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Does "Evaluating Journal Quality and the Association for Information Systems Senior Scholars Journal Basket…" Support the Basket with Bibliometric Measures?

Alex Stewart
Memorial University of Newfoundland
a.stewart@mun.ca

John L. Cotton
Marquette University
John.cotton@marquette.edu

Abstract:

We re-examine "Evaluating Journal Quality and the Association for Information Systems Senior Scholars Journal Basket…" by Lowry et al. (2013). They sought to use bibliometric methods to validate the Basket as the eight top quality journals that are "strictly speaking, IS journals" (Lowry et al., 2013, pp. 995, 997). They examined 21 journals out of 140 journals considered as possible IS journals. We also expand the sample to 73 of the 140 journals. Our sample includes a wider range of approaches to IS, although all were suggested by IS scholars in a survey by Lowry and colleagues. We also use the same sample of 21 journals in Lowry et al. with the same methods of analysis so far as possible. With the narrow sample, we replicate Lowry et al. as closely as we can, whereas with the broader sample we employ a conceptual replication. This latter replication also employs alternative methods. For example, we consider citations (a quality measure) and centrality (a relevance measure in this context) as distinct, rather than merging them as in Lowry et al. High centrality scores from the sample of 73 journals do not necessarily indicate close connections with IS. Therefore, we determine which journals are of high quality and closely connected with the Basket and with their sample. These results support the broad purpose of Lowry et al., finding a wider set of high quality and relevant journals than just *MISQ* and *ISR*, and find a wider set of relevant, top quality journals.

Keywords: Basket of Eight, AIS Senior Scholars, journal ranking, bibliometrics, social network analysis, cross-citations, disciplines

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1 Introduction

This study is a replication of "Evaluating journal quality and the Association for Information Systems Senior Scholars' Basket via bibliometric measures: Do expert journal assessments add value?" (Lowry et al. 2013; hereafter, Lowry et al.). This was the lead article in *MIS Quarterly* (*MISQ*) 37(4). As their title indicates, their study focused on evaluating the top Information Systems (IS) journals. They sought "sound empirical evidence" for the Basket (which they call Sens-8 (p. 995)). They looked to find "whether the [the Basket] journals are truly the top eight journals in IS and whether they should or should not be rank-ordered" (p. 996).

We replicated their study using the same sample of 21 journals, and as well as with a larger sample of 73 journals. With the narrow sample (21 journals), we replicate Lowry et al. as closely as we can, whereas with the broader sample (73 journals) we employ a conceptual replication. The key findings of our study, compared to those of Lowry et al. are (noted by "[NSR]" for narrow sample replication and "[BSR]" for broader sample replication):

- Lowry et al.: The Basket journals have higher citations, centrality, and joint citation-centrality scores than 13 comparison IS journals; [NSR] and [BSR]: Significant support.
- Lowry et al.: The *Journal of Information Technology* (*JIT*) has too many journal self-citations for a top journal; [NSR]: *JIT* has few self-citations and belongs in the Basket.
- Lowry et al.: The top ten journals include *Decision Support Systems* and *Information and Management*; [NSR] and [BSR]: the same finding as Lowry et al.

Other key findings follow, referring to average scores:

- [NSR] and [BSR]: The top eight non-Basket journals are significantly more highly cited than the Basket journals.
- [NSR]: The top eight non-Basket journals are significantly more central than the Basket journals. *However*, [BSR]: The Basket journals are significantly more central than the eight top non-Basket journals.
- [NSR]: The top eight non-Basket journals are significantly higher in joint (citation and centrality) score than the Basket journals. *However*, [BSR]: The difference is small and insignificant.
- [NSR] and [BSR]: Non-IS journals are significantly more highly cited than IS journals.
- [NSR]: IS journals are not significantly more central than non-IS journals. *However*, [BSR]: IS journals are significantly more central than non-IS journals.

We also conducted two post-hoc analyses. First, we found that citation and centrality scores are distinct. The correlations between them are 0.300 [NSR] and 0.199 [BSR]. Only one journal, *MISQ*, is near the citation-centrality frontier. All other journal outlets involve tradeoffs between the two qualities. Moreover, IS journals are not clearly higher in centrality, as Lowry et al. define it, than non-IS journals. Therefore, we searched for journals, not among the Basket journals or the IS journals in Lowry et al., that might have high citation scores and very strong cross-citations with the Basket. Based on Simmelian Ties analysis, we suggest that *Management Science* meets these criteria based on direct cross-citations, with four other journals meeting them with two-step connections. These findings also support Lowry et al. in their treatment of the fields of Information Science, Management, and Software Engineering as less connected with IS.

We also explored whether the IS journals receive recognition from other disciplines equal to the influence of these disciplines on IS. For this, we analyzed each journal's balance of trade. IS journals display a modestly significant deficit in their balance of trade with non-IS journals. Thus, IS can still make progress in its effort to become a reference discipline.

2 The Focal Study: Lowry et al. (2013)

Lowry et al. first determined which journals they viewed as properly "IS" journals. Having done so, they applied to these journals various measures of citation impact and of social network analysis (SNA) centrality. It appears that both were treated as measures of quality (pp. 998-999). Citations are a widely noted, and widely debated, indicator of journal quality (Saha, Saint, & Christakis, 2003; see also the Appendix below). Centrality is a less well known but useful indicator of disciplinary relevance (Leydesdorff, 2007). Centrality is an important addition to citation measures, because some journals – such as major medical journals – have extremely high citation scores but little relevance to IS (with some possible exceptions in medical informatics). Thus, both types of measures are appropriate given the goals of Lowry et al., which combined them as the primary approach to rank ordering the sample journals and thereby assessing the relative standing of the Basket.

Bibliometric results in Lowry et al. are based on a composite measure of various citation and centrality measures. Lowry and colleagues developed four alternative "weighting schemes" (p. 1002), and determined that weighting schemes did not bias their findings of the rank orders among the sampled journals. Their composite measure of journal quality is presented in Table F3 (p. A18; see also p. 1002). Their measures showed that the eight Basket journals ranked first through third, and sixth through tenth, with only *Information and Management* (fourth) and *Decision Support Systems* (fifth) ranking above the other five Basket journals. Thus, they concluded that their "results largely support the [Basket…] validating *MISQ*, *ISQ*, and *JMIS* [*Journal of Management Information Systems*] as the top tiered (i.e., 'A+') journals, [and] we found evidence that [the other five Basket journals] occupy the next tier (i.e., 'A')" (Lowry et al., 2013, p. 1006). They also noted that the *Journal of Information Technology* (*JIT*) has many self-citations, for which reason they suggested that the Basket "might require adjustment" as a "'Select-7'" (p. 1006).

2.1 Why Lowry et al. and the Basket of Eight are important

Lowry et al. is worthy of replication because it asks an important question affecting the careers of IS faculty. Its importance was flagged by its position as the lead article in an elite IS journal. Also, as of 9/17/17 it had 66 citations in Google Scholar (GS), and 23 in Web of Science (WoS), two of which are explicitly supportive (Chan, Guness & Kim, 2015; Templeton & Lewis, 2015). More importantly, Lowry et al. deals with a topic of concern to IS scholars: the stature and delineation of their leading journals. As a demonstration of this concern, a search in GS for ("information systems" and "senior scholars basket") retrieves 570 citations (also 9/17/17).

Several characteristics of some research fields militate against appropriate recognition for the quality of their scholarly work. We note three. First, like start-up firms, younger fields may lack widespread legitimacy (Aldrich & Tang, 2012; Stinchcombe, 1965). They may lack accepted "myths of origin" (Abir-Am, 1985), as for example the roles of Durkheim, Pareto and Weber in the origins of sociology (Aron, 1999). They may not have settled on interdisciplinary or disciplinary status (Small, 1999). They must draw upon older, "reference" disciplines (Baskerville & Myers, 2002), making it harder to assert unique capacities to resolve important questions (Hambrick & Chen, 2008). Further, they do not yet control many university departments as their own, making it difficult to develop an internal labor market of scholars trained specifically in their area (Hambrick & Chen, 2008; Jacobs, 2014).

All the above characteristics apply to the field of Information Systems (IS). First, IS is a young field, with major journals dating from 1977 through 2000. Even Computer Science (CS), an older field than IS, has been called "a relatively young discipline" seeking to "legitimize… its own identity" (Bullynck, Daylight, & De Mol, 2015, p. 37). Thus, IS continues to draw upon older reference disciplines, such as CS and Management (Benbasat & Weber, 1996). It is frequently described as interdisciplinary (Bang, 2015; Bernroider, Pilkington, & Córdoba, 2013), regarding its attention to both technical and social concerns (Cecez-Kecmanovic, Galliers, Henfridsson, Newell, & Vidgen, 2014; Walsham, 2012). It does not typically enjoy departmental standing, but it does do so often enough to create some ambiguity as to its recognition. Taking as a convenience sample the 115 U.S. universities with the "highest research activity" in the latest

Carnegie classification – relatively large institutions and thus relatively differentiated (Richardson, 2008) – we find that 41 have a dedicated IS department (with IS or equivalent name), amounting to 41.8% of the universities that do offer IS in some manner.

It is therefore not surprising if IS scholars may believe they suffer from of a history of “problems in career advancement” (Benbasat & Weber, 1996: 390). In particular, they have noted the small number of IS journals widely regarded as elite and included in the *Financial Times* 45 list (FT45 list, since replaced by the FT50 list, which includes the *Journal of Management Information Systems*): *Information Systems Research* and *MIS Quarterly* (Lowry et al., 2013; Templeton & Lewis, 2015; Valacich, Fuller, Schneider, & Dennis, 2006). In the view of Lowry and colleagues (2013: 994), “most other business areas have significantly more elite publishing opportunities than IS researchers.” As they reported, “in response… the Association for Information Systems (AIS) Senior Scholars publicly endorsed a basket of six plus two top IS journals… and then… in December 2011 decided to include all eight of these journals in a single list” (2013, p. 995; also Love & Hirschheim, 2015). These journals (hereafter the Basket) were accorded the status of the “top journals in our field”: (http://aisnet.org/?SeniorScholarBasket).

2.2 Why the Basket might omit top IS journals

As the summary in Lowry et al. implies, the “Basket” has gained widespread, though not universal, acceptance (e.g. Bernroider et al., 2013; Chan, Guness, & Kim, 2015). We find evidence, presented in the Appendix, that its promotion by the AIS College of Senior Scholars has increased the prominence of the eight journals. However, there is evidence that IS scholars publish in a wide range of journals, both technical and managerial (Willcocks, Whitley, & Avgeron, 2008). Thus, it is unclear if IS scholars hew closely to the publishing prescriptions of the Senior Scholars or of Lowry et al. Dean, Lowry and Humpherys (2011) examined this question by collecting the pre-promotion publication records of IS faculty members, and found that they “publish in high numbers” in CS and engineering journals (23% of their “top tier” articles) and in non-IS business journals (22%; Dean, Lowry, & Humpherys, 2011, pp. 9, 12). Following their procedures, we limited our sample to recent cases of designated IS scholars in U.S. business schools, but used a more recent time frame, and found very similar results. Details of our modest replication of their study are found in the Appendix (Table A1).

Based on this overview, it seems clear that the venues for IS publications include a wide array of journals – as in fact, the Senior Scholars recognized themselves:

> In schools with a highly technical focus, the adopted journal list should obviously include highly-rated and/or highly-cited technical journals. Other programs draw from and contribute to a multidisciplinary base, and should include journals from other fields such as computer science, economics, psychology, biometrics, and human-computer Interaction. The College of Senior Scholars focused on behavioral, business-oriented IS research, which might reflect a majority, but is not a universal model that fits (or even should fit) all schools. http://aisnet.org/?SeniorScholarBasket

The set of journals that are appropriate for IS research might be broader than the “behavioral, business-oriented” journals proposed by the Senior Scholars or examined by Lowry and colleagues. Lowry et al. excluded 28 journals for being “primarily CS” and not “strictly speaking, IS journals” (Lowry et al., 2013, p. 997), even though the IS scholar respondents had proposed them as IS journals. Based on this logic, we can think of the included journals as “primarily IS” journals and the proposed but excluded journals as “secondarily IS” journals. These secondarily IS journals covered technically oriented ACM and IEEE journals, but also four journals with a focus on data Management and decision making: *Expert Systems with Applications*, *Information and Software Technology*, *Journal of Systems and Software*, and *Knowledge-Based Systems*. These journals all refer to Management or implementation and organizational issues in their self-depiction. Claims to a distinctive domain for IS often emphasize its consideration of the joint influences of changing technologies and of management (Hirschheim & Klein, 2012; Lyytinen & King, 2004; Walsham, 2012).

Classic works in Management, such as Burns & Stalker (1961) and Thompson (1967), and influential schools of thought such as the Tavistock studies (e.g., Trist & Bamforth, 1951) and the Aston School (e.g., Hickson, Pugh, & Pheysey, 1969) showed a keen interest in technology. It is also easy to find current Management studies with technology in the foreground (e.g., Barley, 2015; Davis, 2016). However, approaches to thinking about technology have changed over time (Cascio & Montealegre, 2016; Orlikowski & Scott, 2008) and it is possible that Management has lost its claims to include important technological topics (Leonardi & Barley, 2010).

We wondered, then, how a broader delineation of journals, such as the Management and CS journals considered but rejected by Lowry et al., would fare as IS outlets if we adopted their methods? Despite their goal of "empirical", "bibliometric" support for the Basket, their categorization of journals based on discipline was based on subjective judgments, not bibliometric findings. We lack empirical evidence that, for example, all CS or Management journals are less appropriate for IS research. The Lowry sample was limited to 21 journals more for perceived lack of relevance (i.e., disciplinary provenance) than for limited prominence (i.e., citations).[1] It is possible that some journals classified as secondarily IS are actually primarily IS, and vice versa (although the latter possibility seems unlikely).

Several IS scholars have asserted that the IS field is fundamentally cross-disciplinary (e.g., Bang, 2015; Bernroider et al., 2013, Hasselbring, 2000). Stewart, Cotton, and Adya (2017) reported evidence that more than 21 IS journals form a cohesive web of cross-citations. Their sample of 98 journals included those with a focus on "Knowledge and Data Management" (KD), "Computer Networking" (CN), "Health Informatics" (HI), and "Behavioral" (BEH). Based on this sample, they found IS to be "a heterogeneous but nonetheless cohesive discipline", due to the bridging role played by certain journals, particularly those they depicted as KD (p. 597).

2.3 Sampling decisions

To explore whether a wider sample demonstrates a wider set of "quality" IS journals (again, as Lowry et al. define quality), we undertook a broader sample replication of their article. Insofar as we replicate the methods in Lowry et al. to the extent currently possible with the same sample, we cannot do so entirely due to change over time in Google Scholar. Thus, our narrow sample replication is not exactly the type that Tsang and Kwan (1999) called "exact." The broader sample replication is the type that Tsang and Kwan (1999, p. 766) called a "conceptual extension" and Schmidt (2009) called a "constructive" replication. To form their sample, the Lowry et al. team considered 140 journals that had been included in prior rankings or that were suggested for inclusion in a survey of 2,816 IS scholars. They winnowed this list by means of a variety of judgments. Some of these judgments were clearly necessary, such as excluding journals no longer in print or not amenable to searches in WoS (and hence impossible to include reliably in a cross-citation matrix). The most important of the judgments considered the core discipline of the journal.

Lowry et al. excluded a total of 55 journals for their disciplinary focus most often on the grounds of being classed as largely Computer Science, Operations Research – Operations Management, or Management journals. The ultimate sample examined in Lowry et al. consists of 21 journals, consisting of eight Basket journals and 13 comparison journals. The winnowing involved in this process is depicted in Table 1. Our sample includes only journals that were suggested by their respondents and considered for inclusion and then either included or rejected by Lowry et al. Therefore, we have reason to expect that they are at least IS-related if not IS-focused. Expanding the sample is a common basis for conceptual replications (Lynch, Bradlow, Huber & Lehmann, 2015).

[1] Lowry et al. excluded 34 journals for being "not top-40" and 55 for belonging to non-IS disciplines. They also listed six journals for being a "write-in by several experts, top-40" and included one, *MIS Quarterly Executive*.

Table 1: Formation of the Sample in Lowry et al. and the Replication Study			
Number		**Number**	
140	Titles in Lowry et al. Considered for Inclusion	140	Titles in Replication Considered for Inclusion
Drop Number:		**Drop Number:**	
3	Not singular titles	3	Not singular titles
1	Excluded as magazines	1	Excluded but due to JCR data, 2 included
4	Out of print	4	Out of print
6	"Not top 40"	2	Only 2 excluded due to absent cross-citations
14	Not explicitly excluded or included	9	5 dropped due to absent cross-citations, 3 dropped as in other component, 1 for a redundant title
55	Discipline is CS (28), MGT (10), MGT/OB (7) etc.	11	6 for absent cross-citations, 3 for component, 1 for a merger, 1 as not singular
5	Top 40 but excluded write-ins	5	Lack of WoS data
31	Not ranked before, not top 40	31	Following Lowry et al.
119	Total non-inclusions	67	Total non-inclusions
21	Final sample	73	Final sample

Note: Based on the categorization of disciplines in Lowry et al.: their sample is made up of 21 IS journals; the broader sample has 29 from IS, 21 from CS, 9 from Management or Management/OB, 5 from OR/OM. 3 from HCI and 3 from Information Science, 2 from Communication, 1 from Decision Sciences

Table 1 also shows the formation of the larger replication sample. Our purpose was to sample journals that might include a wider range of high quality outlets for IS scholarship. All 140 of the considered journals had been regarded by some IS scholars as fitting this requirement. Thus, as with the Lowry et al. scholars, we began with the potential sample of 140. We accepted many of the exclusions of journals Lowry et al., most notably exclusions with the “justification” “write-in; not ranked before; not top 40” (Lowry et al. 2013, Table B1). We dropped the Lowry et al. exclusion of being “primarily” in another discipline. Some of the journals excluded for this reason might prove to be peripheral to IS concerns, but we wanted to use empirical, bibliometric methods prior to excluding them.[2]

Having opened the sample to include journals that might or might not prove to be peripheral, we added exclusionary principles not needed in Lowry et al., which already had a sample determined to be based in IS. We needed to be sure that all the journals in our sample were connected by cross-citations to the 21 IS journals in the Lowry et al. sample. We checked this in two ways. The first is based on SNA concepts of cohesion. We removed seven journals because their inclusion resulted in lower cohesion as measured by the number and strength of components. In a “strong” component, each node -journal, in this case - can reach every other node through paths in both directions - citing and cited cross-citations (Borgatti, Everett & Johnson, 2013, p. 23). Before removing the seven journals, there was only one component, but it was weak. After removing them, it was strong. These seven excluded journals included one in the Lowry et

[2] We interpreted the “*Journal on Computing*” in Lowry et al. as the *INFORMS Journal on Computing* because its publisher is an “elite academic organization” (Lowry et al., 2013, p. 1007) – INFORMS – that also publishes *Information Systems Research*, *Management Science*, and *Organization Science*. A *SIAM Journal on Computing* and a *GSTF Journal on Computing* also exist, but neither is noted in the Lowry list of considered journals.

al. sample. *MIS Quarterly Executive* has no outdegrees (citing ties) to any of the other journals. Further details about the use of component analysis are in the Appendix.

2.4 Method differences and similarities

Methodologically, this replication and Lowry et al. are similar. Both studies use citations within wider samples, such as the Web of Science (WoS) dataset, and from selected alternative sources such as Google Scholar. Both use social network methods to analyze the centrality of journals in a cross-citation matrix of the study sample. This replication uses the methods of Lowry et al. where possible and closely related methods where we find reasons to suggest them as alternatives. Conceptual replications can differ from the focal study both in the sample and in the measures (Schmidt, 2009). Thus, we use these alternative measures for reasons discussed below, but also many of the same measures as in Lowry et al. We will note these technical differences. For example, Lowry et al. collapses citations and centrality into a singular metric, but we find that these measures provide distinct information and thus we *also* treat them distinctly.

Citations directly reflect journal influence and, by extension, journal quality within the universe of indexed journals. Centrality reflects the position of the journal within a delimited sample and, by extension, journal relevance as perceived by the authors in that sample (Appendix). A journal may be high in citations and low in centrality, because it may be widely cited in other disciplines but not much cited in IS, and of course the opposite is also possible. Unlike citations, which derive from any journal recognized by ISI or other database, such as Scopus, centrality measures are contingent on the delineation of the network (Anderson, Håkansson, & Johanson, 1994). By centrality, Lowry et al. meant the “influence” of a journal (p. 999). In general, this is reasonable. In context, however, social network centrality measures the association with a particular matrix, which in this case is a particular set of IS-related journals. Thus, we interpret citations as measures of global prominence and centrality as measures of contextual (i.e. disciplinary or content) association and relevance.

Lowry et al. did not control for number of articles per journal, but this had only a modest effect. All of the citation measures and two of the centrality measures – Information Centrality and Bonacich Power Centrality – are size-independent due to dichotomized data. However, this is not the case with degree centrality measures. The degree measures are absolute, and not relative to the number of articles published by each journal. A case can be made that this is appropriate. Centrality is construed in their study and ours as a measure of relevance, and it is hard to make a case for the relevance of a journal with few articles. That is, relevance has an absolute quality. However, it is also hard to argue that a journal becomes relevant by virtue of producing massive numbers of articles. Thus, for degree centrality measures, we controlled for the number of articles that could cite or be cited, using Journal Citation Reports data in the Web of Science.

2.5 Citation and centrality measures in Lowry et al. and this replication

Lowry et al. used two citation measures that are widely adopted but that perhaps should be treated with caution: the h-index and its variants and citations per paper from Google Scholar (GS). We use the h-index and its variants only for reasons of comparison but not for our suggested alternative rankings. These measures are popular, but several authors have demonstrated that these measures are flawed.[3] These measures also rely on GS, as does their measure of citations per paper. Aguillo (2012, p. 343) summarizes the overall problem with GS: it “lacks the quality control needed for its use as a bibliometric tool; the larger coverage it provides consists in some cases of items not comparable with those provided by other similar databases.” Critiques by information scientists of the h-index and of GS are summarized in the Appendix.

Because of the limitations noted for GS, we replicated GS metrics so far as possible for purposes of the narrow sample replication, but for measures of prominence we also drew upon metrics from dedicated

[3] Waltman and van Eyk (2012) demonstrated that the h-index generates incoherent results given relative and absolute changes in performance (i.e. impact), and generates inconsistent results across levels of aggregation.

bibliometric databases. We used three measures from Journal Citation Reports (JCR) in WoS that were also used by Lowry et al.: two year JIF without self-citations, five year JIF, and article influence, plus three measures that draw upon the larger Scopus database: SNIP (which adjusts for the citing proclivity of the citing journals), SJR (a size-independent measure which adjusts for the cited prominence of the citing journals) and the Impact per Paper (akin to a three-year JIF). WoS and Scopus measures “yield comparable rankings” (Sicilia, Sánchez-Alonso, & García-Barriocanal, 2011, p. 703; see also Colledge et al., 2010; Haddawy & Hassan, 2014). These six metrics are more stable than those from GS.

Lowry et al. used three measures from SNA: Freeman degree (FD), Information Centrality (IC) and Bonacich Power (BP). They do not specify the symmetrization method they chose for IC nor their meaning of the term Freeman Degree. FD measures could refer to the indegree, in this case citations received, to the outdegree, in this case citations sent, or the mean of the two. Using outdegrees would be reasonable, because they are an unobtrusive measure of the perceived areas of relevance for a journal. However, using indegrees is also appropriate, as citations received are reflective of the recognition of a focal journal than are citations sent. Based on our replication of their matrix, we determined that they used indegrees. We also determined that the symmetrization method used for Information Centrality appears to have been the default in UCINET, which is the maximum method. The use of Bonacich Power (BP) raises a different question. With Bonacich Power, the authors reported their choice of beta (0.075). However, the question is whether it is an appropriate measure at all in this context. Because its measures are erratic and hard to reconcile with other measures, we chose to report BP results (incorporated with results replicating Lowry) but not to employ them in our analysis of the replication sample of 73 journals. For details please see the Appendix, which lists topics at the beginning.

2.5 Hypotheses

Lowry et al. found that the Basket out-performed the other IS journals they sampled for comparison (the “comparison” journals). We added 52 other journals. With these, we calculate the highest ranked eight non-Basket journals, to match the Basket’s number, for each relevant measure. In the spirit of a replication of an article from a major journal, we posit support of the results in Lowry et al. Thus, we derive the following for the standing of the Basket relative to the comparison journals (i.e., the 13 non-Basket journals in the sample in Lowry et al., 2013):

Hypothesis 1a: *Basket journals have higher joint scores averaging across citations and centrality than the comparison IS journals in Lowry et al., in narrow sample replication using our closest approximations of the joint citation and centrality measures in Lowry et al.*

Hypothesis 1b: *Basket journals have higher joint scores averaging across citations and centrality than the comparison IS journals in Lowry et al., in broader sample replication using our suggested joint citation and centrality measures.*

Our sample represents eight different disciplines, as categorized by Lowry et al. (Table 1). The IS discipline (as defined by Lowry et al.) is represented by 29 journals, compared with CS, the next most represented, with 21 journals. The next best represented discipline is Management, with nine journals. We expect that these journals are more likely to cross-cite with IS than with CS. We expect that IS journals, as defined by Lowry et al, will have the most cross-citations with the other such IS journals, compared with journals excluded by Lowry et al. as belonging predominantly to fields such as CS and Management. Therefore, we expect that IS journals will be the most central in SNA measures, whereas the journals excluded by Lowry et al. will be less central. As we have noted, these centrality measures are indicators of the relevance of the journals for the sample. Therefore, we derive the following:

Hypothesis 2a: *IS journals will have higher SNA centrality scores than journals excluded as non-IS by Lowry et al., in narrow sample replication.*

Hypothesis 2b: *IS journals will have higher SNA centrality scores than journals excluded as non-IS by Lowry et al., in broader sample replication.*

Lowry et al. used a joint measure of journal quality that includes both citations and social network centrality. However, citation and centrality measures are distinct. Citations derive from any of the thousands of journals covered by Web of Science or other large datasets, but centrality scores derive only from the journals in a sample; 21 in the case of Lowry et al. and 73 in the case of our broader sample. These samples include only journals that have a possible link with IS. Centrality in both studies more specifically indicates recognition by scholars in, or relevant to, IS. Further, most centrality measures are two-directional. They are based on citations received (indegrees) and on citations sent (outdegrees). Citations are based on indegrees only. Because of these differences, a journal could be extremely high in citations but low in centrality, or vice versa. Therefore, we measure citation and centrality separately, and derive the following:

Hypothesis 3a: *Basket journals have higher average citation scores than the comparison IS journals in Lowry et al., in narrow sample replication.*

Hypothesis 3b: *Basket journals have higher average citation scores than the comparison IS journals in Lowry et al., in broader sample replication.*

Hypothesis 4a: *Basket journals have higher average social network centrality scores than the comparison IS journals in Lowry et al., in narrow sample replication.*

Hypothesis 4b: *Basket journals have higher average social network centrality scores than the comparison IS journals in Lowry et al., in broader sample replication.*

We have no reason to doubt that the hypotheses above will be supported. Further, we have no reason to doubt that the same would be true if we compared the Basket journals with all the other 65 journals in our sample. However, we do not know if the Basket journals will have higher joint scores, citations, or centrality, than the eight non-Basket journals with the highest scores in any of the measures. Therefore, we derive hypotheses for the standing of the Basket relative to the top eight non-Basket journals for each measure paralleling those above:

Hypothesis 5a: *Basket journals have higher joint scores averaging across citations and centrality than the eight highest scoring other journals on these measures, in narrow sample replication.*

Hypothesis 5b: *Basket journals have higher joint scores averaging across citations and centrality than the eight highest scoring other journals on these measures, in broader sample replication.*

Hypothesis 6a: *Basket journals have higher average citation scores than the eight highest scoring other journals on these measures, in narrow sample replication.*

Hypothesis 6b: *Basket journals have higher average citation scores than the eight highest scoring other journals on these measures, in broader sample replication.*

Hypothesis 7a: *Basket journals have higher average social network centrality scores than the eight highest scoring other journals on these measures, in narrow sample replication.*

Hypothesis 7b: *Basket journals have higher average social network centrality scores than the comparison IS journals in Lowry et al., in narrow sample replication.*

We will consider that results for these hypotheses “support” Lowry et al. if these results are significantly consistent with their findings or assertions about journals or scholarly fields. We will consider that the results “fail to support” if the findings are not consistent with the expectation of findings or assertions in Lowry et al. We will consider that the results “significantly fail to support” if they are significantly *inconsistent* with their findings or assumptions.

3 Findings

3.1 Citation, centrality, and joint citation-centrality measures

Table A2 reports citations results for the primary sample of 73 journals. Table 2 reports the means of citations, centrality, and joint scores of both, for both the narrow sample and broader sample replications. The two approaches yield different results for some journals, but at the aggregate level are very similar. The narrow sample and broader sample citation approaches are correlated at r = 0.947. However, the two centrality measures are correlated at only r = 0.668. This discrepancy is due to our controlling for number of articles with degree centrality, and omission of Bonacich Centrality because it generates unintelligible results. The Appendix reports details of citation and centrality measures prior to being averaged as "composite" measures of citations or centrality. Table 2 is found at the end of the Appendix.

As with Lowry et al. for most purposes, we report citation results in z score form. We use two-tailed t tests with alpha of 0.05 for the significance of three comparisons. We compare differences between the Basket (B8 in the table) and the comparison journals, differences between the Basket and the eight top-ranked non-Basket journals, and differences between IS and non-IS journals. When we compare replication results with those of Lowry, with the narrow sample approach that uses the sample of journals focused clearly on IS, and compares the Basket with their comparison journals, we find support for their conclusions. This holds for the replication using somewhat different citations measures (i.e., the "broader sample" replication in the second column of results). The Basket scores as a category are significantly more cited, more central, and higher in joint scores, than the comparison scores as a category. Thus, the results are supportive of the higher quality of the Basket as expected in Hypotheses 1a, 1b, 3a, 3b, 4a, and 4b.

Hypotheses 5a, 5b, 6a, 6b, 7a, and 7b compare the Basket journals with the highest ranked eight other journals for each measure. For citations, the results are consistent between the narrow sample and broader sample replications. Both approaches find the top eight non-Basket journals to be significantly more cited than the Basket journals. For centrality, the two approaches yield opposite results. The narrow sample replication determines that the top eight non-Basket journals are significantly more central than the Basket journals, whereas the broader sample replication determines the inverse. Naturally, the joint measures, which average the citation and centrality scores, also yield different results depending on the replication approach. The narrow sample replication determines that the top non-Basket journals are significantly higher quality, in the terms of Lowry et al., than the Basket journals. However, the broader sample replication determines that the difference is small and insignificant.

When we compare IS with non-IS journals (as defined by Lowry et al.), we find that the non-IS journals are significantly more highly cited, regardless of replication approach. However, only the broader sample approach finds a significant difference between the centrality of IS and non-IS journals. As expected, the IS journals are more central. Because the results for citations and for centrality diverge, the differences for the joint scores are small. The differences are non-significant with the broader sample approach, thus failing to support Hypothesis 2b. The narrow sample approach yields marginally significant support for Hypothesis 2a.

3.2 Should *JIT* be dropped from the Basket?

Lowry et al. (2013, p. 1006) concluded that one of the Basket journals, the *Journal of Information Technology* (*JIT*), showed excessive levels of journal self-citation, and should therefore be dropped from the Basket, leaving a "Select-7" list of the top IS journals. We report our examination of this potential problem in the Appendix. Our findings on this topic materially fail to support their claims of excessive self-citations in *JIT*. Thus, our results are consistent with (at least) eight top Basket journals. Detailed results for centrality measures are presented in Table A3.

With *JIT* retained in the Basket, we can compare the rank ordering of the top journals in the Lowry et al. sample, according to the ranking in Lowry et al., the narrow sample replication, and the broader sample replication. In the aggregate, the rankings are very similar, with correlations on the order of 0.83. The replications and the Lowry et al. study include two IS journals, *Decision Support Systems* and *Information & Management*, in the same range as the Basket. The three rank orderings are listed in Table 3.

Table 3: Rank Orderings of the Basket and Other Top IS Journals Comparing the Two Replication Approaches with Lowry et al.

	Lowry et al.	**Narrow**	**Broader**
Decis Support Syst	5	3	7
Electron Commer R A	18	10	12
Eur J Inform Syst	9	7	9
Inform Manage-Amster	4	5	6
Inform Syst J	10	11	10
Inform Syst Res	2	2	4
J Assoc Inf Syst	6	6	2
J Inf Technol	7	9	8
J Manage Inform Syst	3	4	3
J Strategic Inf Syst	8	8	5
MIS Quart	1	1	1
Correlations			
Lowry et al. - Narrow	0.827		
Lowry et al. - Broader	0.834		

4 Post Hoc Analyses

We developed two post hoc analyses, based on issues raised by the findings above. First, we wondered whether centrality is an adequate measure of relevance in the broader sample replication. With the wider sample for this replication, high centrality scores might be driven by connections among journals that do not focus on IS. Thus, we sought alternative ways to examine which journals are especially focused on the discipline. Second, within the wider sample, the IS journals are less highly cited than the non-IS journals. Recalling that these latter journals had all been recommended as IS journals by the experts surveyed by Lowry et al., yet excluded for a lack of focus on IS, we wondered if the differences in citations might indicate that IS had not yet (at that time) become a reference discipline, with related disciplines having more influence on IS than the reverse. Thus, we examined the “balance of trade” among the broader sample of journals.

4.1 Disaggregating citation and centrality measures

In Lowry et al, citations and centrality are combined for a joint measure of journal quality, an approach that we interpret as measuring journal recognition by the scholarly community in general and recognition by the field in question, which in turn captures the relevance of the journal in that field. We thus see the value in combining the measures. However, they are distinct, with a correlation of 0.300 using the narrow sample approach and 0.199 using the broader sample approach. The reason for this low correlation is the difference in the population of journals that send citations. The average citation measures represent indegrees from all journals covered by Web of Science or Google Scholar, whereas the average centrality measures represent indegrees from only the 73 journals in the sample. Journals differ in their recognition by journals in the wider population compared with recognition within a discipline.

Several journals that Lowry et al. classify as non-IS focused score highly in at least one of the two replication approaches. *Academy of Management Journal*, *Academy of Management Review*, *Administrative Science Quarterly*, *European Journal of Operational Research*, *Expert Systems with Applications*, and *Management Science* all have a joint (overall) z score of more than one and a positive centrality score. However, these centrality scores might be based on cross-citations with other non-IS focused journals. Moreover, these joint scores imply high quality in terms of Lowry et al., but they might be driven largely by citation scores, which may be very different from centrality scores. For scholars choosing among journals for submitting their work, a choice between high citations or high centrality might be needed.

We demonstrate this point with a scatterplot (Figure 1) that shows 19 possible journal choices, with citations on the x axis and centrality on the y axis. This figure identifies the unique position of *MIS Quarterly* as the one journal that is very high in both citations and centrality. By analogy with production frontiers, *MISQ* alone approaches the citation-centrality frontier. The *Journal of the Association for Information Systems* and *Journal of Management Information Systems* are similar in centrality but lag *MISQ* in citations. Across the diagonal, we find journals such as the *Academy of Management Review* that are strongest in citations. Unless scholars publish all their work in *MISQ*, they will need to make decisions about what combination of prominence or field centrality they seek.

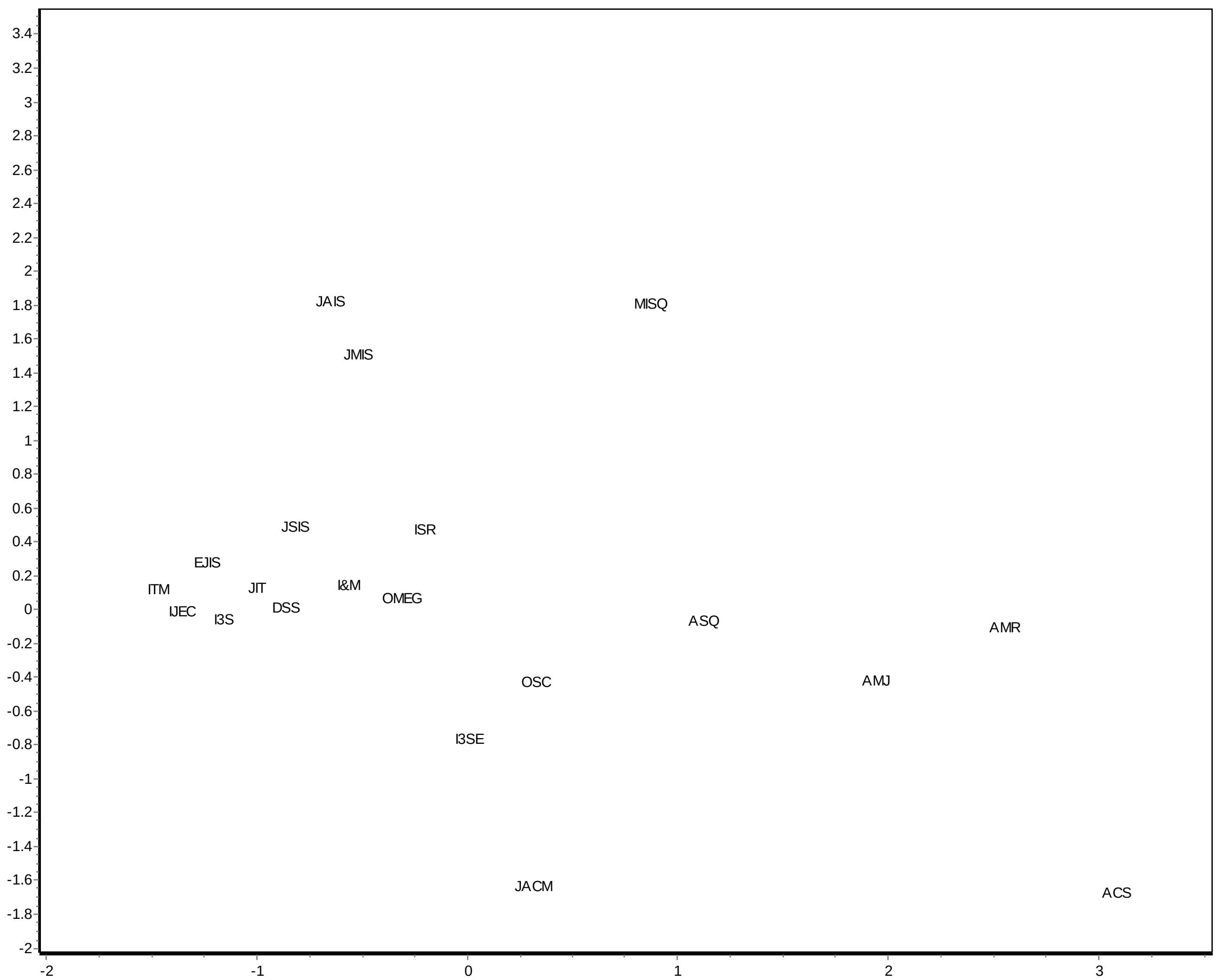

Figure 1: Scatter Plot of Average Citation and Centrality Z Scores for 27 Journals

X Axis: Citations; Y Axis: Centrality, both by the Broader Sample Methods

Presumably, many IS scholars will want to publish in journals that are highly relevant within the IS field. They could examine the centrality scores of the delimited sample in Lowry et al., but all of these journals were screened for focusing on IS. The wider sample might prove to include non-Basket journals, and even journals regarded as non-IS by Lowry et al., that are in fact highly relevant. After all, this sample includes only journals that were proposed for IS relevance by experts surveyed by Lowry et al. Moreover, the sample has extensive cross-citations with a density of 0.17, and it forms one strong component; that is, each journal has a cross-citation path to every other journal in both directions. The average path length is 2.15 (sd = 0.72). In SNA terms, such a sample is relatively highly cohesive. The extent of cross-citations can be demonstrated graphically, as in Figure 2. By the same token, this figure makes clear that not all journals are closely connected with journals, such as the Basket journals, that are well established as IS focused.

4.2 Very strong ties among journals: Simmelian ties

In order to determine which journals are closely connected, we derived a second figure that represents only very strong ties among the journals. We used “Simmelian ties” as the measure of very strong ties. Simmelian ties have three properties: they are reciprocated, strong, and triadic. Krackhardt demonstrated that such ties “subject the [members] to group norms” (1999, p. 187; see also Kilduff & Krackhardt, 2008, pp. 249-256, and Tortoriello & Krackhardt, 2010).[4] We dichotomized the cross-citation matrix at greater than one. At this level, each Simmelian triad (or “clique,” in SNA terms) has at least 12 cross-citations (2 by 2 by 3). After using the UCINET routine to calculate Simmelian ties, we counted these Simmelian ties to the Basket of Eight, the 13 comparison journals, the IS and the non-IS journals. The graphic representation is shown in Figure 3. It shows an underlying pattern of closely tied journals, not visible with the raw cross-citations in Figure 2. Due to this simplification, several points are (literally) visible. Figures 2 and 3 are found at the close of the Appendix.

Clearly, Lowry et al. were correct in thinking that some of the journals that were proposed by experts are focused on cognate disciplines but not largely on IS. The figure shows four strong components, three of them small: one for management, one for information science, and one for software engineering.[5] None of these is closely connected with IS. The component with IS journals includes six of the eight Basket journals, with *ISJ* and *JIT* not represented. The six Basket journals have one-step ties to two of the comparison journals: *DSS* and *ECRA*, and one excluded journal: *MS*. These three journals connect the Basket journals with nine excluded journals. Four of these have two-step paths to the Basket journals: *KBS*, *ESA*, *EJOR*, and *OR*. The other five excluded journals appear to be less closely connected to IS, because they have longer paths to the Basket.

4.3 Balance of trade: Influences among disciplines

As noted above, we controlled for number of articles in our broader sample results for degree centrality. As a further test of the standing of a journal, another size-independent measure is the journal’s “balance of trade” (Cronin & Meho, 2008). This measure is particularly suitable for disciplines, such as IS, that seek to become a “reference discipline” that influences a variety of scholarly fields (Baskerville & Myers, 2002). The balance of trade is found by comparing the citations sent and received between journal dyads. Neeley (1981) and Lockett and McWilliams (2005) used this method to compare management with longer-established disciplines, such as psychology, finding in both cases that the newer field draws heavily on the older fields but is accorded little recognition in return. Following the “trading metaphor” (Yan, Ding, Cronin & Leydesdoff, 2013), Locket and McWilliams concluded that Management is in a “deficit” position with

[4] Borgman and Rice (1992) uses this method, without the terminology.

[5] The components are “strong” – reachable in both directions – because Simmelian ties are all reciprocated.

respect to foundational fields. That is, its citations to other fields are not matched by reciprocating recognition.

Technically, the balance of trade among journals is the difference between the transpose of the cross -citation matrix and that matrix, expressed as a percentage of the maximum of *ij* and *ji*. The result of these calculations is a non-symmetric set of dyadic relationships. The overall balance of trade for a journal is the mean of its dyadic balance of trade. UCINET has a transpose routine, and the resulting matrix can be exported as an Excel file, simplifying the remainder of the calculations. We conducted this analysis with both the journals in the sample of Lowry et al. and the wider sample, although the use of a different method implies that both analyses are of the broader sample type; they are conceptual replications. Thus, we generated the following post hoc hypotheses:

Hypothesis A1a: *Basket journals have a higher average balance of trade than the comparison IS journals in Lowry et al. based on the smaller sample*. This hypothesis refers to narrow sample replication with respect to the sample but broader sample with respect to the method, which has no equivalent in Lowry et al.

Hypothesis A1b: *Basket journals have a higher average balance of trade than the comparison IS journals in Lowry et al. based on the extended sample*.

Hypothesis A2: *Basket journals have a higher balance of trade than the eight highest scoring other journals on this measure, using the extended sample*.

Hypothesis A3: *IS journals have a higher balance of trade than the non-IS journals on this measure, using the extended sample*. Hypotheses A2 and A3 refer to a purely broader sample replication.

Results of these analyses are presented in Table 4. As with the other tables, results are presented as z scores. The findings for the hypotheses follow:

Using the delimited sample, the Basket journals have a larger average balance of trade than the comparison journals. This result is significant if we adopt a very modest standard of significance ($p = 0.168$).

Using the wider sample, the Basket journals have a larger average balance of trade than the comparison journals, but this result is not statistically significant.

The Basket journals do not have a larger average balance of trade than the eight highest scoring other journals. In fact, the reverse holds and is significant.

The IS journals no not have a larger average balance of trade than the non-IS journals. In fact, the reverse holds and is modestly significant ($p = 0.081$).

Table 4: Balance of Trade among IS and IS-Related Journals

	Sample	
Journal Name	**Narrow**	**Broader**
Academy of Management Journal		0.590
Academy of Management Review		0.534
ACM Computing Surveys		0.500
ACM Transactions on Database Systems		0.188
ACM Transactions on Information Systems		0.429
Administrative Science Quarterly		0.698
AI Magazine		-0.667
Business & Information Systems Engineering	-1.823	-0.820
Business Horizons		-0.375

Table 4: Balance of Trade among IS and IS-Related Journals		
California Management Review		-0.643
Communication Research		0.333
Communications of the ACM		0.635
Computer Journal		-0.258
Computer Supported Cooperative Work		0.000
Computers and Operations Research		0.265
Computers in Human Behavior		-0.314
Database for Advances in Information Systems		-0.700
Decision Sciences		0.091
Decision Support Systems	0.887	0.366
Electronic Commerce Research & Applications	0.032	0.176
Electronic Markets		-0.750
European Journal of Information Systems	-0.372	-0.265
European Journal of Operational Research		-0.136
Expert Systems with Applications		-0.502
Human-Computer Interaction		0.000
IEEE Software		0.194
IEEE Transactions on Computers		-0.167
IEEE Transactions on Knowledge and Data Engineering		0.500
IEEE Transactions on Software Engineering		0.291
Information & Management	0.984	0.412
Information & Software Technology		-0.175
Information and Organization		0.167
Information Processing and Management		0.624
Information Research		-0.220
Information Sciences		-0.481
Information Systems		0.147
Information Systems Frontiers	1.262	0.375
Information Systems Journal	1.410	0.673
Information Systems Management	0.493	0.130
Information Systems Research	1.362	0.370
Information Technology & Management	-1.092	-0.426
Information Technology & People		-0.375
Informs Journal on Computing		0.198
Interfaces		-0.125
International Journal of Electronic Commerce	-1.195	-0.623
International Journal of Human Computer Studies		-0.008
International Journal of Information Management		-0.531
International Journal of Technology Management		0.222
Journal of Computer & System Sciences		-0.100
Journal of Computer Information Systems	-0.841	-0.444
Journal of Database Management	-1.044	-0.529
Journal of Global Information Management	0.214	-0.147

Table 4: Balance of Trade among IS and IS-Related Journals		
Journal of Information Science		-0.305
Journal of Information Technology	-0.709	-0.344
Journal of Management Information Systems	0.909	0.203
Journal of Organizational and End User Computing		-0.714
Journal of Organizational Computing & Electronic Commerce	-0.939	-0.353
Journal of Strategic Information Systems	-0.616	-0.343
Journal of Systems and Software		-0.307
Journal of the ACM		-0.286
Journal of the American Society for Information Science & Technology	-0.153	
Journal of the Association for Information Systems	0.058	-0.287
Knowledge-Based Systems		-0.185
Management Science		0.286
MIS Quarterly	1.021	0.328
MIT Sloan Management Review		0.955
Omega		0.566
Operations Research		0.625
Organization Science		0.252
Organizational Behavior and Human Decision Processes		0.778
Simulation Transactions of the Society for Modelling & Simulation	-0.286	
Simulations Modelling Practice & Theory		0.167
The Information Society		0.000
Mean, Basket of Eight	0.383	0.042
Mean, Comparisons	-0.255	-0.157
Mean, Top 8 Non-B8		0.684
Mean, IS journals		-0.112
Mean, Non-IS journals		0.068
P-value B8:Comps	0.168	0.314
P-value B8: Top 8 Non-B8		0.001
P-value IS:Non-IS		0.081

Caution is needed in interpreting these results, because the balance of trade is diminished by a high outdegree, which can be interpreted as the exploration by a journal of multiple sources of knowledge. Thus, we suggest that very high scores, as with *ISJ* and *ISR*, and very low scores, as with *JDM*, *IT&M*, and *IJEC*, are more indicative than are differences among the journals with middling scores. On balance, however, these results suggest that IS still has progress to make as a reference discipline.

5 Limitations

This study has limitations shared by all replications. We borrow the summary by Tsang and Kwan (1999: 770): “Replicability does not mean conclusive verification, and failure to replicate does not mean conclusive falsification… Furthermore, … replication usually provides neither new concepts nor original approaches”. This latter concern is especially disconcerting for a study that aims to make discoveries. Even a broader sample replication must hew sufficiently closely to the methods of its focal study that it can contribute to the confidence we should place in that study. Thus, our study is not free to ignore all the methodological needs of narrow sample or even “close” replications (Brandt et al., 2014).

For assessing close replications, Brandt et al. (2014, p. 218) proposed “five ingredients” for a successful replication: “1. Carefully defining the effects and methods… 2. Following as exactly as possible the methods of the original study… 3. Having high statistical power… 4. Making complete details about the replication available… [and 5. … comparing [replication results] critically with to the results of the original study.” These general requirements, and specifications such as exactly following the original “participant recruitment, instructions [and] stimuli” (p. 218) are well suited to the research milieu of Brandt and his nine colleagues, experimental psychology, and by contrast suggest limitations of our study. The limitation of our study that this list clarifies is limited statistical power due to its sample size. Aside from our use of a relatively modest 0.05 level for alpha, “only the sample size [could] be used to control power” (Verma & Goodale, 1995, p. 144). Although we expanded our sample size from the 21 in Lowry et al. to 73, it remains small, and subsample sizes for the classes of journals (such as the Basket of Eight) are very small. The approach taken by Lowry et al. to ameliorate this limitation was to rely on a variety of measures and analyses.

We have tried to be transparent and believe our study could be replicated. This possibility is one of the advantages of bibliometric studies that employ relatively stable databases such as Web of Science and Scopus. However, results from Google Scholar are not stable, among other limitation for bibliometric purposes noted in the Appendix. Even a broader sample replication such as ours cannot stray too far from the logic of the focal study, which in this case focuses on journal impact based on citations, and on cross citations as indications of centrality or relevance. Lowry et al. were clear that their goal, which they believe they achieved, was to find “bibliometric” support for the Basket. We thus share the limitations of this approach.

Bibliometric analysis has multiple uses, strengths and limitations (Narin, Olivastro, & Stevens, 1994; Okubo, 1997; Vogel, 2012). We focus here on five limitations with important effects on our focal study and on this replication. First, both studies use snapshots of one citing year. Our experience with other bibliometric work shows that cross citations are unstable on a year-by-year basis.

A second limitation is that, as with most bibliometric studies of citations, we do not control for known influences on citations. Positive influences include age and reputations based on long-published but classic articles, and the publication of review essays or meta-analyses. Negative influences include the publication of short editorial essays and book reviews. As with Lowry et al., we treat these as noise. However, they are among the reasons that citations are certainly imperfect as measures of quality.

A third limitation we share with Lowry et al. is that the categorization of journals as related is fraught with challenges. We employ the journal categorizations in Lowry et al. These, as with any others, are limited by the variation in coverage and by the maturity of the scholarly field among journals. Thus, they classify *Decision Sciences* as a “Decision Science” journal rather than a “Management” journal. They classify *Management Science* as a “Management” journal rather than as an “MS/OR” journal. We can say that we find IS journals, as classified by Lowry et al., to be strongly inter-connected with certain other fields, as classified by Lowry et al. From the perspective of replication, this is appropriate, but we would be wary of drawing any further conclusions about the scholarly fields without checking on the journals in question.

A fourth limitation, nearly universal in bibliometric studies, is that findings are contingent on the delineation of the sample boundaries.[6] Our sample is more inclusive than that in Lowry. However, we included only journals that his poll of IS scholars thought might be appropriate outlets for IS. An advantage of this decision is that there is reason to think that all the journals included may be field relevant. However, we cannot tell if we missed other scholarly fields that are connected with IS. As Jacobs (2014) argues, disciplines have fuzzy boundaries with considerable overlap. In our study we do not know, for example,

[6] This is not universal. For example, Franceschet (2012) analyzed cross citations among 6,702 journals.

about connections with Medical Informatics, which in turn connects with Chemical Informatics and Drug Discovery – all of which include contributions by established IS scholars in major IS departments.[7]

A fifth limitation is that citation and cross citation studies rely on formal, explicit measures of scholarly communications. Such communications flow though many media, such as hallway and conference chats, emails and listservs, social media, and unpublished writings and presentations. As Vogel (2012, pp. 1021-1022) notes, “bibliometric methods measure the products rather than the process of scientific communication… [or its] social component.” He adds that the solution to this limitation can only come from quite different modes of study, such as ethnography. We have treated cross citations as unobtrusive measures of scholarly communications, but they are the tip of the iceberg of workflows and scholarly interaction. However, Lowry et al. is based on cross citations and we follow their lead. Citations also have the advantage of being conservative measures: once an influence reaches the point of a cross citation it has presumably become relatively important.

These limitations caution against extrapolating beyond patterns in journal publications. Journal publications are not reflective of all scholarly communication and their lags might mislead about future trends. That said, they are crucial elements in the perception and reputation of a scholarly field, both by its own members and by others (Pfeffer, Leong, & Strehl, 1977; Hambrick & Chen, 2008). Moreover, our hypotheses are explicitly framed by and limited to journal publications.

6 Discussion

Two of three steps proposed by Merton to explain the rise of sociology, and borrowed by Hambrick and Chen (2008) to explain the rise of Strategic Management, are “differentiation” – the assertion of a distinctive domain – and “legitimation” – recognition for quality scholarship. Without them, scholars in new fields, such as IS, have trouble controlling key resources, such as hiring, tenure, and promotion within faculty lines (Hambrick & Chen, 2008; Stewart & Miner, 2011). A well disseminated perception in the IS field is that achieving such control over scholarly careers has been challenging (Benbasat & Weber, 1996; Dennis, Valacich, Fuller, & Schneider, 2006; Lowry et al., 2013; Templeton & Lewis, 2015). The promotion by the AIS Senior Scholars of the high quality of eight IS-specific journals, and the efforts of Lowry and his colleagues to validate that set, were self-consciously efforts to ameliorate these problems. These efforts sought to differentiate and to legitimize the field, as they construed it. Lowry et al. (2013, p. 995) chose an interesting word for their goal: they sought “hard empirical evidence [that] is pivotal to reify” the Basket; that is, to make of a construct, a cognitive category, something more substantial: a *thing*.

Efforts to promote the Basket exemplify attempts by “relatively small and cohesive élite groups… to determine the standards governing access to key resources, including prestigious journal space” (Whitley, 2000, p. xxv). As Whitley cautioned, the field of Management (broadly defined) is “a fragmented autocracy [with a] high level of task uncertainty… and low levels of task and strategic interdependence” (2000, p. xxxi; also Vogel, 2012; Whitley, 1984). We have noted trends in impact factors suggesting that the efforts of IS élites have had some success in improving the standing of the Basket. Moreover, the FT45 is being replaced with an FT50, which adds the *Journal of Management Information Systems* to *MIS Quarterly* and *Information Systems Research*. Our findings are consistent with this addition. However, we have noted based on work by Dean, Lowry and Humpherys (2011) and our own replication of that study, that IS scholars in research intensive universities publish in a diverse set of journals and achieve promotion to Associate Professor.

Lists of ranked journals are targets of critiques (e.g., Brembs, Button, & Munafò, 2013; Mingers & Willmott, 2013), but this has not hindered their near-ubiquity. A search of peer-reviewed works in ProQuest yields 746 items with “(journal* AND rank* AND list*)” in the abstracts alone.[8] These lists are typically

[7] We have in mind Prof. Chen of the University of Arizona (recent added to the AIS Senior Scholars), and Prof. Neill of the Heinz School at Carnegie Mellon.
[8] Searched on 09/17/2017, with 29 databases.

singular, with each journal assigned one and only one rank. This property is shared by Lowry et al. As we have seen, their list is singular because it merges citations and centrality into a single joint value. We have also seen that citations and centrality are orthogonal. For example, with the journals in the broader sample replication with the highest 25 joint scores, the correlation between the citations and centrality is -0.306. Scholars who seek the "best" journals as outlets for their work must, consequently, consider tradeoffs.

Depending on their publication goals, career circumstances, and approaches to IS research, IS scholars can choose from a wider set of journals than would be possible with only one delineation of the top journals. We find that major, broad-coverage Management journals such as *Management Science* could be included in a forum for the highest quality IS research. Other examples of additional top journals are the CS journal *Expert Systems with Applications*, the information science journal *JASIST* (now named *Journal of the Association for Information Science and Technology*), the OR/OM journal the *European Journal of Operational Research*, and (as the results in Lowry et al. also indicate) the behavioral IS journal *Decision Support Systems*. Which of these would be appropriate will depend on the scholar's approach to IS. Broadly construed, this finding is consistent with the purpose of the Senior Scholars Basket and with the work of Lowry et al. Consistent with Lowry et al., we find that top quality IS journals extend beyond the three now included in the *Financial Times* 50: *MISQ*, *ISR*, and *JMIS*.

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Appendix

Topics covered:

Where IS scholars publish

Paths from journals in our wider sample to journals in Lowry's sample

Problems with the h-index and Google Scholar

Self-citation problems with *JIT*?

"Quality" citations and the FT45 list

Citations and centrality: three differences

Dichotomized or valued data in cross-citation matrixes

Information centrality

Bonacich Power centrality

Tables and figures:

Table A2. Comparison of Journal Self-Citation Calculations

Table A3. Z Scores of Citation Measures for 73 IS and IS-Relevant Journals

Table A4. Z Scores of Centrality Measures for 73 IS and IS-Relevant Journals

Table 2: Scores for Citations and Centrality and Means of Both (Joint Scores)

Figure 2: Cross-Citations among 73 IS and IS-Related Journals

Figures 3: Simmelian Ties among IS and IS-related Journals

A1 Where IS scholars publish: Small replication

Dean, Lowry and Humpherys (2011) used the 19-year period 1990-2008; we used the ten-year period 2006-2015.[9] Whereas their sample included all Carnegie research categories, we included only the most research active ("very high") level. Our sample of 67 promoted scholars is thus smaller than their sample of 210. We classified the promoted professors' publications to compare them with Lowry et al.: all journals that they did not consider, the eight they included from the Basket, the 13 that they included as other high-level journals dedicated to IS, and the 119 journals that they considered for inclusion but decided to exclude from comparison with the Basket. The modal reason for exclusions was a provenance "primarily" in another discipline, with 55 excluded on this basis, 28 from CS and 10 from Management or OB/Management. By the latter, they meant *Organization Science* and *Organizational Behavior and Human Decision Processes*.

We distinguished between exclusions based on discipline from the other reasons, and noted journals that were not considered at all for inclusion by Lowry et al. We also followed Dean et al. by classifying journals as business (not IS) and as CS and Engineering. For this purpose, we used the ISI classifications found in Journal Citation Reports. These classifications are widely used in bibliometric studies despite recognized limitations (Rafols & Leydesdorff, 2009; Zhang, Liu, Janssens, Liang, & Glänzel, 2010).

[9] Some of our data include early 2016 as well. We made one exception about business schools, including one scholar with a specific "IS" designation in the Heinz College of Information Systems, Public Policy and Management of Carnegie Mellon. This scholar focuses on medical informatics.

We find them to have face validity in the present usage. We report the results for the articles of the 67 IS scholars in Table A1. [10]

Table A1: Articles in Classes of Journals by IS Scholars Promoted to Associate Professor over the Past Decade in Highest Research Activity Universities

Number of Articles by Category	Mean	C.I. min.	C.I. max.
Basket of Eight	2.90	0.34	5.45
Comparison IS journals in Lowry	1.90	-0.16	3.95
Excluded due to discipline	3.04	0.73	5.36
Excluded for other reasons	1.12	-0.99	3.23
Not considered for inclusion	4.55	0.76	8.34
ISI CS (with CS-IS also classed as other CS) and Engineering	3.31	0.58	6.05
ISI Business (e.g. Management, ORMS) NOT IS	2.42	0.09	4.75
ISI Management	1.30	-0.23	2.83
Percentage of Articles by Category	**Mean**	**C.I. min.**	**C.I. max.**
Basket of Eight	23.20%	3.02%	43.38%
Comparison IS journals in Lowry	13.22%	0.81%	25.63%
Excluded due to discipline	25.55%	4.30%	46.81%
Excluded for other reasons	6.33%	-4.33%	17.00%
Not considered for inclusion	31.88%	8.22%	55.53%
ISI CS (with CS-IS also classed as other CS) and Engineering	24.12%	5.46%	42.78%
ISI Business (e.g. Management, ORMS) NOT IS	21.27%	-0.29%	42.84%
ISI Management	9.68%	-1.83%	21.19%

Notes: C.I.: Confidence Interval, recognizing that the data are not a random sample. The 67 scholars are those with data on publications on their university website who were promoted to Associate Professor in the last decade in one of the 115 "highest research activity" universities in the Carnegie classification.

Our results are very close to those in Dean et al. (2011). They found that promoted IS scholars published 23% of their articles in CS and Engineering journals; we find 24%. They found 22% of articles in non-IS business journals; we find 21%. Comparing our results with the 21 IS journals examined in Lowry et al., we find that the promoted scholars averaged about five articles in included journals, four in explicitly excluded journals, and four and a half in non-considered journals. Our findings could be interpreted as consistent with the prescriptions in Lowry et al., as almost one quarter of the articles appeared in Basket journals. However, our results, like those of Dean et al. (2011), could be interpreted as not consistent, as nearly two thirds of the articles appeared in excluded or non-considered journals.

A2 Journal paths and the formation of the broader sample

A strong component might be made up of lengthy, indirect paths between journals. In that case, their connections would be too tenuous to regard them as providing meaningful scholarly cross-fertilization. We wanted to ensure that the paths needed to reach the Lowry et al. sample were no longer than two steps

[10] Because standards for promotion might differ in stand-alone IS departments, we distinguished between 30 IS scholars in 17 stand-alone departments and 37 IS scholars in 23 in more heterogeneous departments. We found the results to be not significantly different and very similar.

in each direction (for the rationale: Bohlin, Viamontes Esquivel, Lancichinetti, & Rosvall, 2016). That is, each journal should be able to reach every Lowry et al. journal with no more than one indirect cross-citation. On inspection of the remaining strong component, this condition is met. Of the 52 journals that we added to the Lowry et al. sample, 19 require two steps in the citing (outdegree) direction and nine require two steps in the cited (indegree) direction. Thus, 33 have direct outdegree ties and 41 have direct indegree ties with the Lowry et al. sample – as do the 21 journals in the Lowry et al. sample.

A3 Limitations of the h-index and Google Scholar

As noted in the body of this paper, the most critical problem with the h-index was demonstrated by Waltman and van Eyk (2012), who showed that it generates incoherent results given relative and absolute changes in performance (i.e. impact), and generates inconsistent results across levels of aggregation. Other critiques have been made by the statisticians Adler, Ewing, and Taylor (2009) and by the information scientists Costas and Bordons (2007) and Rousseau, García-Zorita, and Sanz-Casado (2013). For example, Adler et al. assert that "the h-index *and its variants*… lose crucial information that is essential for the assessment of research" (pp. 1-2, emphasis added). A related problem is that these measures as used are based on GS. Lastly, two of the four indexes used in Lowry et al., the hc-index and the e-index, have been replaced by other metrics. Thus, for comparison (narrow sample replication) purposes we use the h-index, the g-index and cites/paper.

Jacsó (2012, p. 464) is even more critical than Aguillo (2012), arguing that GS is "very inappropriate for bibliometric and scientometric purposes." We see two problems with GS that are particularly relevant here. First, it does provide control over the time period for cited items, but no control for the time period of the citing items. Currently, this means that when we search for citations to articles from 2008-2009 (the relevant period for replication), we retrieve citations from an eight-year window. This is eight times the period for related measures in Journal Citation Reports and in Scopus. More crucially, this means we cannot replicate earlier searches. Actually, GS is unstable over much shorter time frames. On recalculating our results using identical methods (for example, using the ISSN rather than title), we found differences for four of eight journals within less than 24 hours. Results for *DSS*, *ISR*, *JMIS*, and *OSC* were unchanged, but cites/paper for *EJIS* went from 74.40 to 76.34, for *JIT* from 55.29 to 55.50, for *AMJ* from 168.60 to 169.92 and for *ASQ* they dropped from 137.33 to 133.98.

A second and larger problem is that the population searched is noisy (Jacsó, 2011; 2012). For example, it retrieves from sources that are heterogeneous across journals. For some journals, most if not all cited works are found on the publisher's site, but for some journals, such as *Information Research* and *MIT Sloan Management Review*, no publisher exists (in the unusual case of *IR*) or no publisher appears in the retrieval (*SMR*). For most journals, cited works are found in a variety of sites. For example, the *Journal of Database Management* has nine articles found on the site of its publisher, igi-global, but 30 articles are counted in all. The nine articles have 33.11 cites per paper (as of 03-23-2016) but the noisier, full set has only 17.97. By and large, the non-publisher sites have many fewer citations and are inconsistent across journals. Thus, we use Publish or Perish to sort by publisher and use only articles on the publisher site, which has the result of under-counting an unknown number of legitimate sources. For *MISQ*, we had to make an exception and use JSTOR as the source, as it is the only source for the great majority of such citations.

A third problem that is less ubiquitous is that GS retrievals stop at 1,000 works. Of course, this includes works such as citations (i.e. citations to the work) that should be uncounted (unchecked in Publish or Perish), which compounds the problem that some journals, such as *EJOR*, publish more than one 1,000 in a year, and others, such as *ESA*, publish more than 1,000 in a two-year window. The latter renders the calculations of the *h* index and its variants problematic but the former renders the results flawed without a solution.

The larger coverage provided by GS has value for assessments of the many journals that are not included in the WoS or Scopus databases. In our sample, only the *Journal of Organizational and End User*

Computing lacks either coverage. It is neither an excluded or comparison journal in Lowry et al., but merely a journal that they considered. It also had a two-year JIF of only 0.243 in its first year of WoS coverage (2012), so we regard this exception as insufficient to justify using GS more broadly. The problem with time periods could be solved with a highly time-consuming process of checking on each individual citation. However, this would not solve the problem that, because the dataset is dynamic, the searches from a few years ago cannot be replicated.

A4 Journal self-citations and the Journal of Information Technology

Lowry et al. reported the journal self-citation data from WoS, but asserted that this is insufficient to evaluate excessive self-citations. Thus, they calculated their own metrics using GS data for one and a half year periods (pp. 999-1001). They reported these results as “short-term self-citations,” which is an unusual (apparently unique) metric. The key conclusion they drew from this analysis is that the *Journal of Information Technology* (*JIT*), one of the Basket journals, “does not presently exhibit self-citation rates and IS community influence of a top, mainstream IS journal” (p. 1006). They reported an extreme self-citation rate for *JIT* of 77.8%.

The Lowry et al. finding of 77.8% short-term self-citations for *JIT* contrasts sharply with the rates reported in Journal Citation Reports. Therefore, we explored the Lowry et al. self-citation findings. For reasons noted, at a later time it is not possible to replicate using GS, which was the basis of their figures, nor did we see how to generate a half-year of data. However, we could retrieve data for single year periods from Web of Science. We examined citations by dividing the self-citations by all citations, with one year cited periods and the following year cited period. We used the acronyms from JCR as they retrieve more citations than full journal titles. For example, we used BUS INFORM SYST ENG+ for the journal that Lowry et al. refer to as WIRT. Results are presented in Table A2. Two findings stand out. First, *JIT* did not experience high levels of self-citations, based on WoS; in fact, its levels were low. Second, there is considerable year-to-year fluctuation, which calls into question the argument in Lowry et al. that short time periods are best for this consideration.

A5 Distinctions between citations and centrality in the context of cross citations

There are three differences. Citations potentially refer to about 20,000 journals, depending on database, whereas the former refer to 20 other journals, in the case of the matrix developed by Lowry et al. The latter refer only to indegrees (citations received), whereas the former refer (depending on the measure) to indegrees, outdegrees (citations sent) or both. The latter refer only to direct ties (except for the SJR measure in Scopus), whereas the former can refer to local (direct) and global (indirect) measures.

A6 Cross-citation matrixes: Valued or dichotomized

An important judgment needed for SNA with cross-citations is whether to retain valued data or to dichotomize the adjacency matrix at if >0, 1 or some other level, such as the matrix mean. For many SNA analyses, there is no choice: the routines cannot use valued data. In the former case, one captures data on citations of article-to-journal and journal-to-article. In the latter case, one captures data on citations of journal-to-journal and the reverse.[11] Lowry et al. does not report its decision, but it makes possible a replication of its cross-citation matrix for the 21 journals of its sample. We created such a matrix to experiment with various SNA alternatives. We determined on this basis that Lowry et al. used article level (valued matrix) not journal level (dichotomized matrix) data. To replicate their approach, and to avoid losing the data regarding the number of articles cited, we used article level data.

[11] One reason to treat impact factors with caution is that citations of journals, rather than of articles, are becoming less relevant “in the digital age” as scholars can more readily find and retrieve works without regard to the publishing journal (Lozano, Larivière, & Gingras, 2012).

A7 Centrality measures: Information centrality

Information centrality loses data on asymmetry, which can be pronounced with some journal dyads. In the UCINET information centrality routine, the default symmetrizes by the maximum. Because this symmetrization results in the highest correlation with our replication, we presume that this was the method that was used in Lowry et al. This leads to odd results. For example, two pairs of journals with cross-citations of 0, 20 and 20, 20 would register identically as 20, 20. We used the sum (equivalent in practice to the mean). In the example above, the two pairs would register as 20, 20 and 40, 40, which at least retains the ratio of totals between the pairs.

A8 Bonacich Power centrality

Bonacich Power analysis requires a fundamental decision: does a connection to highly connected alters increase or decrease ego's power (Bonacich & Rodan, 2011)? For access to information, for example, we expect a positive relationship and we choose a positive beta, whereas for dominance of dependent others we expect a negative relationship and we choose a negative beta. Rodan (2011) has shown that in many cases, the choice of beta is immaterial. However, in the present case the choice of beta proves to be important, generating a wide range of results. Moreover, none of these results are intelligible across a range of beta selections.

Using valued (article level) results, we find the following journals to be the most highly central: with the UCINET default beta calculation of 0.012, the top five in order are *ESA*, *EJOR*, *COR*, *ISC*, and *OMEG*. With beta of -0.1, they are *ISR*, *IJHCS*, *OSC*, *CSCW*, and *I&ST*. With a beta of -0.5, they are *ISM*, *IR*, *TIS*, *ITM*, and *BISE*. With a beta of 0.1, they are *ISC*, *KBS*, *OR*, *ESA*, and *MS*. With a beta of 0.5, they are *JDM*, *CSCW*, *JOEUC*, *DBAIS*, and *I3TC*. Because it is highly skewed to outdegrees, BISE has the highest BP score with a beta of 0.25 and above. As a minor point, *MISQE*, which has an outdegree of zero, should have a BP of zero, not 4.32 as in Lowry et al. (2013, Table F1).

A9 Rank ordering the Basket journals

Do the replications validate the rank ordering within the Basket proposed by Lowry et al.? Their ordering (p. 1006) was: "the top-tiered IS journals are *MISQ*, *ISR*, and *JMIS* in that specific rank order, with a gap following that tier… *EJIS*, *ISJ*, *JAIS*, and *JSIS* occupy the next tier… [However,] *JIT* does not presently exhibit self-citation rates and IS community influence of a top, mainstream IS journal… *JIT* would be in the second cluster is short-term citation measures were not considered… the second cluster, unlike the first tier, has no natural rank order, except for *JAIS* perhaps being of higher quality than the other three…" Based on the narrow sample replication, our rank ordering is the same for the top three of *MISQ*, *ISR*, and *JMIS*. The broader sample replication also ranks *MISQ* first and *JMIS* third, but *ISR* fourth, not second, and *JAIS* is second. Both replication approaches rank *ISJ* eighth, whereas it ranks fifth in Lowry et al. Our analysis, as noted above, does not support the claims of excessive self-citation in *JIT*.

A10 Disaggregated citation and centrality measures

The disaggregated results for citations and centrality, summarized in Table 2, are presented in Tables A3 and A4, below.

Table A2: Comparison of Journal Self-Citation Calculations

Journal	Lowry et al.	2008 % Cit.	2009 % Cit.	2010 % Cit.	2011 % Cit.	2012 % Cit.	2008-2012 Av.	2011-1/2 2012 Av.
DSS	15.8%	16.82%	15.85%	16.67%	30.43%	19.00%	19.75%	26.62%
ECRA	6.5%	5.00%	8.89%	14.29%	17.86%	14.29%	12.06%	16.67%
EJIS	8.0%	18.75%	14.29%	19.44%	18.92%	6.52%	15.58%	14.79%
I&M	9.9%	9.17%	7.00%	5.13%	21.95%	12.20%	11.09%	18.70%
IJEC	24.1%	21.43%	29.41%	38.89%	35.00%	25.00%	29.95%	31.67%
ISF	27.3%	11.90%	7.14%	6.67%	8.33%	9.52%	8.71%	8.73%
ISJ	6.5%	7.41%	0.00%	4.65%	3.45%	0.00%	3.10%	2.30%
ISM	0.0%	3.45%	15.38%	4.55%	20.00%	11.11%	10.90%	17.04%
ISR	4.7%	7.14%	5.56%	11.11%	5.36%	18.00%	9.43%	9.57%
IT&M	68.9%	0.00%	0.00%	0.00%	53.85%	3.57%	11.48%	37.09%
JAIS	9.4%	5.13%	2.13%	0.00%	6.90%	11.90%	5.21%	8.57%
JCIS	5.3%	29.79%	32.50%	29.41%	28.57%	3.33%	24.72%	20.16%
JDM	0.0%	31.03%	50.00%	25.00%	45.45%	22.22%	34.74%	37.71%
JGIM	0.0%	0.00%	15.79%	0.00%	33.33%	57.14%	21.25%	41.27%
JIT	77.8%	2.94%	0.00%	3.57%	10.53%	3.70%	4.15%	8.25%
JMIS	3.2%	18.75%	18.00%	22.86%	27.03%	25.00%	22.33%	26.35%
JOCEC	6.3%	9.09%	20.00%	0.00%	16.67%	16.67%	12.48%	16.67%
JSIS	3.1%	24.00%	25.00%	27.27%	27.59%	27.27%	26.23%	27.48%
MISQ	5.1%	11.83%	6.73%	5.31%	7.14%	7.91%	7.78%	7.40%
MISQE	0.0%	28.57%	27.78%	16.67%	11.11%	20.00%	20.83%	14.07%
WIRT	18.4%	NA	8.70%	23.53%	23.81%	46.67%	25.68%	31.43%
Mean	**14.3%**	**13.1%**	**14.8%**	**13.1%**	**21.6%**	**17.2%**	**16.1%**	**20.12%**

Lowry et al. figures are unique 1.5-year calculations of "short-term self-citations" based on Google Scholar (Lowry et al., 2013, Table F4, p. A19). Although the JIF figures in their article are 2010 citing years with 2008-2009 cited years, the self-citation figures are for January 2011 through 2012 (Lowry et al, 2013, pp. 1000, 1001). Half year figures cannot be calculated from Web of Science (WoS) and must be difficult in GS, which allows for full year cited years. Moreover, journals do not synchronize their stated publication dates, for which reason WoS delays reporting results until full years are available. WoS makes it possible to generate short-term self-citation scores based on one year, not one and a half year increments. For example, the 2008 figures in the table are based on the 2009 citing year. In order to approximate the time frame in Lowry et al., the right-most column reports the mean of 2011 and 2012 with 2011 doubly weighted. The correlation between these figures and the results reported by Lowry et al. is 0.027.

Table A3: Z Scores of Citation Measures for 73 IS and IS-Relevant Journals

Rank	Acron.	JIF NSC	5yr JIF	IPP	SNIP	SJR	Art Influ.	Left av.	cits/papr	h-index	g-index	As Lowry
3	AMJ	**2.245**	**2.951**	**3.002**	<u>1.287</u>	**3.458**	**3.581**	**2.754**	**2.103**	<u>1.747</u>	1.428	**2.549**
2	AMR	**3.486**	**3.632**	**4.339**	**2.351**	**2.998**	**3.413**	**3.370**	<u>1.825</u>	<u>1.030</u>	<u>1.010</u>	**2.647**
1	ACS	**4.532**	**3.319**	**3.529**	**6.105**	**3.211**	**2.715**	**3.902**	**5.635**	-0.324	-0.663	**2.729**

Table A3: Z Scores of Citation Measures for 73 IS and IS-Relevant Journals

19	ATDS	-0.459	-0.111	-0.177	0.468	1.006	0.240	0.161	-0.039	-0.324	-0.196	-0.061
20	ATIS	-0.559	-0.321	0.083	1.114	0.289	-0.145	0.077	0.083	-0.683	-0.614	-0.288
4	ASQ	1.226	1.908	1.705	0.260	**3.208**	**3.320**	1.938	1.488	-0.324	-0.713	1.520
62	AIM	-0.943	-0.883	-0.892	-0.268	-0.759	-0.675	-0.737	-0.690	-0.762	-0.540	-0.738
71	BISE	-0.877	NA	-1.164	-0.917	-0.901	-0.879	-0.947	-0.609	-1.001	-0.713	-0.844
63	BH	-0.914	NA	-0.746	-0.697	-0.684	NA	-0.760	-0.082	-0.245	0.026	-0.395
35	CMR	-0.140	-0.191	-0.206	-0.400	-0.435	-0.219	-0.265	0.225	-0.324	-0.368	-0.188
36	CR	-0.147	-0.254	-0.287	-0.686	-0.230	-0.067	-0.278	0.072	-0.125	0.050	-0.102
22	CACM	0.361	-0.204	-0.056	0.696	-0.306	-0.229	0.043	0.809	1.389	**3.052**	0.624
55	CJ	-0.380	-0.757	-0.788	-0.577	-0.553	-0.426	-0.580	-0.771	-0.364	-0.368	-0.509
65	CSCW	-1.123	NA	-0.886	-0.526	-0.556	NA	-0.773	-0.788	-0.802	-0.983	-0.894
26	COR	-0.147	-0.306	0.173	0.107	0.333	-0.182	-0.004	-0.319	1.747	1.182	0.224
38	CHB	-0.316	-0.283	0.006	-0.344	-0.364	-0.462	-0.294	0.206	1.628	1.724	0.217
NA	DBAIS	NA	NA	NA	NA	NA	NA	NA	-0.778	-1.001	-0.983	-0.921
21	DS	0.189	0.400	0.033	-0.324	-0.113	0.219	0.067	0.375	-0.284	-0.196	0.124
27	DSS	-0.121	-0.171	0.161	0.149	0.011	-0.330	-0.050	-0.032	0.950	1.133	0.131
45	ECRA	-0.100	-0.522	-0.255	-0.375	-0.545	-0.589	-0.398	0.306	-0.245	0.026	-0.264
72	EM	NA	NA	-1.316	-1.341	-0.934	NA	-1.197	-0.810	-0.882	-0.885	-0.944
46	**EJIS**	-0.297	-0.323	-0.173	-0.344	-0.931	-0.462	-0.421	0.250	-0.484	-0.540	-0.342
24	EJOR	-0.057	-0.196	0.110	0.053	0.319	-0.182	0.008	0.131	**2.982**	**2.733**	0.655
40	ESA	-0.314	-0.329	-0.078	-0.268	-0.412	-0.561	-0.327	0.278	**3.141**	**2.536**	0.483
12	HCI	1.599	0.733	-0.052	0.697	-0.497	0.192	0.445	-0.529	-1.081	-1.156	0.049
41	I3S	-0.255	-0.451	-0.469	0.069	-0.545	-0.430	-0.346	-0.557	-0.045	-0.073	-0.323
37	I3TC	-0.176	-0.396	-0.500	-0.020	-0.415	-0.219	-0.288	-0.484	0.313	0.370	-0.137
13	I3KDE	-0.046	-0.034	0.504	1.228	0.500	0.051	0.367	-0.062	0.791	1.035	0.269
8	I3SE	0.290	0.217	1.316	**2.154**	0.945	0.029	0.825	0.238	0.393	0.518	0.317
16	I&M	0.473	0.385	0.698	0.081	0.072	-0.227	0.247	0.873	0.871	1.035	0.428

Table A3: Z Scores of Citation Measures for 73 IS and IS-Relevant Journals

44	I&O	NA	NA	-0.317	-0.286	-0.524	NA	-0.376	-0.123	-0.882	-1.033	-0.603
39	I&ST	-0.395	-0.630	-0.144	0.297	-0.276	-0.615	-0.294	-0.311	0.433	0.444	-0.248
34	IPM	-0.222	-0.500	-0.175	0.116	-0.125	-0.430	-0.223	-0.316	0.273	0.247	-0.200
66	IR	-0.830	-0.887	-0.843	-0.698	-0.739	-0.718	-0.786	NA	NA	NA	-0.787
23	ISC	-0.179	0.012	0.683	0.173	-0.031	-0.404	0.042	-0.238	**1.986**	1.674	0.311
54	TIS	-0.694	-0.530	-0.594	-0.383	-0.617	-0.471	-0.548	-0.665	-0.603	-0.565	-0.569
33	ISY	-0.179	-0.459	-0.243	0.186	-0.167	-0.389	-0.208	-0.432	-0.484	-0.393	-0.367
50	ISF	-0.424	-0.635	-0.493	-0.527	-0.453	-0.568	-0.517	-0.576	-0.205	-0.368	-0.483
31	**ISJ**	0.122	0.016	-0.272	-0.401	-0.224	-0.320	-0.180	0.135	-0.404	-0.442	-0.174
61	ISM	-0.655	-0.709	-0.885	-0.765	-0.728	-0.654	-0.733	-0.615	-0.643	-0.516	-0.647
9	**ISR**	0.964	1.037	0.511	-0.101	0.513	0.762	0.614	1.437	0.114	-0.319	0.671
58	ITM	-0.838	NA	-0.612	-0.563	-0.587	NA	-0.650	-0.700	-1.081	-0.934	-0.841
59	ITP	NA	NA	-0.694	-0.675	-0.725	NA	-0.698	-0.636	-0.842	-0.860	-0.759
43	IJC	-0.493	-0.641	-0.571	-0.351	0.067	-0.167	-0.359	-0.576	-0.284	-0.368	-0.382
60	INTF	-0.805	-0.781	-0.947	-0.798	-0.578	-0.447	-0.726	-0.897	-0.842	-0.885	-0.729
52	IJEC	-0.924	-0.342	-0.339	-0.675	-0.528	-0.421	-0.538	-0.339	-0.842	-0.614	-0.555
30	IJHCS	-0.200	-0.296	-0.101	0.327	-0.368	-0.432	-0.178	-0.165	0.233	0.247	-0.153
53	IJIM	-0.539	-0.503	-0.391	-0.463	-0.695	-0.649	-0.540	-0.278	-0.045	-0.073	-0.409
70	IJTM	-0.960	-0.929	-1.090	-0.994	-0.864	-0.759	-0.933	-0.915	-0.643	-0.639	-0.817
29	JCSS	-0.163	-0.528	-0.366	-0.049	0.254	-0.144	-0.166	-0.633	-0.643	-0.417	-0.355
67	JCIS	-0.951	-0.876	-0.661	-0.832	-0.674	-0.770	-0.794	-0.498	-0.205	-0.245	-0.639
49	JDM	-0.523	-0.420	-0.342	-0.546	-0.583	-0.572	-0.498	-0.781	-1.519	-1.475	-0.795
57	JGIM	-0.570	-0.482	-0.626	-0.734	-0.661	-0.632	-0.618	-0.930	-1.280	-1.352	-0.812
47	JIS	-0.480	-0.469	-0.361	-0.266	-0.503	-0.542	-0.437	-0.415	-0.444	-0.220	-0.444
32	**JIT**	0.729	0.195	-0.557	-0.560	-0.692	-0.233	-0.186	-0.126	-0.882	-0.860	-0.200
14	**JMIS**	0.375	0.449	0.464	0.044	0.428	0.050	0.302	0.417	0.074	0.346	0.258

Table A3: Z Scores of Citation Measures for 73 IS and IS-Relevant Journals

68	JOEUC	NA	NA	NA	NA	-0.603	NA	-0.603	-1.045	-1.440	-1.426	-1.129
56	JOCEC	-0.795	-0.829	-0.824	-0.902	-0.730	-0.729	-0.801	-0.904	-1.121	-1.180	-0.886
25	**JSIS**	0.152	0.341	0.132	0.039	-0.331	-0.351	-0.003	0.670	-0.762	-0.959	-0.158
48	JSS	-0.520	-0.707	-0.379	-0.035	-0.436	-0.606	-0.447	-0.500	0.512	0.493	-0.298
7	JACM	1.091	0.434	0.923	1.440	1.882	1.034	1.134	0.965	-0.006	0.050	0.717
28	JASIST	-0.165	-0.363	0.212	-0.031	-0.114	-0.408	-0.145	-0.398	1.150	1.182	0.056
18	**JAIS**	0.263	NA	0.370	0.066	-0.026	NA	0.168	-0.175	-1.240	-1.303	-0.457
51	KBS	-0.578	-0.639	-0.340	-0.398	-0.507	-0.664	-0.521	-0.517	0.194	0.001	-0.424
11	MS	0.144	0.412	0.326	0.044	0.931	1.165	0.504	0.339	1.707	1.674	0.889
5	**MISQ**	**2.167**	**2.863**	1.802	0.846	1.067	1.378	1.687	1.931	0.751	0.296	1.557
42	SMR	-0.286	-0.278	-0.305	-0.248	-0.627	-0.346	-0.348	NA	NA	NA	-0.321
10	OMEG	0.637	0.315	1.005	0.218	0.871	-0.023	0.504	0.309	0.911	1.059	0.461
15	OR	-0.026	-0.114	0.006	0.155	1.040	0.686	0.291	-0.144	0.751	0.665	0.349
6	OSC	1.106	1.196	1.064	0.139	1.824	1.530	1.143	1.772	1.309	1.207	1.349
17	OBHDP	0.394	0.253	0.185	-0.424	0.144	0.816	0.228	0.308	0.472	0.395	0.460
64	SMPT	-0.882	-0.880	-0.832	-0.576	-0.699	-0.729	-0.766	-0.814	-0.245	-0.442	-0.686
69	STSM	-0.896	-0.908	-0.993	-0.542	-0.779	-0.704	-0.804	-0.963	-0.962	-0.959	-0.862
Averages												
B8		0.559	0.654	0.285	-0.051	-0.025	0.118	0.248	0.567	-0.354	-0.473	0.144
Comps	-0.525	-0.460	-0.445	-0.551	-0.526	-0.579	-0.525	-0.400	-0.527		-0.434	-0.517
8 nonB8		1.990	1.823	**2.110**	**2.047**	**2.328**	**2.197**	1.946	1.934	**2.041**	**2.004**	1.632
P-value B8:Comps	0.004	0.032	0.030	0.017	0.075	0.035	0.014	0.008	0.600		0.903	0.031
P-value B8:Top 8 NonB8	0.025	0.062	0.006	0.010	0.000	0.001	0.006	0.051	0.000		0.000	0.002

Key: NSC: two year JIF without self-citations; Lowry et al.: the mean of the six metrics still available that were used by Lowry et al. Comps: the 12 comparison journals in Lowry et al. (i.e., excluding *MIS Executive,* which received 22 citations and had no outdegrees to the sample in this period); 8 nonB8: the highest ranked eight journals not in the Basket for this measure. The three columns with a frame should be used with caution. Bolding: for acronyms: Basket of Eight; underlining for acronyms: Comparison journals included in the Lowry et al. sample of 21.

For the acronyms: The WoS (JCR) short names in order of appearance in this table: Acad Manage J; Acad Manage Rev; ACM Comput Surv; ACM T Database Syst; ACM T Inform Syst; Admin Sci Quart; AI Mag; Bus Inform Syst Eng+ (called WIRT for its German name in Lowry et al.; Bus Horizons; Calif Manage Rev; Commun Res; Commun ACM; Comput J; Comput Supp Coop W J; Comput Oper Res; Comput Hum Behav; Data Base Adv Inf Sy; Decision Sci; Decis Support Syst; Electron Commer R A; Electron Mark; **Eur J Inform Syst;** Eur J Oper Res; Expert Syst Appl; Hum-Comput Interact; IEEE Software; IEEE T Comput; IEEE T Knowl Data En; IEEE T Software Eng; Inform Manage-Amster; Inform Organ-UK; Inform Software Tech; Inform Process Manag; Inform Res; Inform Sciences; Inform Soc; Inform Syst; Inform Syst Front; **Inform Syst J;** Inform Syst Manage; **Inform Syst Res;** Inform Technol Manag; Inform Technol Peopl; Informs J Comput; Interfaces; Int J Electron Comm; Int J Hum-Comput St; Int J Inform Manage; Int J Technol Manage; J Comput Syst Sci; J Comput Inform Syst; J Database Manage; J Glob Inf Manag; J Inf Sci; **J Inf Technol; J Manage Inform Syst;** J Organ End User Com; J Org Comp Elect Com; **J Strategic Inf Syst;** J Syst Software; J ACM; J Am Soc Inf Sci Tec; **J Assoc Inf Syst;** Knowl-Based Syst; Manage Sci; **MIS Quart;** MIT Sloan Manage Rev; Omega-Int J Manage S; Oper Res; Organ Sci; Organ Behav Hum Dec; Simul Model Pract Th; Simul-T Soc Mod Sim. (Note: Lowry et al. lists "Simulation." Not knowing which one was meant, we sampled both.)

Table A4: Z Scores of Centrality Measures for 73 IS and IS-Relevant Journals

Rank	Acronym	Outdegree	Indegree	Info Cent.	Average	Average	Bon Power
25	AMJ	-0.103	0.302	0.536	0.245	0.146	-0.339
16	AMR	0.472	0.981	0.234	0.562	0.026	-0.35
65	ACS	-0.787	-0.452	-1.781	-1.007	-1.271	-0.367
53	ATDS	-0.502	-0.387	-0.94	-0.609	-0.791	-0.392
55	ATIS	-0.761	-0.321	-0.997	-0.693	-0.838	-0.392
14	ASQ	0.439	1.746	-0.37	0.605	-0.438	-0.378
71	AIM	-0.64	-0.961	-1.896	-1.166	-1.336	-0.376
62	BH	-0.729	-0.94	-1.226	-0.965	-0.973	-0.382
17	BISE	1.95	-0.655	0.311	0.535	-0.012	-0.138
52	CMR	-0.054	-0.856	-0.702	-0.537	-0.673	-0.352
39	CACM	-0.865	-0.203	1.007	-0.021	0.665	-0.35
67	CR	-0.972	-0.647	-1.544	-1.054	-1.143	-0.394
35	CHB	-0.362	-0.694	1.169	0.038	0.926	-0.108
60	CJ	-0.847	-0.921	-0.655	-0.808	-0.635	-0.195
20	COR	-0.302	-0.059	1.215	0.285	1.68	3.192
61	CSCW	-0.437	-0.87	-1.55	-0.952	-1.149	-0.373
49	DBAIS	NA	NA	-0.347	-0.347	-0.467	-0.279
12	DSS	-0.089	0.736	1.397	0.681	1.458	0.973
46	DS	-0.277	-0.185	-0.115	-0.193	-0.305	-0.223
19	ECRA	0.069	0.212	0.591	0.291	0.234	-0.251
38	EM	NA	NA	-0.012	-0.012	-0.245	-0.272
6	**EJIS**	1.424	0.393	**1.019**	0.945	**0.683**	**-0.15**
31	EJOR	-0.511	-0.639	1.457	0.103	2.98	4.683
42	ESA	-0.717	-0.933	1.404	-0.082	2.001	5.126
69	HCI	-0.543	-0.718	-2.046	-1.102	-1.415	-0.391

Table A4: Z Scores of Centrality Measures for 73 IS and IS-Relevant Journals

13	I3S	0.206	1.423	0.192	0.607	-0.075	-0.355
72	I3TC	-0.97	-1	-1.78	-1.25	-1.273	-0.39
51	I3KDE	-0.939	-0.639	0.007	-0.524	-0.206	-0.274
43	I3SE	-0.449	0.003	0.165	-0.094	-0.064	-0.256
7	I&M	-0.186	1.683	0.936	0.811	0.591	-0.32
54	I&O	NA	NA	-0.628	-0.628	-0.626	-0.385
21	IPM	-0.677	0.909	0.61	0.281	0.356	-0.267
43	IR	-0.02	-0.692	0.095	-0.206	-0.124	-0.285
40	ISC	-0.554	-0.759	1.23	-0.028	1.254	2.168
66	TIS	-0.696	-0.777	-1.644	-1.039	-1.2	-0.39
30	I&ST	0.034	-0.378	0.778	0.145	0.506	-0.17
37	ISF	-0.487	0.147	0.351	0.004	0.024	-0.337
15	**ISJ**	-0.353	1.809	**0.258**	0.571	**-0.04**	**-0.382**
36	ISM	0.147	-0.1	0.021	0.023	-0.21	-0.319
5	**ISR**	0.569	1.632	**1.232**	1.144	**1.052**	**-0.202**
50	ISY	-0.6	-0.44	-0.209	-0.416	-0.36	-0.332
9	ITM	2.079	0.315	-0.031	0.788	-0.253	-0.329
45	ITP	NA	NA	-0.151	-0.151	-0.33	-0.355
29	IJC	-0.297	0.376	0.388	0.156	0.136	0.154
11	IJEC	2.045	-0.159	0.298	0.728	-0.02	-0.278
47	IJHCS	-0.344	-0.452	0.197	-0.2	-0.085	-0.328
23	IJIM	0.494	-0.501	0.762	0.251	0.378	-0.16
59	IJTM	-0.883	-0.801	-0.72	-0.801	-0.677	-0.385
58	INTF	-0.596	-0.665	-1.006	-0.756	-0.839	-0.221
63	JACM	-0.637	-0.818	-1.443	-0.966	-1.083	-0.378
22	JASIST	-0.018	-0.387	1.16	0.252	1.224	0.007
1	**JAIS**	3.907	2.258	**1.312**	2.492	**1.206**	**-0.054**
27	JCIS	0.401	-0.441	0.647	0.202	0.275	-0.014
64	JCSS	-0.843	-0.859	-1.266	-0.989	-0.989	-0.362
24	JDM	1.121	-0.256	-0.125	0.246	-0.319	-0.337
34	JGIM	0.512	0.061	-0.398	0.058	-0.487	-0.296
28	JIS	0.241	-0.159	0.493	0.192	0.195	-0.279
8	**JIT**	1.482	0.281	**0.623**	0.795	**0.258**	**-0.204**
3	**JMIS**	2.425	2.888	**1.205**	2.173	**0.99**	**-0.179**
33	JOCEC	0.628	-0.107	-0.345	0.059	-0.457	-0.319
73	JOEUC	NA	NA	-1.654	-1.654	-1.206	-0.372
4	**JSIS**	2.316	0.553	**0.598**	1.156	**0.228**	**-0.293**
41	JSS	-0.534	-0.617	0.96	-0.064	0.736	-0.16
44	KBS	-0.414	-0.585	0.569	-0.143	0.28	0.983
18	MS	-0.533	0.243	1.235	0.315	1.137	-0.074
2	**MISQ**	1.838	4.19	**1.395**	2.474	**1.445**	**-0.252**
56	SMR	-0.966	-0.214	-0.901	-0.694	-0.782	-0.395
10	OMEG	-0.029	1.284	0.956	0.737	0.753	1.024

Table A4: Z Scores of Centrality Measures for 73 IS and IS-Relevant Journals

32	OR	-0.648	-0.027	0.891	0.072	0.685	-0.02
57	OBHDP	-0.926	-0.325	-0.935	-0.729	-0.792	-0.395
26	OSC	0.065	0.002	0.647	0.238	0.453	-0.079
70	SMPT	-0.956	-0.956	-1.569	-1.16	-1.153	-0.288
68	STSM	-0.812	-0.87	-1.567	-1.083	-1.156	-0.388
Rank	**Acronym**	**Outdegree**	**Indegree**	**Info Cent.**	**Cent Av.**	**As Lowry**	**Bon Power**
Mean	B8	1.701	1.75	0.955	1.469	0.728	-0.215
	Comps	0.682	0.12	0.304	0.369	0.069	-0.164
	8 NonB8	0.617	1.001	0.452	0.69	0.255	-0.002
P-value B8:Comps	0.051	0.002	0.009	0	0.015	0.712	
P-value B8:Top 8 NonB8	0.072	0.184	0.067	0.014	0.127	0.352	

Notes: The Lowry et al. calculations (the narrow sample replication) are the average of three measures: the average of indegrees and outdegrees, information centrality, and Bonacich Power centrality (Lowry et al., p. 999). This effectively skews towards outdegrees for reasons noted in the text. The centrality average (Cent Av.), for the broader sample replication, is the mean of information centrality, indegree centrality and outdegree centrality, both of which are corrected for number of articles. The social network measures: Freeman degree centrality (outdegrees – citations sent, and indegrees – citations received), information centrality and Bonacich Power centrality (BPC) are calculated based on the cross-citation matrix of 73 journals in either direction. These metrics reflect the extent to which the journal is central or peripheral with respect to journals in or relevant to IS, as reflected in Lowry et al. (2013, Appendix B), which notes journals from prior IS journal rankings and scholarly opinion as surveyed by the Lowry et al. authors. The framed Bonacich Power measures should be used cautiously if at all. This is evident in comparing p values. Further, the correlation with our preferred (broader sample replication) average is only 0.105

Table 2: Scores for Citations and Centrality and Means of Both (Joint Scores)

JCR Short Name	Acron.	Narrow Citat's	Broad Citat's	Narrow Central.	Broad Central.	Narrow Joint Av	Broad Joint Av	Narrow Cit-Cnt	Broad Cit-Cnt
Acad Manage J	AMJ	2.549	2.754	0.146	0.245	1.348	1.499	2.403	2.509
Acad Manage Rev	AMR	2.647	3.370	0.026	0.562	1.337	1.966	2.621	2.808
ACM Comput Surv	ACS	2.729	3.902	-1.271	-1.007	0.729	1.448	4.000	4.909
ACM T Database Syst	ATDS	-0.061	0.161	-0.791	-0.609	-0.426	-0.224	0.730	0.770
ACM T Inform Syst	ATIS	-0.288	0.077	-0.838	-0.693	-0.563	-0.308	0.550	0.770
Admin Sci Quart	ASQ	1.520	1.938	-0.438	0.605	0.541	1.271	1.958	1.333
AI Mag	AIM	-0.738	-0.737	-1.336	-1.166	-1.037	-0.951	0.598	0.429
Bus Inform Syst Eng+	BISE	-0.844	-0.947	-0.973	0.535	-0.909	-0.206	0.129	-1.482
Bus Horizons	BH	-0.395	-0.760	-0.012	-0.965	-0.204	-0.862	-0.383	0.205
Calif Manage Rev	CMR	-0.188	-0.265	-0.673	-0.537	-0.431	-0.401	0.485	0.272
Commun Res	CR	-0.102	-0.278	-1.143	-1.054	-0.623	-0.666	1.041	0.776
Commun ACM	CACM	0.624	0.043	0.665	-0.021	0.645	0.011	-0.041	0.064

Table 2: Scores for Citations and Centrality and Means of Both (Joint Scores)

Comput J	CJ	-0.509	-0.580	-0.635	-0.808	-0.572	-0.694	0.126	0.228
Comput Supp Coop W J	CSCW	-0.894	-0.773	-1.149	-0.952	-1.022	-0.863	0.255	0.179
Comput Oper Res	COR	0.224	-0.004	1.680	0.285	0.952	0.140	-1.456	-0.289
Comput Hum Behav	CHB	0.217	-0.294	0.926	0.038	0.572	-0.128	-0.709	-0.332
Data Base Adv Inf Sy	DBAIS	-0.921	NA	-0.467	-0.347	-0.694	-0.347	-0.454	NA
Decision Sci	DS	0.124	0.067	-0.305	-0.193	-0.091	-0.063	0.429	0.260
Decis Support Syst	DSS	0.131	-0.050	1.458	0.681	0.795	0.316	-1.327	-0.731
Electron Commer R A	ECRA	-0.264	-0.398	0.234	0.291	-0.015	-0.054	-0.498	-0.689
Electron Mark	EM	-0.944	-1.197	-0.245	-0.012	-0.595	-0.605	-0.699	-1.185
Eur J Inform Syst	EJIS	-0.342	-0.421	0.683	0.945	0.171	0.262	-1.025	-1.366
Eur J Oper Res	EJOR	0.655	0.008	2.980	0.103	1.818	0.055	-2.325	-0.095
Expert Syst Appl	ESA	0.483	-0.327	2.001	-0.082	1.242	-0.205	-1.518	-0.245
Hum-Comput Interact	HCI	0.049	0.445	-1.415	-1.102	-0.683	-0.329	1.464	1.547
IEEE Software	I3S	-0.323	-0.346	-0.075	0.607	-0.199	0.131	-0.248	-0.953
IEEE T Comput	I3TC	-0.137	-0.288	-1.273	-1.250	-0.705	-0.769	1.136	0.962
IEEE T Knowl Data En	I3KDE	0.269	0.367	-0.206	-0.524	0.032	-0.078	0.475	0.891
IEEE T Software Eng	I3SE	0.317	0.825	-0.064	-0.094	0.127	0.366	0.381	0.919
Inform Manage-Amster	I&M	0.428	0.247	0.591	0.811	0.510	0.529	-0.163	-0.564
Inform Organ-UK	I&O	-0.603	-0.376	-0.626	-0.628	-0.615	-0.502	0.023	0.252
Inform Software Tech	I&ST	-0.248	-0.294	0.506	0.145	0.129	-0.075	-0.754	-0.439
Inform Process Manag	IPM	-0.200	-0.223	0.356	0.281	0.078	0.029	-0.556	-0.504
Inform Res	IR	-0.787	-0.786	-0.124	-0.206	-0.456	-0.496	-0.663	-0.580
Inform Sciences	ISC	0.311	0.042	1.254	-0.028	0.783	0.007	-0.943	0.070
Inform Soc	TIS	-0.569	-0.548	-1.200	-1.039	-0.885	-0.794	0.631	0.491
Inform Syst	ISY	-0.367	-0.208	-0.360	-0.416	-0.364	-0.312	-0.007	0.208
Inform Syst Front	ISF	-0.483	-0.517	0.024	0.004	-0.230	-0.257	-0.507	-0.521
Inform Syst J	ISJ	-0.174	-0.180	-0.040	0.571	-0.107	0.196	-0.134	-0.751
Inform Syst Manage	ISM	-0.647	-0.733	-0.210	0.023	-0.429	-0.355	-0.437	-0.756
Inform Syst Res	ISR	0.671	0.614	1.052	1.144	0.862	0.879	-0.381	-0.530
Inform Technol Manag	ITM	-0.841	-0.650	-0.253	0.788	-0.547	0.069	-0.588	-1.438
Inform Technol Peopl	ITP	-0.759	-0.698	-0.330	-0.151	-0.545	-0.425	-0.429	-0.547
Informs J Comput	IJC	-0.382	-0.359	0.136	0.156	-0.123	-0.102	-0.518	-0.515
Interfaces	INTF	-0.729	-0.726	-0.839	-0.756	-0.784	-0.741	0.110	0.030
Int J Electron Comm	IJEC	-0.555	-0.538	-0.020	0.728	-0.288	0.095	-0.535	-1.266
Int J Hum-Comput St	IJHCS	-0.153	-0.178	-0.085	-0.200	-0.119	-0.189	-0.068	0.022
Int J Inform Manage	IJIM	-0.409	-0.540	0.378	0.251	-0.016	-0.144	-0.787	-0.791
Int J Technol Manage	IJTM	-0.817	-0.933	-0.677	-0.801	-0.747	-0.867	-0.140	-0.132
J Comput Syst Sci	JCSS	-0.355	-0.166	-0.989	-0.989	-0.672	-0.578	0.634	0.823
J Comput Inform Syst	JCIS	-0.639	-0.794	0.275	0.202	-0.182	-0.296	-0.914	-0.996
J Database Manage	JDM	-0.795	-0.498	-0.319	0.246	-0.557	-0.126	-0.476	-0.744
J Glob Inf Manag	JGIM	-0.812	-0.618	-0.487	0.058	-0.650	-0.280	-0.325	-0.676
J Inf Sci	JIS	-0.444	-0.437	0.195	0.192	-0.125	-0.123	-0.639	-0.629
J Inf Technol	JIT	-0.200	-0.186	0.258	0.795	0.029	0.305	-0.458	-0.981

Table 2: Scores for Citations and Centrality and Means of Both (Joint Scores)

J Manage Inform Syst	JMIS	0.258	0.302	0.990	2.173	0.624	1.237	-0.732	-1.871
J Organ End User Com	JOEUC	-1.129	-0.603	-1.206	-1.654	-1.168	-1.129	0.077	1.051
J Org Comp Elect Com	JOCEC	-0.886	-0.801	-0.457	0.059	-0.672	-0.371	-0.429	-0.860
J Strategic Inf Syst	JSIS	-0.158	-0.003	0.228	1.156	0.035	0.576	-0.386	-1.159
J Syst Software	JSS	-0.298	-0.447	0.736	-0.064	0.219	-0.255	-1.034	-0.383
J ACM	JACM	0.717	1.134	-1.083	-0.966	-0.183	0.084	1.800	2.100
J Am Soc Inf Sci Tec	JASIST	0.056	-0.145	1.224	0.252	0.640	0.053	-1.168	-0.397
J Assoc Inf Syst	JAIS	-0.457	0.168	1.206	2.492	0.375	1.330	-1.663	-2.324
Knowl-Based Syst	KBS	-0.424	-0.521	0.280	-0.143	-0.072	-0.332	-0.704	-0.378
Manage Sci	MS	0.889	0.504	1.137	0.315	1.013	0.410	-0.248	0.189
MIS Quart	MISQ	1.557	1.687	1.445	2.474	1.501	2.081	0.112	-0.787
MIT Sloan Manage Rev	SMR	-0.321	-0.348	-0.782	-0.694	-0.552	-0.521	0.461	0.346
Omega-Int J Manage S	OMEG	0.461	0.504	0.753	0.737	0.607	0.621	-0.292	-0.233
Oper Res	OR	0.349	0.291	0.685	0.072	0.517	0.181	-0.336	0.219
Organ Sci	OSC	1.349	1.143	0.453	0.238	0.901	0.691	0.896	0.905
Organ Behav Hum Dec	OBHDP	0.460	0.228	-0.792	-0.729	-0.166	-0.250	1.252	0.957
Simul Model Pract Th	SMPT	-0.686	-0.766	-1.153	-1.160	-0.920	-0.963	0.467	0.394
Simul-T Soc Mod Sim	STSM	-0.862	-0.804	-1.156	-1.083	-1.009	-0.944	0.294	0.279
							Abs mean:	0.735	0.796
		Narrow Citat's	**Broad Citat's**	**Narrow Cnt Av**	**Broad Cnt Av**	**Narrow Joint Av**	**Broad Joint Av**	**Narrow Cit-Cnt**	**Broad Cit-Cnt**
Mean, Basket of 8		0.144	0.248	0.728	1.469	0.436	0.858		
Mean, Comparisons		-0.517	-0.525	-0.011	0.369	-0.265	-0.078		
Mean, Top 8 Non-B8		1.632	1.946	1.583	0.690	1.176	1.054		
Mean, IS journals		-0.382	-0.345	0.115	0.473	-0.215	-0.037		
Mean, Non-IS journals		0.147	0.164	-0.105	-0.336	0.071	-0.029		
P-value B8:Comps		0.005	0.008	0.013	0.000	0.000	0.012		
P-value B8:Top NonB8		0.003	0.003	0.013	0.014	0.005	0.533		
P-value IS:Non IS		0.006	0.021	0.309	0.000	0.083	0.962		

Notes: The narrow sample replication so far as possible (differing largely due to changes in Google results) whereas the broader sample, for citations, uses the six measures **not** from Google Scholar (thus not including the h-index and g-index); for centrality, just outdegree and indegree, both corrected for number of articles, and information centrality, not Bonacich Power. The narrow sample replications include measures from Google Scholar, including the h-index and g-index, and Bonacich Power. Our reasons for excluding them in our suggested alternative measures are stated below in the Appendix.

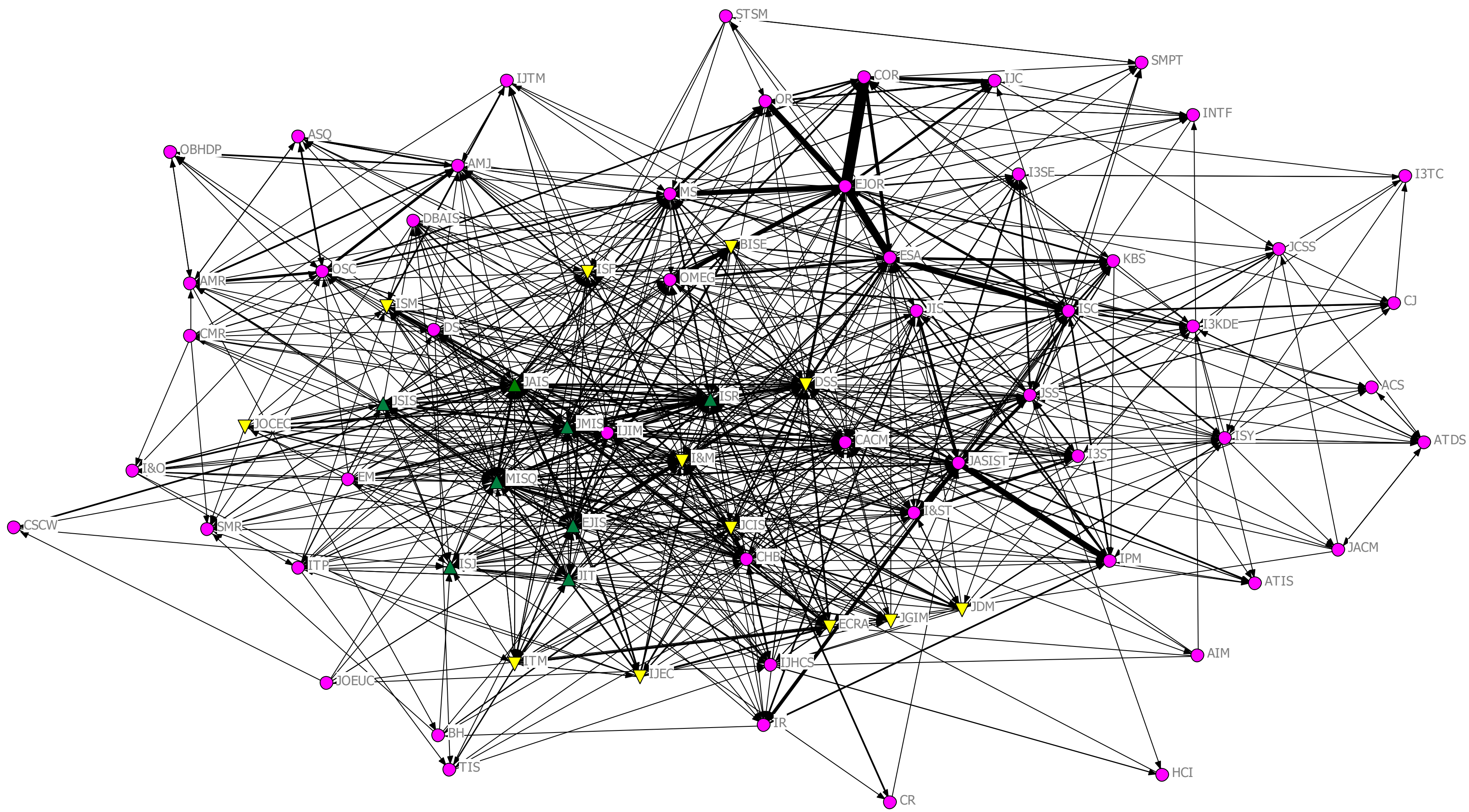

Figure 2. Cross-Citations among 73 IS and IS-Related Journals

Key: Upward triangles: Basket of Eight; downward triangles: IS comparison journals; circles: excluded journals. Graphic prepared with NetDraw (Borgatti, 2002).

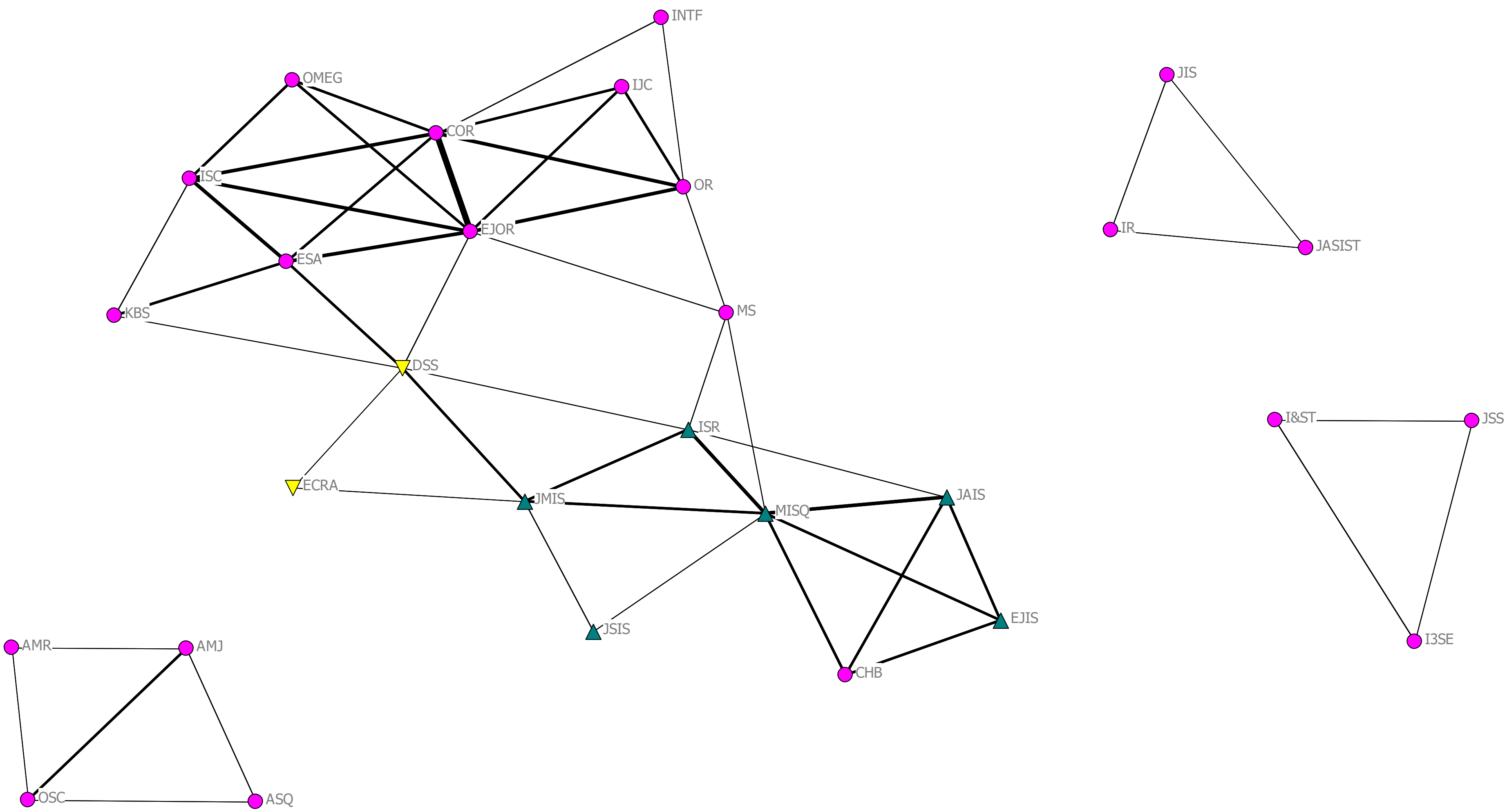

Figure 3: Simmelian Ties among IS and IS-related Journals

Key: Upward triangles: Basket of Eight; downward triangles: IS comparison journals; circles: excluded journals. Each triad (Simmelian clique) has ≥ 12 cross citations. Graphic prepared with NetDraw (Borgatti, 2002).

About the Authors

Alex Stewart is a Professor of Business Administration and Chair in Entrepreneurship at Memorial University of Newfoundland. During much of this study he was Professor of Management and Coleman Foundation Chair in Entrepreneurship at Marquette University. He received his Ph.D. in Political Science and Social Anthropology, his MBA and his MA in Social Anthropology from York University in Toronto. His writings are in the areas of business anthropology, entrepreneurship, and the sociology of knowledge. He is a past Chair of the Entrepreneurship Division of the Academy of Management and of the Family Enterprise Research Conference, and Co-Chair of the Organization Science Winter Conference.

John L. Cotton is a Professor of Management in the College of Business Administration at Marquette University. He received his Ph.D. from the University of Iowa, and has taught at the University of Iowa, Iowa State University, Purdue University, and Marquette. John's primary interests are in Organizational Behavior, specifically employee involvement, leadership, the sociology of academic knowledge, and the mentoring of employees. He has published numerous articles, chapters, and a book on these topics. In addition, he has conducted training and executive development with General Motors, the United Auto Workers, General Electric, Blue Cross/Blue Shield, and the Farm Bureau. He has consulted with the Veterans Administration, General Electric, AT&T, and other organizations. Dr. Cotton is a member of the Academy of Management, the American Psychological Society, and the Society of Industrial/Organizational Psychologists.