent author self-citation, but in longer periods the percentage of self-citations decreased. The study showed a strong positive correlation between the number of self-citations and the number of authors of publication. Krauss (2007) calculated self-citation rates of journals in Ecology subject category of ISI's JCR. Results showed that self-citation was responsible for 16.2 ± 1.3% of impact factor in 2004. There is a negative correlation between self-citation and

journal impact i.e. journals with higher impacts have lower self-citation rates. Thijs and Glänzel (2006) investigated "how far the influence of author self-citation on bibliometric meso-indicators deviates from that at the macro level…." Consequently, they found a complex situation at the meso-level and suggested, including and excluding of self-citation in assessments.

Schubert, Glänzel, and Thijs (2006) examined the cited and citing papers with regard to the weight of self-citing authors among co-authors. They quantified the weight of self-citation at macro and meso level. Fowler and Aksnes (2007) investigated motivations that of an author to cite his/her previous work. To do this, they studied how author self-citation affect the citations he/she receives from others. They concluded that with the increase of a single self-citation, cumulative citations increase too and generate an additional three times from others. Self–citation is treated from different approaches by Hellsten et al. (2007). They showed new research topics appear and develop through self-citation network. This study suggested that scientists' field mobility into new research topics can be measured using self-citation.

Yu and Wang (2007) investigated journal self-citation rate and its impact factor in three levels (i.e. high, medium, and low). With regard to journals with high impact factor, there is a weak influence of self-cited rate on the impact factor. The results showed that journals with medium impact factors are more affected by self-cited rate. For journals with low impact factors two conclusions were stated. First, in journals with very low self-cited rate and impact factors, there is a small effect on impact factor. Second, impact factors of journals with high self-cited rate are influenced by the self-cited rate. Ghane (2008) studied both author and journal self-citations in medical sciences using ISC's PJCR (2005 version). Findings showed there is a positive correlation between journal self-citation and impact factor. Consequently, journals with low impact factor have lower self-cited rate. The study also showed there is no correlation between impact factor and adjusted impact factor with the number of journal articles.

All these studies trace self-citation from different approaches by using ISI products (i.e. JCR and SCI). But, the aim of this study is to recognize both journal self-citation and author self-citation in non-English journals (Persian journals) and recalculates journal impact factors in subject category "Engineering" for the ISC's PJCR and find their correlation with impact factor. With this regard, the research questions are:

1. How is the correlation between impact factor and journal self-citation?
2. How is the correlation between impact factor and author self-citation?
3. Did self-cited rates change within years in question?
4. What is the relation between numbers of articles and journal impact factor?

Data and Method

Citation analysis is used to conduct the study. The population includes 51 engineering journals from 2002 to 2006. The bibliographic data of engineering journals were loaded down from ISC's PSCI for 2002-2006. Since a proportion of citations include self-citations, journal impact factor is recalculated which is known as Adjusted Impact Factor (AIF) (Mcveigh, 2004). To do this, the following equation is used. Suppose we want to calculate a journal AIF for 2006:

$$\text{AIF} = \frac{[(A-a)+(B-b)]}{E=(C+D)} \qquad (1)$$

Where:

A= Cites in a given year (suppose 2006) to articles published in the previous year (2005)

a = Self-cites in a given year (suppose 2006) to articles published in 1 previous years (2005)

B= Cites in a given year (suppose 2006) to articles published in 2 previous years (2004)

b = Self-cites in a given year (suppose 2006) to articles published in 2 previous years (2004)

C= Number of articles (2005)

D= Number of articles (2004)

E= Total number of journal articles (2005+2004)

Data extracted from PSCI and PJCR 23 April, 2008. All 51 journals in engineering subject category in ISC were examined. Total articles for five years in question are 3767 which received 132 citations. Of total citations, 87 (66%) and 54 (41%) belong to author self-citation and journal self-citation, respectively. Citation mean during 2002-2006 is 26.4 and mean for author self-citation is 17.4 and journal self-citation 10.8. The breakdowns are shown in Table 1.

Table 1

Number of Articles, Citations, and Self-citations

Year	# of Articles	# of Citations	# of ASC	# of JSC
2002	596	29	20	7
2003	656	17	13	8
2004	534	29	17	10
2005	905	28	17	15
2006	1076	29	20	14
Total	**767**	**132**	**87**	**54**

A journal's self-cited rate is the percentage of citations received by the journal from itself. An author's self-citation rate is also calculated as a percentage. The formulae used calculating self-cited rates for each of five years is as below:

(2)

$$\frac{\text{Number of times the journal cited by itself in a given year (here 2002-2006)}}{\text{Number of total cites received by the journal from all journals in a given year (here 2002-2006)}} * 100$$

(3)

$$\frac{\text{Number of times an author cited herself / himself in a given year (here 2002-2006)}}{\text{Number of total cites received by the journal from all journals in a given year (here 2002-2006)}} * 100$$

Since the study aims to investigate the influence of self-citation on journal impact factor, number of citations, self-citations, and JIFs extracted from PJCR for years 2002-2006 are ranked according to their IF for each of the five years. By using formula number (1), Journal impact factors were being recalculated. Then they were ranked according to their Adjusted Impact Factor. Correlation between self- citation of the journals and their Impact Factor were calculated with Pearson's Correlation Test.

Results

By using formulae (2) and (3), journal self-citation rates and author self-citation rates were calculated. Within the five years mean journal self-citation rate is 41%, while mean author self-citation rate is 66%. The breakdowns for each of the five years are shown in Table (2).

Table 2

Journal and Author Self-citation Rates in Different Years

Year	JSC rate	Rank	ASC rate	Rank
2002	24%	1	69%	3
2003	47%	3	76.5%	4
2004	34.5%	2	58.6%	1
2005	53.6%	5	60.7%	2
2006	48.3%	4	69%	3

Table (2) shows that the lowest journal self-citation rates belong to 2002 and the highest rates belong to 2005. Contrast to Journal self-citation, the lowest author self-

citation rate is in 2004 and the highest belongs to 2003. More investigations into the citations are illustrated in Table (3).

Table 3

% 0f Citations, Author and Journal Self-citations per Article

Year	% Citations/per articles	% ASC/per articles	% JSC/per articles
2002	4.9%	3.3%	1.1%
2003	2.6%	2%	1.4%
2004	5.3%	3.2%	1.9%
2005	3%	1.9%	1.7%
2006	2.7%	1.9%	1.3%
Mean	3.7%	2.5%	1.5%

Self-citation and Journal Performance for Each Five Years

The influence of both journal and author self-citations on Impact Factor is calculated. The journals then were ranked according to their adjusted Impact Factor. Full details in appendix show journals new rank based on adjusted impact factor. There are 13.7% and 15.7% of journals that their Impact Factor ranks remain the same with or without inclusion of author self-citations and journal self-citations, respectively. The removal of author self-citations had a negative effect on 29.4% of journals, while this proportion is 33.3% about journal self-citations. Out of 51 journals, 29 (56.8%) journals' rank increased with regard to the omission of the author self-citation. Of these, 26 (51%) journals gained higher rank in impact factor recalculation without journal self-citation. Impact factor of 25.5% of journals out of 51 is decreased to zero without the inclusion of journal self-citations. In this case the percentage of impact factor without inclusion of author self-citation is 55%. It shows that journal impact factor is more affected by ASC than JSC.

Table 4

Correlation between Journal Self-citation and Impact Factor

		Impact Factor	Journal Self Citation
Impact Factor	Pearson Correlation	1	.300
	Sig. (2.tailed)	.	.032
	N	51	51
Journal Self Citation	Pearson Correlation	.300	1
	Sig. (2.tailed)	.032	.
	N	51	51

More investigations show that this correlation is more powerful in 2002, 2005 and 2006 (Table 5), but it is not shown in 2004 and 2003 (r = 0.228, Sig. = 0.586 and r

=0.600 and Sig. = 0.088, respectively). Tables 4, 5, and 8, presented at the appendix, show increase and decrease in journal ranks after exclusion of journal self-citations in 2006, 2005, and 2002. Changes in ranks are remarkable (increase: 55.5%, 45.5%, 57% and decrease: 33.3%, 36.3%, and 28.6% in 2002, 2005, and 2006, respectively). It seems that Impact Factor is affected by journal self-citation.

Table 5

Correlation between Journal Self-citation and Impact Factor (2002-2006)

Year	Pearson Correlation	Sig. (2-tailed)	N
2002	**0.761**	**0.017**	9
2003	0.600	0.088	9
2004	0.228	0.586	8
2005	**0.700**	**0.017**	11
2006	**0.541**	**0.046**	14

Correlation between Impact Factor and author self-citation

There is also a correlation between author self-citation and journal Impact Factor (Table 6).

Table 6

Correlation between Author Self-citation and Impact Factor (α = o.o5)

		author self citatrion	impact factor
author self citatrion	Pearson Correlation	1	.397
	Sig. (2-tailed)	.	.004
	N	51	51
impact factor	Pearson Correlation	.397	1
	Sig. (2-tailed)	.004	.
	N	51	51

More details of each year show that in years 2006, 2005, 2003, and 2002 there is no correlation between author self-citation and Impact Factor. In fact, very powerful correlation (r = 0.784, Sig. = 0.021) between author self-citation and impact factor in 2004 overwhelmed other years (Table 7).

Table 7

Correlation between Author Self-citation and Impact Factor (2002-2006)

Year	Pearson Correlation	Sig. (2-tailed)	N
2002	0.547	0.128	9
2003	0.444	0.231	9
2004	0.748	0.021	8
2005	0.066	0.848	11
2006	0.008	0.978	14

Change of Self-cited Rates Within Years in Question

Changes are shown in both author and journal self-citation during 2002-2006 (Table 2), but these changes are not statistically significant (Table 8). One-way ANOVA Test shows that journals' policy and authors' behavior for author and journal self-citation did not change in each five years. It seems that both journal editorial boards and authors have a tendency toward self-citation in general.

Table 8

Changes of Both Author and Journal Self-citation Rates in Different Years

Descriptives

Journal self citation

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
2006	14	1.0000	1.30089	.34768	.2489	1.7511	.00	5.00
2005	11	1.3663	1.20605	.36364	.5534	2.1739	.00	4.00
2004	8	1.2500	1.38873	.49099	.0890	2.4110	.00	4.00
2003	9	.8889	1.36423	.45474	-.1597	1.9375	.00	4.00
2002	9	.7778	1.09291	.36430	-.0623	1.6179	.00	3.00
Total	51	1.0588	1.23954	.17357	.7102	1.4075	.00	5.00

ANOVA

Journal Self-citation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.334	4	.583	.360	.836
Within Groups	74.490	46	1.619		
Total	76.824	50			

Author Self-citation

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
2006	14	1.4286	1.15787	.30945	.7600	2.0971	.00	5.00
2005	11	1.5455	1.43970	.43408	.5783	2.5127	.00	4.00
2004	8	2.1250	.99103	.35038	1.2965	2.9535	.00	4.00
2003	9	1.4444	1.13039	.37680	.5756	2.3133	.00	4.00
2002	9	2.2222	1.301711	.43390	1.2216	3.2228	.00	4.00
Total	51	1.7059	1.22138	.17103	1.3624	2.0494	.00	5.00

ANOVA

Author Self-citation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.780	4	1.445	.966	.435
Within Groups	68.809	46	1.496		
Total	74.588	50			

Relation between Number of Articles and Journal Impact Factor

Table 9 clearly demonstrates that journal Impact Factor is not influenced by the number of articles.

Table 9

Correlation between Number of Articles and Impact Factor

		impact factor	number of articles
impact factor	Pearson Correlation	1	-.031
	Sig. (2-tailed)	.	.831
	N	51	51
number of articles	Pearson Correlation	-.031	1
	Sig. (2-tailed)	.831	.
	N	51	51

Discussion

It is a fact that a portion of total citations to a journal includes self-citation (Mcveigh, 2002). Present study shows that 88% of Persian journals in engineering field publish with 41% of journal self-citation and 61% of journals publish with 66% of author self-citation. These rates are near to self-citation rates of Persian journals in medical sciences (61.5%) (Ghane, 2008), but higher than the rates for different scientific disciplines (Aksnes, 2003), medicine (Gami et al., 2004), social sciences and humanities (Snyder & Bonzi, 1998). Impact Factor is affected by both author self-citation and journal self-citation, but the influence of author self-citation is a little bit stronger than journal self-citation [(r = 0.0397, Sig. = 0.004 versus r = 0.300, Sig. = 0.032)]. The findings show the number of articles has no effect on journal Impact Factor (r = 0.031, sig. = 0.831). Since a vast change in the rank of journals is observed after elimination of self-citation, on the whole self-citation should be considered as a relevant factor in evaluation of JIF (Miguel & Marti-Bonmati, 2002).

Each author self-citation and journal self-citation counts per publications ranged from 0 to 5 in which the maximum is less than Gami et al. (2004) findings. The important finding of present study is that author self-citations include approximately 66% (two-third), and journal self-citation 41% (two-fifth) of all citations to articles in engineering field. Of these 74.5% of journals received author self-citation from 1 to 3 and 13.5% from 4 to 5, but these proportions for journal self-citation are 53% and 8% from 1 to 3 and 4 to 5, respectively. These results are in contrast to GAMI et al. (2004) findings. Thus, the maximal rankings change in the journals is expected after self-citation removal. In this regard only about 13.7 % and 15.7% of journals maintain their position after correction for author self-citation and journal self-citation, respectively. Another finding of this study is that the number of articles is not correlated significantly with JIF which is parallel to Tsay's (2006) results. The results of this study also demonstrate the effect of journal self-citation and author self-citation on JIF that is corresponding with Gami et al. (2004), and Fassoulaki et al. (2000), but are contrast with Nisonger (2000), Mcveigh (2004), and Kraus results (2007). The study demonstrates an increase in ASC rate that is approximately following a regular rhythm. This shows the stability of the journals' policy in ASC behavior. Since JSC is in its infancy, journal editorial boards and contributors are less concerned about JSC. Therefore, on the subject of JSC we observe much vibration in different years. The results of this study display the authors' concentrations on ASC.

Although, self-citation is acceptable to some extent (at the most 20%) according to an investigation on ISI journals (Mcveigh, 2002), but its effect on JIF is inevitable. The results of this study and previous investigations emphasize the existence of self-citations among total citations to a journal. If it exceeds higher than the threshold, concerning the difference between disciplines (Amin & Mabe, 2000 in Yu & Wang, 2007), it is suggested to recalculate JIF to avoid artificial inflation of JIF. Otherwise, Impact Factor loses its importance as a measurement and it is logical to be concerned about self-citation (Daya, 2004). According to the findings of present study it seems that the Persian journal policy in engineering field should change in article selection as well as authors' citation behavior.

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Appendix: Journal performance without inclusion of both author self-citation and journal self-citation.

Table 10

Journal Performance without Inclusion of Journal Self-citation in 2006

Journals	2006 IF	AIF	Rank in 2006	Adjusted rank	Change in rank
1	0.080	0.040	1	2	-1
2	0.069	0	2	8	-6
3	0.061	0.030	3	3	0
4	0.046	0.046	4	1	3
5	0.037	0	5	8	-3
6	0.033	0	6	8	-2
7	0.029	0.009	7	7	0
8	0.027	0.020	8	4	4
9	0.022	0	9	8	1
10	0.014	0	10	8	2
11	0.014	0.014	11	5	6
12	0.014	0.014	11	5	6
13	0.014	0.014	11	5	6
14	0.012	0.012	12	6	6

Table 11

Journal Performance without Inclusion of Journal Self-citation in 2005

journals	2005 IF	AIF	Rank in 2005	Adjusted rank	Change in rank
1	0.081	0.027	1	1	0
2	0.066	0.013	2	6	-4
3	0.042	0	3	8	-5
4	0.032	0	4	8	-4
5	0.030	0.015	5	5	0
6	0.029	0	6	8	-2
7	0.029	0.023	6	3	3
8	0.025	0.025	7	2	5
9	0.017	0.017	8	4	4
10	0.016	0.008	9	7	2
11	0.015	0	10	8	2

Table 12

Journal Performance without Inclusion of Journal Self-citation in 2004

Journals	2004 IF	AIF	Rank in 2004	Adjusted rank	Change in rank
1	0.143	0.143	1	1	0
2	0.117	0.05	2	4	-2
3	0.111	0.111	3	2	1
4	0.065	0.052	4	3	1
5	0.057	0.029	5	6	-1
6	0.49	0.037	6	5	1
7	0.028	0	7	8	-1
8	0.019	0.019	8	7	1

Table 13

Journal Performance without Inclusion of Journal Self-citation in 2003

Journals	2003 IF	AIF	Rank in 2003	Adjust ed rank	Change in rank
1	0.048	0.016	1	5	-4
2	0.037	0.037	2	1	1
3	0.029	0.029	3	2	1
4	0.029	0	3	8	-5
5	0.029	0	3	8	-5
6	0.026	0.026	4	3	1
7	0.024	0.024	5	4	1
8	0.014	0.007	6	6	0
9	0.009	0.009	7	7	0

Table 14

Journal Performance without Inclusion of Journal Self-citation in 2002

Journals	2002 IF	AIF	Rank in 2002	Adjusted rank	Change in rank
1	0.090	0.090	1	2	-1
2	0.94	0.038	2	5	-3
3	0.093	0.093	3	1	2
4	0.081	0.054	4	3	1
5	0.046	0.046	5	4	1
6	0.032	0.032	6	6	0
7	0.024	0	7	9	-2
8	0.020	0.01	8	7	1
9	0.009	0.009	9	8	1

Table 15

Journal Performance without Inclusion of Author Self-citation in 2006

journals	2006 IF	AIF	Rank in 2006	Adjusted rank	Change in rank
1	0.080	0.040	1	2	-1
2	0.069	0.055	2	1	1
3	0.061	0	3	7	-4
4	0.046	0.015	4	5	-1
5	0.037	0	5	7	-2
6	0.033	0	6	7	-1
7	0.029	0.019	7	4	3
8	0.027	0	8	7	1
9	0.022	0.022	9	3	6
10	0.014	0	10	7	3
11	0.014	0	11	7	4
12	0.014	0.007	11	6	5
13	0.014	0	11	7	4
14	0.012	0	12	7	5

Table 16

Journal Performance without Inclusion of Author Self-citation in 2005

journals	2005 IF	AIF	Rank in 2005	Adjusted rank	Change in rank
1	0.081	0.054	1	1	0
2	0.066	0.039	2	3	-1
3	0.042	0.042	3	2	1
4	0.032	0	4	7	-3
5	0.030	0	5	7	-2
6	0.029	0.029	6	4	2
7	0.029	0.006	6	6	0
8	0.025	0	7	7	0
9	0.017	0	8	7	1
10	0.016	0	9	7	2
11	0.015	0.015	10	5	5

Table 17

Journal Performance without Inclusion of Author Self-citation in 2004

Journals	2004 IF	AIF	Rank in 2004	Adjusted rank	Change in rank
1	0.143	0	1	5	-4
2	0.117	0.066	2	1	1
3	0.111	0	3	5	-2
4	0.065	0.039	4	2	2
5	0.057	0	5	5	0
6	0.49	0.025	6	3	3
7	0.028	0.014	7	4	3
8	0.019	0	8	5	3

Table 18

Journal Performance without Inclusion of Author Self-citation in 2003

Journals	2003 IF	AIF	Rank in 2003	Adjusted rank	Change in rank
1	0.048	0.016	1	2	-1
2	0.037	0	2	3	-1
3	0.029	0	3	3	0
4	0.029	0.029	3	1	2
5	0.029	0	3	3	0
6	0.026	0	4	3	1
7	0.024	0	5	3	2
8	0.014	0	6	3	3
9	0.009	0	7	3	4

Table 19

Journal Performance without Inclusion of Author Self-citation in 2002

Journals	2002 IF	AIF	Rank in 2002	Adjusted rank	Change in rank
1	0.090	0	1	6	-5
2	0.94	0.019	2	4	-2
3	0.093	0.046	3	1	2
4	0.081	0.040	4	2	2
5	0.046	0	5	6	-1
6	0.032	0	6	6	0
7	0.024	0.24	7	3	3
8	0.020	0	8	6	2
9	0.009	0.017	9	5	4