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# Investigating Information Systems Research in Canada

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***Abstract***
*This project reports on the state of Information Systems (IS) research in Canada by analyzing research output and impact of Canadian IS scholars appearing in the form of peer-reviewed journal articles. Specifically, we (a) measured individual productivity and impact, (b) measured institutional productivity and impact, (c) listed journals in which these works have appeared, (d) identified the most influential articles, (e) developed a ranking of IS scholarly journals from a Canadian perspective, and (f) compared the obtained journal ranking with the global IS journal rankings. Based on the findings, it was concluded that the Canadian IS discipline exhibits signs of academic maturity. Copyright © 2011 ASAC. Published by John Wiley & Sons, Ltd.*

**JEL Classification:** M15

***Résumé***
*La présente étude rend compte de l'état de la recherche en Systèmes d'information (IS) au Canada. Elle s'appuie sur l'analyse du résultat et de l'impact de la recherche des universitaires canadiens tels qu'ils apparaissent dans les articles publiés dans les revues à comité de lecture. L'article se propose de (a) mesurer la productivité et l'impact individuels; (b) mesurer la productivité et l'impact institutionnels; (c) faire la liste des revues dans lesquelles les travaux sont publiés; (d) répertorier les articles les plus influents; (e) faire un classement des revues scientifiques en IS dans le contexte canadien; et (f) comparer le classement canadien aux classements mondiaux. Les résultats montrent qu'au Canada, le domaine des Systèmes d'information présente des signes de maturité. Copyright © 2011 ASAC. Published by John Wiley & Sons, Ltd.*

**Keywords:** information systems, scientometrics, research output, research productivity, research impact, citation impact, Google Scholar, discipline identity, journal ranking, Publication Power Approach

**Mots-clés :** systèmes d'information, scientométrie, résultat de la recherche, productivité de la recherche, impact de la recherche, impact citationnel, Google Scholar, identité de la discipline, classement des revues, Publication Power Approach

The goal of this study is to investigate the state of Information Systems (IS) research in Canada by presenting a snapshot of publications of Canadian IS scholars appearing in peer-reviewed journals. The framework for the stakeholder approach to identity construction of the IS discipline was adapted, and six research questions were proposed with the purpose to: (a) measure individual productivity and impact, (b) measure institutional productivity and impact, (c) list journals in which these works have appeared, (d) identify the most influential articles, (e) develop a ranking of IS scholarly journals from a Canadian perspective, and (f) compare the obtained journal ranking with the global IS journal rankings. Various reasons suggest the need for such an endeavour, as explained below.

Compared to most other management and business disciplines, IS is relatively new. Since its inception, numerous studies have been conducted to understand the nature and direction of IS research (Benbasat & Weber, 1996; Benbasat & Zmud, 2003; Dearden, 1972; Mason & Mitroff, 1973). Prior investigations developed frameworks that guide IS research (Ives, Hamilton, & Davis, 1980), explored IS research diversity issues (Robey, 1996), created mechanisms to classify IS research topics (Barki, Rivard, & Talbot, 1993), examined what constitutes the (IT) artifact (Orlikowski & Iacono, 2001), and explored the employment of IS scholarly output in practical settings (Benbasat & Zmud, 1999; Pearson, Pearson, & Shim, 2005). As part of these efforts to understand where we were, where we are, and where we want to be (Holsapple, 2008b), many

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scientometric investigations were also conducted to understand who the most influential IS researchers and institutions are, how the IS community perceives the quality of its journals, and what inquiry methods are utilized (Lowry, Karuga, & Richardson, 2007b; Lowry, Romans, & Curtis, 2004; Palvia et al., 2004). However, very few projects investigating the development of IS research in Canada have been conducted. In his seminal work, Erkut (2002) measured the productivity and impact of Canadian business academics and their institutions; however, he did not analyze the IS discipline specifically. While Serenko, Cocosila, and Turel (2008) studied the Canadian IS discipline, they limited their study to the analysis of the proceedings of a single conference. The lack of research on the Canadian IS discipline is regrettable since there are various stakeholders who need to understand the state of the field.

Most previous studies of the state of IS research were done in the US, but their results may not be fully applied to Canada. First, the nature of academic institutions in both countries is different; whereas there are public and private universities in the US, all major Canadian universities are public. Second, the stakeholders of IS research in Canada are different. For example, national IS research is supported by the Canadian granting agencies, which have their own preferences and expectations. It is possible that the research behaviour of IS scholars in Canada will be somewhat different from that of their international colleagues. Therefore, it is critical to explore the state of IS discipline in Canada, which will provide the national stakeholders with a realistic picture of the domestic IS discipline.

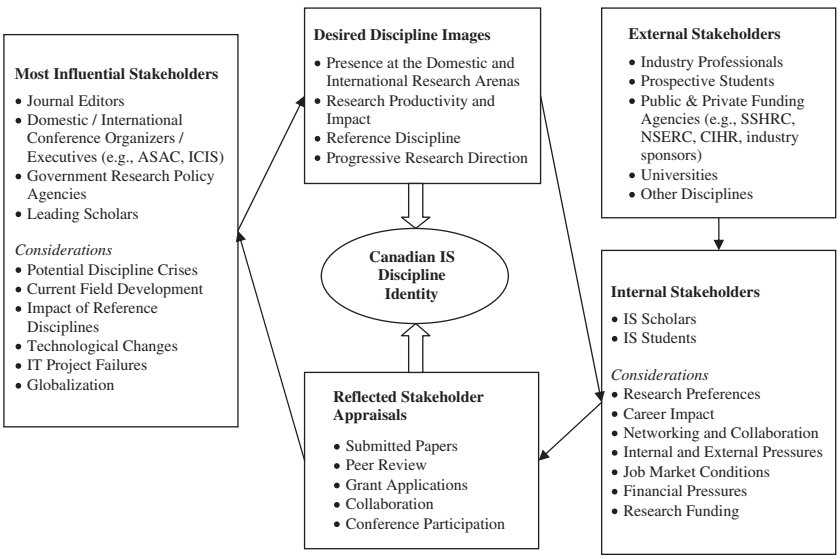
## Framework

The stakeholder approach to identity construction of the IS discipline (Scott & Lane, 2000; Sidorova, Evangelopoulos, Valacich, & Ramakrishnan, 2008) also indicates the importance of this investigation. IS identity, which includes the central, distinctive, and enduring aspects (e.g., goals, values, and practices) of the field, is formed through interactions among its various stakeholders. The results of this study may be of interest to the discipline's most influential, internal, and external stakeholders. Each of these groups plays a role in the identity construction process of the Canadian IS domain (Figure 1).

### Most Influential Stakeholders

There are several highly influential stakeholders who develop desired discipline images through their actions. They include journal editors, organizers or executives of domestic and international conferences, government research policy agencies, and leading scholars who are recognized both nationally and globally. These most influential stakeholders envision an ideal Canadian IS discipline as having presence in

*Figure 1.*
The framework for the stakeholder approach to identity construction of the IS discipline in Canada – Adapted from Scott and Lane (2000) and Sidorova et al. (2008)



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both local and international research arenas, as demonstrating very high research productivity and impact both within and outside the IS domain so that it would be referred to as the reference discipline, and as moving in the right and progressive direction.

However, it is important to know who the most influential IS scholars are. The leading scholars, in turn, should be able to communicate their scientific merit to others both within and outside the IS discipline. Journal editors wish to know how well their journals are recognized by Canadian scholars to make decisions such as selecting editorial board members, guest editors, and reviewers. Conference organizers may use this information when they select conference themes, executive committee members, keynote speakers, and panel topics.

### Internal Stakeholders

Internal stakeholders, such as IS scholars and students who develop their own perceptions of the field's identity, are affected by the desired discipline images coming from the most influential stakeholders, and their reflected appraisals are manifested in their actions. Internal stakeholders consider their personal research interests, career perspectives, opportunities for networking and collaboration, external pressures, job market conditions, financial constraints, and availability of research funding. Their actions are manifested through scholarly papers, participation in peer-reviews, grant applications, collaboration preferences, and conference attendance. The actual image of the Canadian IS academic field represents a combination of two major factors: desired discipline images, coming from the most influential IS stakeholders, and reflective stakeholder reappraisals, resulting from the actions of internal players.

Internal stakeholders may dramatically benefit from the results of scientometric studies. For instance, findings allow IS scholars to demonstrate their research achievements to colleagues, administrators, tenure and promotion committees, and granting agencies. Researchers may compare their own research productivity and impact with those of their colleagues and the leading scholars. This is similar to the feedback process that benefits performance enhancement (Kluger & DeNisi, 1996). The identification of journals in which Canadian IS researchers publish and the development of national journal rankings can also aid scholars (particularly junior ones) and graduate students to choose appropriate outlets to submit their work. Moreover, influential articles can familiarize graduate students (e.g., during PhD seminars) with the field.

### External Stakeholders

Internal stakeholders are influenced by external stakeholders such as industry professionals, prospective students, Canadian public funding agencies (e.g., Social Sciences and Humanities Research Council, Natural Sciences and Engineering Research Council, and Canadian Institutes of Health Research), and private industry sponsors. They feel pressure from their institutions through hiring and tenure and promotion requirements. Internal stakeholders also depend on the body of knowledge existing in other reference disciplines.

It is critical for external stakeholders to understand the state of the Canadian IS discipline. Individual productivity and impact, journal rankings, and influential articles are useful for industry professionals and nondiscipline researchers who want to read papers in the most credible outlets or consult expert opinions. Libraries may employ journal rankings when they allocate their limited subscription resources. Institutional rankings may be used by prospective graduate students who want to apply to research-intensive universities. They also allow well-ranked universities to attract higher calibre job applicants, retain current faculty members, enhance reputation, and secure funding. The usage of officially recognized rankings is the best way for tenure and promotion committee members to make informed decisions since some of them are often unfamiliar with the IS domain.

### The Scientometric Approach

Scientometrics is a science about science, and it offers tools, approaches, theories, and methods that researchers may apply to investigate various aspects of a discipline in detail (Garfield, 1979; Merton, 1976; Price, 1963). There are two scientometric approaches to investigating the state and evolution of a scientific field: normative and descriptive (Neufeld, Fang, & Huff, 2007). The former analyzes heuristics, assumptions, directions, and principles underlying the scholarly domain in order to make prescriptions. The latter observes the past and current state of the discipline in aggregate form by analyzing cumulative scientific outputs. In other words, researchers who adhere to the descriptive approach are not trying to directly guide the field; instead, they examine its various aspects through a scientometric lens of analysis. In the present project, the descriptive approach is selected since it is better suited to empirical scientometric investigations of the discipline.

Scientometrics has played an important role in IS research (Straub, 2006). IS scientometric investigations usually relate to the following areas: productivity studies that measure the quantity and impact of the scientific outputs of individual scholars or institutions at the national and international levels (Huang & Hsu, 2005); journal ranking projects (Lowry et al., 2004); metrics developments that identify new methods for future scientometric research (Holsapple, 2008a, 2009); and analysis of the impact of IS research on other scholarly domains to test whether IS may be considered a reference discipline (Wade, Biehl, & Kim, 2006).



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## Research Questions

Research productivity and impact have traditionally been one of the key streams of scientometrics in all scientific domains (Bapna & Marsden, 2002; Gu, 2004; Serenko & Bontis, 2004; Wright & Cohn, 1996), including IS (Dean, Lowry, & Humpherys, 2011). Research productivity is usually defined as the overall number of papers published, and research impact typically corresponds to the total number of citations to someone's works (Truex, Cuellar, & Takeda, 2009). The findings are generally reported in the form of ranking lists of the most productive and/or influential individuals, departments, or institutions (Grover, Segars, & Simon, 1992). Whereas most scientometric projects consider works published in a limited set of academic journals (Palvia, Mao, Salam, & Soliman, 2003; Palvia et al., 2004; Palvia, Pinjani, & Sibley, 2007) or conference proceedings (Chan, Kim, & Tan, 2006; McLaren & Mills, 2008; Serenko, Bontis, & Grant, 2009), entire publication records are rarely studied. A major driving force behind research is the evidence that the quality and quantity of scholarly publications reflects the nation's scientific wealth and boosts its economic prosperity (King, 2004). For example, there is a positive relationship between the GDP and the volume of scientific research (Hart & Sommerfeld, 1998; Serenko, Bontis, Booker, Sadeddin, & Hardie, 2010). In IS, the first research productivity project was conducted 30 years ago (Hamilton & Ives, 1982), and this line of inquiry still continues (Chua, Cao, Cousins, & Straub, 2002; Grover et al., 1992; Im, Kim, & Kim, 1998).

In Canada, the issue of research productivity and impact has been frequently discussed (Manning & Barrette, 2005). For instance, Erkut (2002) measured the productivity and impact of Canadian business schools, but he neglected the IS discipline. Recently, Serenko et al. (2008) measured the productivity of Canadian IS researchers and universities by analyzing the proceedings of the IS division of the Administrative Sciences Association of Canada (ASAC) conference. However, even though ASAC is a major Canadian business conference, it is possible that the reported productivity rankings disadvantaged those scholars who submit their manuscripts directly to journals, or those who attend international IS meetings. Therefore, it is critical to measure the productivity and impact of the most prolific Canadian IS scholars and institutions. The following research questions are offered:

*Research Question 1. Who are the current leading IS researchers in Canada based on (a) research output and (b) research impact?*

*Research Question 2. What are the current leading IS research institutions in Canada based on (a) research output and (b) research impact?*

The existence and identity of a scientific domain is defined, to some degree, by a set of academic journals (Paul, 2004). Discipline-specific outlets lay the foundation, impact the evolution, and form directions for the development of a scholarly domain (Serenko & Bontis, 2009). Journals allow researchers to directly communicate their ideas to a wider audience, become aware of recent developments, learn about seminal works, accumulate references, and preserve the scientific body of knowledge for the future generations of scholars and practitioners. Journals also play an important role in doctoral student training. For example, during graduate courses and seminars, professors often use journals to familiarize students with the field, expose them to publishing standards, and guide them through the entire research process, from idea generation to final paper acceptance. When a new business research field appears, discipline researchers have to submit their works to general management or other specialized journals that are likely to publish on a topic. However, many readers of such outlets are unlikely to find these articles appealing. Over time, discipline-specific outlets appear and gain recognition.

In IS, there has been a steady increase in the number of new journals since the 1980s (Fisher, Shanks, & Lamp, 2007). At the same time, many IS journal lists and ranking reports include non-IS specific outlets. For example, the Journal Ranking List of the AIS, Lamp's (2009) index for IS journals, and other reports (Lowry et al., 2004) include non-IS titles such as *Administrative Science Quarterly*, *Harvard Business Review*, *Sloan Management Review*, *International Journal of Knowledge, Culture and Change Management*, and *California Management Review*.[1] Since these journal lists usually reflect the opinion and actions of active field researchers, it is likely that some IS academics work in non-IS domains or submit their manuscripts to non-IS journals. This interdisciplinary nature of the publication patterns is interesting. At the same time, no prior study has reported on the publication preferences of Canadian IS scholars. The following research question is therefore proposed:

*Research Question 3. In what journals do current Canadian IS researchers publish?*

The ultimate goal of each article appearing in refereed journals is to contribute to the body of knowledge. In scientometrics, the citation count usually serves as a well-accepted measure of a work's impact on a particular scientific domain (Patsopoulos, Analatos, & Ioannidis, 2006). If the work is not cited, it probably remained unnoticed and made little difference. Therefore:

*Research Question 4. What are the most influential journal articles published by current Canadian IS researchers?*

The development of ranking lists of academic journals has been a frequent topic of IS scientometric projects



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(Kleijnen & Van Groenendaal, 2000). In these projects, two major approaches have been used: expert survey and citation impact (Lowry et al., 2004; Lowry, Humphreys, Malwitz, & Nix, 2007a). During expert surveys, a number of active field researchers are identified and asked to indicate their perceptions of journal quality and/or impact (Bharati & Tarasewich, 2002; Mylonopoulos & Theoharakis, 2001). For example, experts may assess journal quality on a Likert-type scale, select only a limited set of high quality journals, or group outlets based on their impact on IS theory or practice. The key advantage of expert surveys is that rankings are based on an overall opinion of a representative group of scholars who utilize these journals for research purposes and, therefore, are in a position to judge their overall value for the IS discipline. The weaknesses of this approach, however, may outweigh the benefits (Adler & Harzing, 2009; Gallivan & Benbunan-Fich, 2007; Tahai & Meyer, 1999; Truex et al., 2009). First, new and niche journals are disadvantaged since many survey respondents may not be familiar with these outlets and, therefore, assign them lower scores. Second, it may take many years for academics to change their opinion regarding journal quality; this makes rankings somewhat obsolete. Third, survey participants report their perceptual measures that may be formed under certain biases. For example, it is likely that someone would assign greater rank to the outlets in which he or she published. Fourth, during the construction of journal lists presented to survey participants, researchers often rely on previously published rankings and are less likely to include new journals. Fifth, many respondents base scoring decisions on their general familiarity with each outlet (Serenko & Bontis, 2011); however, familiarity and quality are two distinct phenomena. Sixth, institutional politics may also affect respondents' journal ranking decisions. For example, some may favour outlets appearing on their institutional ranking lists.

The citation-based journal ranking approach addresses the limitations of expert surveys by relying on more objective measures (Cheng, Kumar, Motwani, Reisman, & Madan, 1999; Goodrum, McCain, Lawrence, & Giles, 2001; Harzing, 2005; Holsapple, Johnson, Manakyan, & Tanner, 1994; Howard & Day, 1995). The lists are usually constructed based on the Journal Citation Reports by Thomson Reuters. On the one hand, journal ranking lists are formed based on the actual, not self-reported, criteria of journal quality. On the other hand, this method introduces new issues (Seglen, 1997). First, niche or new journals are disadvantaged since they are read by a narrow group of scholars or have not been in print long enough to attract many citations. Second, the key assumption of the technique, such as a positive relationship between the number of citations and quality, is questionable. For example, self-citations or negative citations may inflate citation indices. Third, there may be a time lag between the point when an article is published and when it starts being cited. Fourth, not all works cited in a particular paper are equal; for instance, those that are used to strengthen an opening section have a marginal value, whereas some that are employed to build a theoretical foundation or methodology are crucial. The citation-based approach, however, makes no distinction in this regard.

In order to address the shortcomings of these two dominating ranking approaches, Holsapple (2008a, 2009), and Holsapple and O'Leary (2009) suggested a novel technique referred to as the Publication Power Approach. The ranking is based on the actual publishing behaviour of leading tenured IS scholars over an extended period of time. The ranking is created by analyzing journals in which the leading tenured discipline scholars have been publishing. Because those individuals have demonstrated research excellence recognized by their peers during review processes and by tenure and promotion committees, their research output should be of the highest quality. Moreover, the Publication Power Approach allows establishing national or regional journal rankings. For this, publication records of leading tenured academics from a particular country or region should be utilized. This feature makes the technique suitable for the current investigation in order to develop an IS journal ranking list for Canada.

There is evidence to suggest that journal rankings depend on the geographical location of the journal, its contributors, editorial team, readers, or those who assess its quality (Lowry et al., 2004; Lowry et al., 2007a). It is for these reasons that national journal ranking systems have been proposed (Fisher et al., 2007). However, no IS journal ranking in Canada has yet been established. Therefore, the following research questions are offered:

*Research Question 5. What is the ranking of scholarly journals from a Canadian IS perspective?*

*Research Question 6. How does the ranking of scholarly journals from a Canadian IS perspective compare with those of previously established IS journal rankings?*

## Method

The work by Erkut (2002) was utilized as a basis for this study's methodology, and several recent scientometric developments were considered. Only articles in peer-reviewed journals were used since they are the most valid reflection of a scholar's academic record.

### List of Scholars

By utilizing the online records of the Association of Universities and Colleges of Canada, all IS university departments located in business schools were listed. University of Ontario Institute of Technology and Athabasca

University were excluded since upon discussion with their members, it was concluded that most faculty members of the former studied topics outside of the scope of traditional IS projects and many full-time faculty members of the latter mostly concentrated on facilitating the delivery of online instruction. Based on each faculty website, a list of all full-time tenured or tenure-track IS faculty members was created and forwarded to the IS area chair/coordinator/senior scholar for confirmation.

### List of Publications

Each identified member was approached through a personalized email message that explained the purpose of the project and solicited a list of all his/her peer-reviewed journal articles that were published or accepted as of September 1, 2008. After three follow-up reminders, only seven scholars did not respond. To obtain their list of publications, an extensive online search of various online databases was conducted, their publication records were identified, and forwarded to them for confirmation.

### Productivity Score Calculation

There are four methods to calculate research productivity and impact scores (Serenko et al., 2010): normalized page size (the scores depend on the paper's length), direct count (each author receives the score of one regardless of the number of authors), equal credit (each author receives the score of 1/N where N is the number of authors), and author position (the closer the author's name to the top of the list, the higher his/her score; e.g., the authors of a two-authored paper receive 0.6 and 0.4, and four-authored 0.415, 0.277, 0.185, and 0.123, respectively, as per the formula by Howard, Cole, & Maxwell [1987]). The normalized page size method was excluded since a paper's length is unlikely to influence its significance. All scores were reported based on direct count, equal credit, and author position approach.

### Citation Impact Score Calculation

All citations were derived from (a) Google Scholar (GS) by means of Harzing's Publish or Perish Tool, and (b) Thomson Reuters' Web of Science (WOS). Previous research suggests that GS is an important citation analysis tool that offers results consistent with those by WOS. At the same time, it has several advantages (Harzing & van der Wal, 2008a, 2008b; Kousha & Thelwall, 2007; Meho, 2007; Meho & Yang, 2007). First, whereas WOS database includes only 36% of all IS journals (Fisher et al., 2007), GS covers all of them. Second, GS draws citations not only from journals, but also from books, proceedings, professional publications, reprint repositories, patents, and so forth, including non-English language sources. Third, GS is more robust when dealing with citations containing typos or incomplete information. It was believed that by using two citation tools simultaneously, a more valid picture may be obtained. No adjustment to the number of faculty members per department was made because most IS departments are small, with many including only a few members. In this case, departments that recently hired PhD graduates who have fewer publications and a smaller citation impact would be dramatically disadvantaged. This adjustment may be done only at the business school level.

### List of Journals

The lists of journals were developed based on research output (i.e., how frequently the scholars published in these journals) and citation impact (i.e., how frequently their papers were cited in these journals).

### Most Influential Papers

A list of most frequently cited articles was constructed. For this, only GS was employed since using WOS, which covers IS journals to a lesser extent, might disadvantage some works. For example, WOS does not include articles published in *Information Systems Research* from 1990 to 1994, which is considered one of the premier IS journals. Only articles that appeared at least five years ago (2003 and earlier) were considered, and the Normalized Citation Impact Index (NCII) was utilized to consider the impact of a publication's longevity (Holsapple et al., 1994). The NCII was calculated by dividing the total number of citations by the publication longevity in years. The year 2008 was considered the end point of the period. Therefore, for a paper that appeared in 2000 and was cited 1,000 times, NCII = 1,000 / 8 = 125.

### Ranking of Journals

A list of leading tenured IS researchers was constructed by selecting the names of all individuals who were included in at least one list of the key scholars based on their productivity or impact scores. The Publication Power Approach described by Holsapple (2008a, 2009), Holsapple and O'Leary (2009), and Holsapple and Lee-Post (2010) was used. For each journal, two scores were calculated: (a) publishing intensity, which is the sum of the number of times this outlet was used for publication across all leading tenured researchers, and (b) publishing breadth, which is the number of scholars who published at least one paper in this journal. The journal's publication power, which was employed to develop the final ranking, is the product of publishing intensity and publishing breadth. The obtained ranking was compared with those included in the AIS Senior Scholars' Basket of Journals and the AIS Journal Ranking List. A possible limitation of the Publication Power Approach is that it may overrate journals that publish more

articles per year. Therefore, for all ranked journals, a correlation between the number of articles published in 2008 and their publishing power was calculated.

### Difference in Score Calculation Methods

Spearman's correlations were calculated for three score calculation methods as well as for citation scores obtained from GS and WOS.

### Note of Caution

We note that this project's findings should be interpreted with caution. First, even though journal articles have been traditionally used to measure research output and impact, there are other forms of publications that contribute to science and enjoy high citation rates—for instance: books, book chapters, and conference proceedings. Research grants are a valid measure of academic excellence. Second, IS departments employing new PhD graduates who have not yet developed a strong publication record are disadvantaged. Third, there are other important categories of scholarly contributions, for example, supervising graduate students, organizing conferences, serving on editorial boards, and participating in peer-reviews, which were excluded. Fourth, there are multiple issues with regard to the counting of citations as a measure of citation impact. For example, excessive self-citations may bias the outcome. Negative citations, when the work is critiqued but not used, still contribute to the overall citation count. Not all citations in a paper have an equal contribution. Even though there is no evidence to suggest that these phenomena take place in the IS domain, they need to be considered when interpreting the results. Fifth, despite our best efforts to ensure the accuracy of the findings, some errors are still unavoidable. In fact, this paper does not imply that the overall scholarly contribution of a particular individual or institution is high or low; it simply reports on a particular picture obtained by specific measurement methods that are recognized in scientometrics.

## Results

Overall, 176 full-time tenured or tenure-track faculty members who published at least one journal article from 36 universities were identified. Tables 1 through 6 present the research output and citation impact of individuals and institutions. The Canadian IS researchers published their papers in 714 unique refereed journals. Table 7 outlines the list of journals ranked based on the overall research output (i.e., publication frequency in each journal). Tables 8 and 9 present journal lists based on the number of citations each journal attracted.

Table 10 outlines the nature of the journals in which the Canadian IS researchers prefer to publish their papers. Four observations were made. First, almost half of all selected outlets did not directly pertain to mainstream IS. Second, many non-IS journals were IT-related, such as computer science, networking, and artificial intelligence. Third, health care and medicine outlets represented a noticeable proportion (i.e., 6%). Fourth, a few journals that are unlikely to accept IS papers were spotted—for example, those in the field of economics, finance, physics, mathematics, and law.

Table 11 presents a list of the most frequently cited works based on the NCII. Table 12 outlines a ranking of journals from the Canadian IS perspective based on the actual publication behaviour of 45 leading tenured researchers whose names appeared in Tables 1 through 3. Since no statistically significant correlation was observed between the number of 2008 articles in the ranked journals and their publishing power ($rho = 0.14$, $p = 0.263$, *ns*.), it was concluded that the number of articles published by a journal had no impact on the obtained ranking.

Table 13 reports on the consistency of results obtained by different calculation methods, and Table 14 outlines the relationships between the data obtained from GS and WOS. First, all three methods produced highly correlated results with respect to research impact. Second, with regard to research output, the direct count and equal credit methods, and direct count and author position methods correlated strongly, but some differences in rankings were observed. Third, results obtained from GS and WOS correlated very strongly. However, GS returned approximately three times as many citations as WOS. A visual inspection of all tables demonstrates that generally, the obtained rankings are very consistent. However, in some cases, WOS returned very few, if any, citations to an article, especially if WOS does not currently index this journal or does not index a time period when an article appeared. Five articles among the top 50 GS cited papers are not indexed by WOS. For instance, the article, "Development of an instrument to measure the perceptions of adopting an information technology innovation," *Information Systems Research, 2*(3), 192–222, by Moore and Benbasat (1991), received the most GS citations (1,285), but was not indexed by WOS and therefore received no WOS citations.

## Discussion

### Summary

The findings from this study portray several aspects of the actual state of Canadian IS research. Specifically, based on individual research output and research impacts, the leading IS scholars were identified. The five most productive and influential scholars published over 60 articles each, and their GS citation count exceeds 2,000, which demonstrates their significant contribution to the body of knowledge. HEC, UBC, Queen's U, U of Western

**Table 1**
*Individual Research Output – Top 30*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | Name | Score | % | Name | Score | % | Name |
| 112 | 4.95 | Benbasat, I. | 51.95 | 4.70 | Raymond, L. | 53.12 | 4.71 | Raymond, L. |
| 97 | 4.29 | Raymond, L. | 51.00 | 4.61 | Benbasat, I. | 48.22 | 4.28 | Benbasat, I. |
| 74 | 3.27 | Higgins, C.A. | 38.70 | 3.50 | Kersten, G. | 41.96 | 3.72 | Kersten, G. |
| 68 | 3.01 | Yuan, Y. | 30.83 | 2.79 | Caro, D. | 31.12 | 2.76 | Caro, D. |
| 66 | 2.92 | Kersten, G. | 28.90 | 2.61 | Yuan, Y. | 27.85 | 2.47 | Yuan, Y. |
| 58 | 2.57 | McKeen, J.D. | 28.15 | 2.55 | Higgins, C.A. | 27.04 | 2.40 | Zahir, S. |
| 52 | 2.30 | Rivard, S. | 28.08 | 2.54 | McKeen, J.D. | 26.68 | 2.37 | McKeen, J.D. |
| 48 | 2.12 | Wand, Y. | 27.50 | 2.49 | Zahir, S. | 25.08 | 2.22 | Higgins, C.A. |
| 41 | 1.81 | Zahir, S. | 22.50 | 2.04 | Rivard, S. | 20.30 | 1.80 | Rivard, S. |
| 40 | 1.77 | Ngwenyama, O. | 21.53 | 1.95 | Wand, Y. | 19.70 | 1.75 | Paré, G. |
| 39 | 1.72 | Paré, G. | 19.16 | 1.73 | Ngwenyama, O. | 19.17 | 1.70 | Ngwenyama, O. |
| 39 | 1.72 | Webster, J. | 18.48 | 1.67 | Paré, G. | 18.75 | 1.66 | Wand, Y. |
| 37 | 1.64 | Gallupe, R.B. | 17.60 | 1.59 | Webster, J. | 17.88 | 1.59 | Montazemi, A. |
| 33 | 1.46 | Caro, D. | 16.75 | 1.52 | Montazemi, A. | 16.66 | 1.48 | Ifinedo, P. |
| 31 | 1.37 | Barki, H. | 16.48 | 1.49 | Gallupe, R.B. | 16.16 | 1.43 | Palanisamy, R. |
| 28 | 1.24 | Montazemi, A. | 16.20 | 1.47 | Ifinedo, P. | 15.87 | 1.41 | Webster, J. |
| 28 | 1.24 | Nault, B.R | 15.17 | 1.37 | Nault, B.R. | 15.81 | 1.40 | Gallupe, R.B. |
| 28 | 1.24 | Pinsonneault, A | 14.92 | 1.35 | Palanisamy, R. | 15.01 | 1.33 | Barki, H. |
| 25 | 1.11 | Serenko, A. | 13.55 | 1.23 | Pinsonneault, A. | 14.61 | 1.30 | Nault, B.R. |
| 25 | 1.11 | Staples, D.S. | 13.23 | 1.20 | Barki, H. | 14.09 | 1.25 | Angeles, R. |
| 24 | 1.06 | Reich, B.H. | 13.17 | 1.19 | Angeles, R. | 13.94 | 1.24 | Pinsonneault, A. |
| 22 | 0.97 | Babin, G. | 12.58 | 1.14 | Serenko, A. | 13.16 | 1.17 | Serenko, A. |
| 22 | 0.97 | Chan, Y.E. | 12.00 | 1.09 | Wright, D.J | 12.88 | 1.14 | Cyr, D. |
| 21 | 0.93 | Angeles, R. | 12.00 | 1.09 | Reich, B.H. | 12.64 | 1.12 | Reich, B.H. |
| 21 | 0.93 | Aubert, B. | 11.75 | 1.06 | Cyr, D. | 12.00 | 1.06 | Wright, D.J. |
| 21 | 0.93 | Caron, C. | 11.50 | 1.04 | Staples, D.S. | 11.42 | 1.01 | Staples, D.S. |
| 21 | 0.93 | Head, M. | 11.20 | 1.01 | Travica, B. | 11.38 | 1.01 | Travica, B. |
| 21 | 0.93 | Palanisamy, R. | 10.75 | 0.97 | Chan, Y.E. | 11.21 | 0.99 | Chan, Y.E. |
| 21 | 0.93 | Walker, J.H. | 10.58 | 0.96 | Wang, H. | 10.15 | 0.90 | Rahman, A.H. |
| 21 | 0.93 | Wang, H. | 9.95 | 0.90 | Detlor, B. | 10.03 | 0.89 | Wang, H. |
| 1,077 | 47.60 | Others (146) | 499.00 | 45.20 | Others (146) | 524.00 | 46.40 | Others (146) |

Ontario, Concordia U, and McMaster U appear at the top of the research productivity and impact lists.

We constructed a list of journals in which Canadian IS scholars publish, developed a ranking of scholarly journals from a Canadian IS perspective, and compared it to other international IS journal rankings. Our study identified 714 unique refereed journals and discovered that Canadian IS researchers target excellent-quality outlets that have a theoretical (e.g., *MIS Quarterly, Information Systems Research, Journal of Management Information Systems*, and *Communications of the Association for Information Systems*) and practical focus (e.g., *Communications of the ACM*). The ranking of most IS journals is consistent with those reported in prior IS journal ranking studies. For example, *MIS Quarterly*, *Journal of Management Information Systems*, and *Information Systems Research* were identified in the top five category. *Information & Management*, *Communications of the Association for Information Systems*, and *Communications of the ACM* consistently hold high rankings. Our study also identified the most influential journal articles published by Canadian IS researchers. It was observed that these papers have been cited very frequently in the literature—some over 50 times per year. Thirteen of the top 30 articles were published in *MIS Quarterly*.

## Contributions to Scholarship

Based on the findings, several important issues emerged. First, the overall research productivity and impact distributions obtained in this study are skewed so that a minority of all individuals or institutions account for publishing most works and attract most citations. This pattern has been referred to as the "star effect" (Adler & Harzing, 2009). Rousseau's Law suggests that the number of the elite and high visibility scholars is approximately equal to the square root of the total number of a field's

**Table 2**
*Individual Research Impact – Top 30 (citation impact based on Google Scholar)*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | Name | Score | % | Name | Score | % | Name |
| 8,655 | 16.17 | Benbasat, I. | 3,769.92 | 15.36 | Benbasat, I. | 3,781.03 | 14.96 | Benbasat, I. |
| 4,728 | 8.83 | Higgins, C.A. | 1,947.07 | 7.93 | Higgins, C.A. | 1,711.70 | 6.77 | Higgins, C.A. |
| 2,766 | 5.17 | Gallupe, R.B. | 1,225.45 | 4.99 | Raymond, L. | 1,244.94 | 4.93 | Wand, Y. |
| 2,743 | 5.13 | Webster, J. | 1,196.42 | 4.87 | Webster, J. | 1,231.11 | 4.87 | Raymond, L. |
| 2,354 | 4.40 | Wand, Y. | 1,143.40 | 4.66 | Gallupe, R.B. | 1,184.81 | 4.69 | Webster, J. |
| 2,238 | 4.18 | Barki, H. | 1,133.02 | 4.62 | Wand, Y. | 1,134.84 | 4.49 | Gallupe, R.B. |
| 2,074 | 3.88 | Raymond, L. | 994.82 | 4.05 | Barki, H. | 1,117.22 | 4.42 | Barki, H. |
| 1,962 | 3.67 | Rivard, S. | 786.23 | 3.20 | Compeau, D. | 953.30 | 3.77 | Compeau, D. |
| 1,755 | 3.28 | Compeau, D. | 773.50 | 3.15 | Rivard, S. | 723.21 | 2.86 | Rivard, S. |
| 1,119 | 2.09 | Faraj, S. | 522.32 | 2.13 | Yuan, Y. | 555.06 | 2.20 | Yuan, Y. |
| 1,094 | 2.04 | Yuan, Y. | 509.73 | 2.08 | Faraj, S. | 553.52 | 2.19 | Kersten, G. |
| 962 | 1.80 | Ngwenyama, O. | 503.78 | 2.05 | Kersten, G. | 543.97 | 2.15 | Chan, Y.E. |
| 961 | 1.80 | Chan, Y.E. | 499.08 | 2.03 | Chan, Y.E. | 533.56 | 2.11 | Ngwenyama, O. |
| 942 | 1.76 | Kersten, G. | 487.42 | 1.99 | Ngwenyama, O. | 491.60 | 1.95 | Pinsonneault, A. |
| 896 | 1.67 | Pinsonneault, A. | 423.18 | 1.72 | Pinsonneault, A. | 464.96 | 1.84 | Reich, B.H. |
| 809 | 1.51 | Reich, B.H. | 399.67 | 1.63 | Reich, B.H. | 454.96 | 1.80 | Faraj, S. |
| 798 | 1.49 | McKeen, J.D. | 339.58 | 1.38 | McKeen, J.D. | 362.03 | 1.43 | Angeles, R. |
| 790 | 1.48 | Etezadi-Amoli, J. | 339.25 | 1.38 | Angeles, R. | 354.55 | 1.40 | McKeen, J.D. |
| 776 | 1.45 | Staples, D.S. | 323.50 | 1.32 | Nault, B.R. | 348.58 | 1.38 | Montazemi, A. |
| 627 | 1.17 | Paré, G. | 322.67 | 1.31 | Montazemi, A. | 321.06 | 1.27 | Staples, D.S. |
| 573 | 1.07 | Nault, B.R. | 295.73 | 1.20 | Paré, G. | 312.50 | 1.24 | Nault, B.R. |
| 570 | 1.07 | Aubert, B. | 287.67 | 1.17 | Staples, D.S. | 288.49 | 1.14 | Paré, G. |
| 553 | 1.03 | Talbot, J. | 283.50 | 1.15 | Gopal, A. | 270.86 | 1.07 | Etezadi-Amoli, J. |
| 528 | 0.99 | Parsons, P. | 265.37 | 1.08 | Etezadi-Amoli, J. | 267.75 | 1.06 | Parsons, P. |
| 518 | 0.97 | Montazemi, A. | 263.23 | 1.07 | Parsons, P. | 266.09 | 1.05 | Gopal, A. |
| 471 | 0.88 | Angeles, R. | 214.67 | 0.87 | Zahir, S. | 253.99 | 1.01 | Aubert, B. |
| 430 | 0.80 | Ingham, J. | 213.83 | 0.87 | Aubert, B. | 211.54 | 0.84 | Dubé, L. |
| 390 | 0.73 | Gopal, A. | 183.25 | 0.75 | Talbot, J. | 204.84 | 0.81 | Zahir, S. |
| 388 | 0.73 | Head, M. | 176.33 | 0.72 | Dubé, L. | 158.19 | 0.63 | Cho, D.I. |
| 357 | 0.67 | Dubé, L. | 143.50 | 0.58 | Ingham, J. | 143.67 | 0.57 | Wade, M. |
| 9,690 | 18.10 | Others (146) | 4,582.00 | 18.70 | Others (146) | 4,847.00 | 19.20 | Others (146) |

scholars (Diodato, 1994). Therefore, there should be only 13 and six extremely productive individuals and institutions, respectively. In actuality, larger numbers were observed. All 30 individuals included in the output ranking published over 20 articles, and their citation scores mostly exceeded 100. Over six major research-intensive universities were identified. Erkut (2002) found that 1% of all business academics across all disciplines generate 31% of all citations on WOS. In the present study, 31% of all WOS citations came from 2% of the elite scholars. The 30 leading IS researchers produced just over 50% of the entire output, revealing a more equal distribution than reported by Erkut (2002) for all business scholars. Thus, the IS departments of these, as well as most other IS institutions, were generally able to develop very productive working environments.

Second, the observed productivity tables were also compared to those reported by Serenko et al. (2008), who ranked IS researchers and institutions based on their publications in the proceedings of the IS division of the ASAC Conference. Many differences were observed; new individuals and institutions were included in the new tables, and the rankings of many changed dramatically. UBC was ranked 2nd in the individual research output list in the present study, but only 10th when ASAC proceedings were used. Only 7 of the most 21 productive scholars based on the direct count method appeared in the top author list of the Serenko et al. (2008) investigation of ASAC proceedings. This discrepancy suggests that a different sampling frame of research contributions (i.e., journal articles vs. papers in the proceedings of a single conference) represents complimentary but different assessments of research productivity and impact.

Third, among the identified refereed journal outlets, only 56% were purely IS-focused. It may be assumed that some Canadian IS scholars have broader research interests. It is also possible that some of them publish in non-IS

**Table 3**
*Individual Research Impact – Top 30 (citation impact based on Web of Science)*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | Name | Score | % | Name | Score | % | Name |
| 2,540 | 13.22 | Benbasat, I. | 1,085.25 | 12.71 | Benbasat, I. | 1,120.62 | 12.74 | Benbasat, I. |
| 1,963 | 10.22 | Higgins, C.A. | 829.70 | 9.71 | Higgins, C.A. | 735.05 | 8.36 | Higgins, C.A. |
| 1,534 | 7.99 | Webster, J. | 617.35 | 7.23 | Webster, J. | 583.16 | 6.63 | Webster, J. |
| 1,415 | 7.37 | Gallupe, R.B. | 559.16 | 6.55 | Gallupe, R.B. | 576.97 | 6.56 | Gallupe, R.B. |
| 827 | 4.31 | Compeau, D. | 371.08 | 4.34 | Barki, H. | 447.34 | 5.09 | Compeau, D. |
| 800 | 4.16 | Barki, H. | 367.50 | 4.30 | Compeau, D. | 399.27 | 4.54 | Barki, H. |
| 748 | 3.89 | Wand, Y. | 352.42 | 4.13 | Wand, Y. | 375.94 | 4.27 | Wand, Y. |
| 626 | 3.26 | Rivard, S. | 324.33 | 3.80 | Raymond, L. | 322.42 | 3.67 | Raymond, L. |
| 545 | 2.84 | Etezadi-Amoli, J. | 264.58 | 3.10 | Rivard, S. | 256.48 | 2.92 | Yuan, Y. |
| 527 | 2.74 | Raymond, L. | 233.28 | 2.73 | Yuan, Y. | 255.37 | 2.90 | Rivard, S. |
| 484 | 2.52 | Yuan, Y. | 196.43 | 2.30 | Faraj, S. | 211.38 | 2.40 | Kersten, G. |
| 416 | 2.17 | Faraj, S. | 190.22 | 2.23 | Kersten, G. | 181.61 | 2.06 | Faraj, S. |
| 368 | 1.92 | Kersten, G. | 170.50 | 2.00 | Zahir, S. | 160.37 | 1.82 | Etezadi-Amoli, J. |
| 297 | 1.55 | Ngwenyama, O. | 160.35 | 1.88 | Etezadi-Amoli, J. | 158.10 | 1.80 | Zahir, S. |
| 265 | 1.38 | Zahir, S. | 139.50 | 1.63 | Ngwenyama, O. | 156.47 | 1.78 | Ngwenyama, O. |
| 264 | 1.37 | Chan, Y.E. | 130.83 | 1.53 | Chan, Y.E. | 139.63 | 1.59 | Chan, Y.E. |
| 260 | 1.35 | Pinsonneault, A. | 120.00 | 1.40 | Pinsonneault, A. | 138.22 | 1.57 | Pinsonneault, A. |
| 258 | 1.34 | Reich, B.H. | 119.00 | 1.39 | Reich, B.H. | 134.39 | 1.53 | Reich, B.H. |
| 252 | 1.31 | McKeen, J.D. | 113.25 | 1.33 | Montazemi, A. | 118.20 | 1.34 | Montazemi, A. |
| 211 | 1.10 | Staples, D.S. | 102.83 | 1.20 | McKeen, J.D. | 108.46 | 1.23 | McKeen, J.D. |
| 211 | 1.10 | Paré, G. | 101.17 | 1.18 | Nault, B.R. | 105.40 | 1.20 | Nault, B.R. |
| 189 | 0.98 | Parsons, P. | 96.58 | 1.13 | Parsons, P. | 100.27 | 1.14 | Parsons, P. |
| 175 | 0.91 | Irving, R.H. | 88.37 | 1.03 | Paré, G. | 94.62 | 1.08 | Cho, D.I. |
| 175 | 0.91 | Nault, B.R. | 87.33 | 1.02 | Staples, D.S. | 92.57 | 1.05 | Paré, G. |
| 170 | 0.89 | Montazemi, A. | 79.50 | 0.93 | Cho, D.I. | 82.49 | 0.94 | Staples, D.S. |
| 166 | 0.86 | Ingham, J. | 69.00 | 0.81 | Gopal, A. | 69.13 | 0.79 | Wade, M. |
| 158 | 0.82 | Cho, D.I. | 60.08 | 0.70 | Wade, M. | 63.38 | 0.72 | Aubert, B. |
| 143 | 0.74 | Aubert, B. | 58.83 | 0.69 | Irving, R.H. | 61.95 | 0.70 | Gopal, A. |
| 127 | 0.66 | Wade, M. | 55.33 | 0.65 | Ingham, J. | 53.92 | 0.61 | Angeles, R. |
| 111 | 0.58 | Gopal, A. | 53.33 | 0.62 | Toms, E.G. | 52.42 | 0.60 | Ingham, J. |
| 2,983 | 15.20 | Others (146) | 1,345.00 | 15.70 | Others (146) | 1,441.00 | 16.40 | Others (146) |

journals. For example, IS works appear in the *Canadian Journal of Administrative Sciences, Management Science*, and *Business Process Management Journal*. Outlets from computer science, engineering, and artificial intelligence, which are closely related fields, are also very popular. There is also a high interest in the application of IS in health care. Knowledge management and intellectual capital outlets also received attention. The interdisciplinary journal outlet selection by Canadian IS scholars may well serve the IS discipline because this behaviour exposes IS scholars to new perspectives, allows them to form new research networks, boosts their creativity, and promotes IS as a reference discipline.

Fourth, a Canada-specific pattern of journal outlet selection was observed. *European Journal of Information Systems* received a somewhat low position (32). At the same time, French-language outlets, such as *Gestion - Revue Internationale de Gestion (8)* and *Technologies de l'Information et Société* (27) appeared. However, the citation impact of these non-English outlets was somewhat less significant. Several non-IS focused journals—for instance, the *Canadian Journal of Administrative Sciences*—also received good rankings. These findings support the idea that geographical locations of journals and their contributors influence journal rankings ( Lowry et al., 2004; Lowry et al., 2007a).

## Applied Implications

Consistent with the conclusion by Serenko et al. (2008), the present study demonstrates that the Canadian IS discipline exhibits signs of academic maturity. There are many very productive IS scholars who have made a substantial impact on the field. A number of schools have developed very strong research environments, and IS scholars tend to target leading IS journals as well as outlets

**Table 4**
*Institutional Research Output – Top 15*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | School | Score | % | School | Score | % | School |
| 254 | 11.24 | HEC | 105.92 | 9.58 | HEC | 108.10 | 9.67 | HEC |
| 198 | 8.76 | UBC | 88.49 | 8.00 | UBC | 84.73 | 7.51 | Queen's U |
| 190 | 8.41 | Queen's U | 87.74 | 7.94 | Queen's U | 84.34 | 7.48 | UBC |
| 153 | 6.77 | McMaster U | 78.97 | 7.14 | Concordia U | 82.98 | 7.36 | Concordia U |
| 149 | 6.59 | Concordia U | 70.44 | 6.37 | McMaster U | 69.50 | 6.16 | Ryerson U |
| 129 | 5.71 | Ryerson U | 66.00 | 5.97 | Ryerson U | 68.90 | 6.11 | McMaster U |
| 124 | 5.49 | U of Western Ontario | 61.34 | 5.55 | U of Ottawa | 64.12 | 5.69 | U of Ottawa |
| 103 | 4.56 | Simon Fraser U | 55.95 | 5.06 | U of Québec Trois-Rivières | 56.92 | 5.05 | U of Québec Trois-Rivières |
| 103 | 4.56 | U of Québec Trois-Rivières | 52.02 | 4.70 | U of Western Ontario | 53.79 | 4.77 | Simon Fraser U |
| 98 | 4.34 | U of Ottawa | 50.83 | 4.60 | Simon Fraser U | 47.89 | 4.25 | U of Western Ontario |
| 77 | 3.41 | U of Quebec Montreal | 41.17 | 3.72 | U of Lethbridge | 40.71 | 3.61 | U of Lethbridge |
| 69 | 3.05 | McGill U | 31.50 | 2.85 | St. Frances Xavier U | 34.10 | 3.02 | St. Frances Xavier U |
| 66 | 2.92 | U of Lethbridge | 30.53 | 2.76 | U of Quebec Montreal | 31.48 | 2.79 | U of Quebec Montreal |
| 49 | 2.17 | St. Frances Xavier U | 29.43 | 2.66 | McGill U | 30.59 | 2.71 | McGill U |
| 48 | 2.12 | York U | | | | | | |
| 47 | 2.08 | Saint Mary's U | | | | | | |
| 403 | 18.00 | Others (20) | 255.00 | 23.00 | Others (22) | 273.00 | 24.00 | Others (22) |

**Table 5**
*Institutional Research Impact – Top 15 (citation impact based on Google Scholar)*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | School | Score | % | School | Score | % | School |
| 11,525 | 21.53 | UBC | 5,107.56 | 20.81 | UBC | 5,229.29 | 20.68 | UBC |
| 8,130 | 15.19 | Queen's U | 3,489.23 | 14.21 | Queen's U | 3,567.82 | 14.11 | Queen's U |
| 7,114 | 13.29 | U of Western Ontario | 2,883.01 | 11.74 | HEC | 3,019.72 | 11.94 | U of Western Ontario |
| 6,856 | 12.81 | HEC | 3,124.30 | 12.73 | U of Western Ontario | 2,988.11 | 11.81 | HEC |
| 2,442 | 4.56 | McGill U | 1,228.45 | 5.00 | U of Québec Trois-Rivières | 1,242.76 | 4.91 | Concordia U |
| 2,439 | 4.56 | Concordia U | 1,178.86 | 4.80 | McMaster U | 1,234.11 | 4.88 | U of Québec Trois-Rivières |
| 2,325 | 4.34 | McMaster U | 1,116.52 | 4.55 | McGill U | 1,227.93 | 4.86 | McMaster U |
| 2,077 | 3.88 | U of Québec Trois-Rivières | 1,158.40 | 4.72 | Concordia U | 1,174.78 | 4.65 | McGill U |
| 1,687 | 3.15 | Simon Fraser U | 789.17 | 3.21 | Simon Fraser U | 901.13 | 3.56 | Simon Fraser U |
| 1,489 | 2.78 | Ryerson U | 756.10 | 3.08 | Ryerson U | 825.24 | 3.26 | Ryerson U |
| 724 | 1.35 | York U | 394.17 | 1.61 | U of Lethbridge | 376.25 | 1.49 | U of Lethbridge |
| 669 | 1.25 | U of Calgary | 380.33 | 1.55 | U of Calgary | 372.41 | 1.47 | U of Calgary |
| 664 | 1.24 | Memorial U | 341.73 | 1.39 | Memorial U | 362.03 | 1.43 | U of New Brunswick Fredericton |
| 637 | 1.19 | U of Lethbridge | 339.25 | 1.38 | U of New Brunswick Fredericton | 356.23 | 1.41 | Memorial U |
| 586 | 1.09 | U of Ottawa | 334.92 | 1.36 | York U | 348.48 | 1.38 | York U |
| 583 | 1.09 | U of Sherbrooke | | | | | | |
| 3,572 | 7.00 | Other (20) | 1,927.00 | 7.80 | Other (21) | 2,064.00 | 8.00 | Other (21) |

in other disciplines. This publishing behaviour demonstrates that many Canadian IS academics have achieved academic excellence within their own field and also made an impact on other disciplines. Even though we cannot conclude whether the IS field has become a reference discipline, which is an ultimate goal of every scholarly domain, we suggest that the Canadian IS discipline has played a pivotal role in promoting IS as a field of science. As such, we are

**Table 6**
*Institutional Research Impact – Top 15 (citation impact based on Web of Science)*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | School | Score | % | School | Score | % | School |
| 3,711 | 19.32 | Queen's U | 1,506.96 | 17.51 | UBC | 1,567.15 | 17.81 | UBC |
| 3,466 | 18.04 | UBC | 1,506.52 | 17.51 | Queen's U | 1,502.32 | 17.08 | Queen's U |
| 3,002 | 15.63 | U of Western Ontario | 1,372.65 | 15.95 | U of Western Ontario | 1,280.18 | 14.55 | U of Western Ontario |
| 2,027 | 10.55 | HEC | 880.57 | 10.23 | HEC | 912.94 | 10.38 | HEC |
| 1,117 | 5.82 | Concordia U | 450.23 | 5.23 | Concordia U | 480.21 | 5.46 | Concordia U |
| 842 | 4.38 | McMaster U | 433.63 | 5.04 | McMaster U | 459.81 | 5.23 | McMaster U |
| 839 | 4.37 | McGill U | 388.77 | 4.52 | McGill U | 408.98 | 4.65 | McGill U |
| 527 | 2.74 | Simon Fraser U | 324.33 | 3.77 | U of Québec Trois-Rivières | 322.42 | 3.67 | U of Québec Trois-Rivières |
| 527 | 2.74 | U of Québec Trois-Rivières | 238.50 | 2.77 | U of Lethbridge | 266.63 | 3.03 | Simon Fraser U |
| 399 | 2.08 | Ryerson U | 231.17 | 2.69 | Simon Fraser U | 225.87 | 2.57 | U of Lethbridge |
| 389 | 2.03 | U of Lethbridge | 180.57 | 2.10 | Ryerson U | 200.78 | 2.28 | Ryerson U |
| 387 | 2.01 | York U | 173.00 | 2.01 | York U | 177.95 | 2.02 | York U |
| 258 | 1.34 | U of Ottawa | 124.17 | 1.44 | U of Calgary | 132.07 | 1.50 | Memorial U |
| 238 | 1.24 | Memorial U | 124.08 | 1.44 | Memorial U | 130.20 | 1.48 | Calgary U |
| 237 | 1.23 | Brock U | 99.71 | 1.16 | Brock U | 117.61 | 1.34 | U of Ottawa |
| | | | 99.48 | 1.16 | U of Ottawa | 116.36 | 1.32 | Brock U |
| 1,242 | 6.50 | Others (21) | 470.00 | 5.50 | Others (21) | 496.00 | 5.60 | Others (21) |

**Table 7**
*List of Journals Based on Research Output – Top 30*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | Journal | Score | % | Journal | Score | % | Journal |
| 87 | 3.85 | MIS Quarterly | 42.73 | 3.86 | MIS Quarterly | 43.88 | 3.89 | MIS Quarterly |
| 65 | 2.88 | Information & Management | 30.00 | 2.71 | Information & Management | 30.59 | 2.71 | Information & Management |
| 60 | 2.65 | Communications of the Association for Information Systems | 27.44 | 2.48 | Gestion - Revue internationale de gestion | 28.08 | 2.49 | Gestion - Revue internationale de gestion |
| 56 | 2.48 | Information Systems Research | 26.62 | 2.41 | Communications of the Association for Information Systems | 27.05 | 2.40 | Communications of the Association for Information Systems |
| 54 | 2.39 | Journal of Management Information Systems | 24.83 | 2.25 | Journal of Management Information Systems | 24.81 | 2.20 | Journal of Management Information Systems |
| 54 | 2.39 | Gestion - Revue internationale de gestion | 23.25 | 2.10 | Information Systems Research | 22.67 | 2.01 | Information Systems Research |
| 37 | 1.64 | Communications of the ACM | 16.21 | 1.47 | Communications of the ACM | 17.04 | 1.51 | Communications of the ACM |
| 34 | 1.50 | Decisions Support Systems | 15.92 | 1.44 | Data Base for Advances in Information Systems | 16.29 | 1.44 | Data Base for Advances in Information Systems |
| 31 | 1.37 | Journal of the Association for Information Systems | 15.58 | 1.41 | Decision Support Systems | 15.96 | 1.42 | Decision Support Systems |
| 30 | 1.33 | Data Base for Advances in Information Systems | 14.28 | 1.29 | European Journal of Operational Research | 15.12 | 1.34 | European Journal of Operational Research |
| 29 | 1.28 | Group Decision and Negotiation | 13.17 | 1.19 | Group Decision and Negotiation | 13.64 | 1.21 | Group Decision and Negotiation |
| 27 | 1.19 | European Journal of Operational Research | 13.08 | 1.18 | Journal of the Association for Information Systems | 12.95 | 1.15 | Journal of the Association for Information Systems |

(Continues)



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**Table 7**
*(Continued)*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | Journal | Score | % | Journal | Score | % | Journal |
| 23 | 1.02 | Information Systems Journal | 11.83 | 1.07 | Canadian Journal of Administrative Sciences | 12.32 | 1.09 | Canadian Journal of Administrative Sciences |
| 23 | 1.02 | Canadian Journal of Administrative Sciences | 11.75 | 1.06 | Management Science | 12.17 | 1.08 | Management Science |
| 21 | 0.93 | Management Science | 11.58 | 1.05 | Journal of Computer Information Systems | 11.50 | 1.02 | Information Systems Journal |
| 21 | 0.93 | Journal of Computer Information Systems | 11.42 | 1.03 | Information Systems Journal | 11.35 | 1.01 | Journal of Computer Information Systems |
| 20 | 0.88 | Internet Research | 10.42 | 0.94 | International Journal of Human-Computer Studies | 9.87 | 0.88 | Internet Research |
| 20 | 0.88 | International Journal of Human-Computer Studies | 9.83 | 0.89 | Internet Research | 9.85 | 0.87 | International Journal of Human-Computer Studies |
| 19 | 0.84 | Revue internationale de cas en gestion | 8.75 | 0.79 | Journal of Information Systems Education | 9.09 | 0.81 | Journal of Global Information Management |
| 17 | 0.75 | Journal of Strategic Information Systems | 8.58 | 0.78 | Journal of Global Information Management | 8.97 | 0.80 | Journal of Information Systems Education |
| 17 | 0.75 | Industrial Management and Data Systems | 8.33 | 0.75 | Journal of Strategic Information Systems | 8.74 | 0.77 | Journal of Strategic Information Systems |
| 15 | 0.66 | Journal of Information Technology | 8.00 | 0.72 | Journal of Information Technology | 8.40 | 0.75 | Journal of Information Technology |
| 15 | 0.66 | Journal of Information Systems Education | 8.00 | 0.72 | Industrial Management and Data Systems | 8.40 | 0.75 | Industrial Management and Data Systems |
| 15 | 0.66 | Journal of Global Information Management | 7.08 | 0.64 | INFOR | 7.13 | 0.63 | INFOR |
| 15 | 0.66 | European Journal of Information Systems | 6.92 | 0.63 | Revue internationale de cas en gestion | 6.87 | 0.61 | Revue internationale de cas en gestion |
| 14 | 0.62 | Systèmes d'information et management | 6.50 | 0.59 | Healthcare Management FORUM/ Gestion des soins de santé | 6.46 | 0.57 | Organization Science |
| 14 | 0.62 | Organization Science | 6.42 | 0.58 | IEEE Transactions on Systems, Man, and Cybernetics | 6.46 | 0.57 | Journal of Database Management |
| 14 | 0.62 | International Journal of Electronic Business | 6.25 | 0.57 | International Journal of Information Management | 6.40 | 0.57 | Healthcare Management FORUM/ Gestion des soins de santé |
| | | | 6.25 | 0.57 | Journal of Database Management | 6.21 | 0.55 | IEEE Transactions on Systems, Man, and Cybernetics |
| | | | 6.23 | 0.56 | Organization Science | 6.20 | 0.55 | Journal of Information & Knowledge Management |
| 1,413 | 62.5 | Others (688) | 688.00 | 62.30 | Others (686) | 703.00 | 62.40 | Others (686) |

very encouraged by the direction in which the Canadian IS discipline has been developing, and we believe that no corrective action by its stakeholders is required.

Nevertheless, our findings may also provide useful information for various stakeholders. For example, our individual productivity and impact information may aid IS journal editors in their selection of editorial boards and special issue guest editors, and be used by conference organizers to identify keynote speakers. IS scholars can obtain a more realistic understanding of their own research productivity and impact in comparison with their institutional and national colleagues. Universities may make use of our findings to set specific performance goals, such as being in the top 10 category of Canadian IS schools in terms of research productivity and impact, and establish tenure standards to support their school goals. Prospective students, particularly graduate students who are interested in IS research, can target the research intensive schools such as HEC, UBC, Queen's, Western Ontario, Concordia, and McMaster. University libraries should review the ranking

**Table 8**
*List of Journals Based on Citation Impact (Google Scholar) – Top 30*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | Journal | Score | % | Journal | Score | % | Journal |
| 12,812 | 23.94 | MIS Quarterly | 5,889.92 | 23.99 | MIS Quarterly | 6,318.23 | 24.98 | MIS Quarterly |
| 5,216 | 9.75 | Information Systems Research | 2,297.67 | 9.36 | Information Systems Research | 2,163.58 | 8.55 | Information Systems Research |
| 2,797 | 5.23 | Journal of Management Information Systems | 1,297.33 | 5.28 | Journal of Management Information Systems | 1,310.90 | 5.18 | Journal of Management Information Systems |
| 2,622 | 4.90 | Information & Management | 1,197.08 | 4.88 | Management Science | 1,181.23 | 4.67 | Information & Management |
| 2,315 | 4.33 | Management Science | 1,127.42 | 4.59 | Information & Management | 1,091.41 | 4.32 | Management Science |
| 1,972 | 3.69 | Communications of the ACM | 893.79 | 3.64 | Communications of the ACM | 985.35 | 3.90 | Communications of the ACM |
| 1,060 | 1.98 | Decision Support Systems | 460.75 | 1.88 | European Journal of Operational Research | 506.86 | 2.00 | European Journal of Operational Research |
| 907 | 1.70 | Journal of Applied Psychology | 451.67 | 1.84 | Decision Support Systems | 474.43 | 1.88 | Decision Support Systems |
| 860 | 1.61 | European Journal of Operational Research | 385.92 | 1.57 | Information Systems Journal | 429.83 | 1.70 | Information Systems Journal |
| 803 | 1.50 | Academy of Management Journal | 344.50 | 1.40 | Journal of Strategic Information Systems | 408.22 | 1.61 | Academy of Management Journal |
| 789 | 1.47 | Organization Science | 329.33 | 1.34 | Internet Research | 333.16 | 1.32 | Internet Research |
| 783 | 1.46 | Information Systems Journal | 309.17 | 1.26 | Academy of Management Journal | 318.21 | 1.26 | Journal of Strategic Information Systems |
| 736 | 1.38 | Internet Research | 286.33 | 1.17 | Organization Science | 305.80 | 1.21 | Fuzzy Sets and Systems |
| 709 | 1.33 | Journal of Strategic Information Systems | 281.33 | 1.15 | Journal of Applied Psychology | 283.92 | 1.12 | Organization Science |
| 460 | 0.86 | Journal of Technology Studies | 267.50 | 1.09 | Fuzzy Sets and Systems | 253.74 | 1.00 | Journal of Applied Psychology |
| 459 | 0.86 | Fuzzy Sets and Systems | 221.50 | 0.90 | Administrative Sciences Quarterly | 241.71 | 0.96 | Small Group Research |
| 448 | 0.84 | Small Group Research | 216.17 | 0.88 | Data Base for Advances in Information Systems | 219.85 | 0.87 | Data Base for Advances in Information Systems |
| 443 | 0.83 | Data Base for Advances in Information Systems | 207.83 | 0.85 | Small Group Research | 200.67 | 0.79 | IEEE Transactions on Software Engineering |
| 443 | 0.83 | Administrative Sciences Quarterly | 194.25 | 0.79 | International Journal of Information Management | 182.83 | 0.72 | International Journal of Information Management |
| 376 | 0.70 | OMEGA-The International Journal of Management Science | 176.17 | 0.72 | IEEE Transactions on Software Engineering | 177.20 | 0.70 | Administrative Sciences Quarterly |
| 359 | 0.67 | IEEE Transactions on Software Engineering | 171.67 | 0.70 | International Journal of Human-Computer Studies | 176.41 | 0.70 | International Journal of Human-Computer Studies |
| 352 | 0.66 | Computers in Human Behavior | 154.33 | 0.63 | Information Systems Management | 170.16 | 0.67 | Computers in Human Behavior |
| 349 | 0.65 | Group Decision and Negotiation | 153.33 | 0.62 | Journal of Technology Studies | 155.84 | 0.62 | European Journal of Information Systems |
| 329 | 0.61 | Organizational Behavior and Human Decision Processes | 152.58 | 0.62 | Group Decision and Negotiation | 155.47 | 0.61 | Group Decision and Negotiation |
| 327 | 0.61 | International Journal of Human-Computer Studies | 147.00 | 0.60 | European Journal of Information Systems | 154.47 | 0.61 | Information Systems Management |
| 320 | 0.60 | International Journal of Information Management | 146.50 | 0.60 | Communication Research | 150.68 | 0.60 | ACM Transactions on Database Systems |
| 316 | 0.59 | European Journal of Information Systems | 143.42 | 0.58 | OMEGA-The International Journal of Management Science | 145.263 | 0.57 | Journal of Technology Studies |

(Continues)

**Table 8**
*(Continued)*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | Journal | Score | % | Journal | Score | % | Journal |
| 311 | 0.58 | ACM Transactions on Database Systems | 140.17 | 0.57 | Computers in Human Behavior | 137.83 | 0.54 | OMEGA-The International Journal of Management Science |
| 293 | 0.55 | Communication Research | 125.00 | 0.51 | ACM Transactions on Database Systems | 122.51 | 0.48 | Organizational Behavior and Human Decision Processes |
| 271 | 0.51 | Journal of Computer-Mediated Communication | 124.50 | 0.51 | Organizational Behavior and Human Decision Processes | 117.20 | 0.46 | Communication Research |
| 13,270 | 24.80 | Others (686) | 6,254.00 | 25.50 | Others (686) | 6,418.00 | 25.40 | Others (686) |

**Table 9**
*List of Journals Based on Citation Impact (Web of Science) – Top 30*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | Journal | Score | % | Journal | Score | % | Journal |
| 5,108 | 26.59 | MIS Quarterly | 2,388.58 | 27.96 | MIS Quarterly | 2,531.32 | 28.77 | MIS Quarterly |
| 1,451 | 7.55 | Information Systems Research | 609.58 | 7.14 | Information Systems Research | 604.28 | 6.87 | Information Systems Research |
| 1,132 | 5.89 | Management Science | 579.75 | 6.79 | Management Science | 530.68 | 6.03 | Information & Management |
| 1,131 | 5.89 | Information & Management | 509.50 | 5.96 | Information & Management | 529.73 | 6.02 | Management Science |
| 825 | 4.30 | Communications of the ACM | 365.79 | 4.28 | Communications of the ACM | 415.98 | 4.73 | Communications of the ACM |
| 692 | 3.60 | Journal of Applied Psychology | 270.03 | 3.16 | European Journal of Operational Research | 291.96 | 3.32 | European Journal of Operational Research |
| 502 | 2.61 | Journal of Management Information Systems | 233.50 | 2.73 | Journal of Management Information Systems | 222.77 | 2.53 | Journal of Management Information Systems |
| 501 | 2.61 | European Journal of Operational Research | 207.20 | 2.43 | Journal of Applied Psychology | 196.20 | 2.23 | Fuzzy Sets and Systems |
| 357 | 1.86 | Academy of Management Journal | 166.50 | 1.95 | Fuzzy Sets and Systems | 177.84 | 2.02 | Journal of Applied Psychology |
| 323 | 1.68 | Decision Support Systems | 131.67 | 1.54 | Decision Support Systems | 168.82 | 1.92 | Academy of Management Journal |
| 315 | 1.64 | Fuzzy Sets and Systems | 120.83 | 1.41 | Academy of Management Journal | 142.88 | 1.62 | Decision Support Systems |
| 241 | 1.25 | Administrative Sciences Quarterly | 120.50 | 1.41 | Administrative Sciences Quarterly | 103.19 | 1.17 | Small Group Research |
| 238 | 1.24 | Organizational Behavior and Human Decision Processes | 99.50 | 1.16 | Journal of Strategic Information Systems | 98.96 | 1.12 | Information Systems Journal |
| 237 | 1.23 | Organization Science | 92.30 | 1.08 | Organization Science | 96.40 | 1.10 | Administrative Sciences Quarterly |
| 210 | 1.09 | Journal of Strategic Information Systems | 92.00 | 1.08 | Information Systems Journal | 93.72 | 1.07 | Organization Science |
| 191 | 0.99 | Small Group Research | 88.67 | 1.04 | Small Group Research | 91.25 | 1.04 | Journal of Strategic Information Systems |
| 187 | 0.97 | British Journal of Cancer | 88.67 | 1.04 | Organizational Behavior and Human Decision Processes | 86.46 | 0.98 | Organizational Behavior and Human Decision |

(Continues)



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**Table 9**
*(Continued)*

| Direct count method | | | Equal credit method | | | Author position method | | |
|---|---|---|---|---|---|---|---|---|
| Score | % | Journal | Score | % | Journal | Score | % | Journal |
| | | | | | | | | Processes |
| 187 | 0.97 | Information Systems Journal | 73.33 | 0.86 | IEEE Transactions on Software Engineering | 82.35 | 0.94 | Computers in Human Behavior |
| 174 | 0.91 | Internet Research | 72.50 | 0.85 | Internet Research | 80.56 | 0.92 | IEEE Transactions on Software Engineering |
| 171 | 0.89 | Computers in Human Behavior | 68.50 | 0.80 | Communication Research | 73.33 | 0.83 | Internet Research |
| 158 | 0.82 | Group Decision and Negotiation | 68.00 | 0.80 | International Journal of Human-Computer Studies | 68.80 | 0.78 | International Journal of Human-Computer Studies |
| 151 | 0.79 | IEEE Transactions on Software Engineering | 65.67 | 0.77 | Computers in Human Behavior | 67.31 | 0.77 | Group Decision and Negotiation |
| 138 | 0.72 | International Journal of Human-Computer Studies | 65.00 | 0.76 | Group Decision and Negotiation | 65.79 | 0.75 | ACM Transactions on Database Systems |
| 137 | 0.71 | Communication Research | 64.25 | 0.75 | International Journal of Information Management | 60.43 | 0.69 | International Journal of Information Management |
| 137 | 0.71 | OMEGA-The International Journal of Management Science | 56.75 | 0.66 | IEEE Transactions on Systems, Man, and Cybernetics | 58.12 | 0.66 | IEEE Transactions on Systems, Man, and Cybernetics |
| 136 | 0.71 | ACM Transactions on Database Systems | 56.33 | 0.66 | Data Base for Advances in Information Systems | 54.80 | 0.62 | Communication Research |
| 122 | 0.64 | Data Base for Advances in Information Systems | 54.00 | 0.63 | Physical Review D | 52.74 | 0.60 | Data Base for Advances in Information Systems |
| 120 | 0.62 | IEEE Transactions on Systems, Man, and Cybernetics | 54.00 | 0.63 | ACM Transactions on Database Systems | 46.28 | 0.53 | OMEGA-The International Journal of Management Science |
| 108 | 0.56 | International Journal of Information Management | 50.33 | 0.59 | OMEGA-The International Journal of Management Science | 45.46 | 0.52 | Physical Review D |
| 107 | 0.56 | Physical Review D | 44.00 | 0.52 | INFOR | 43.20 | 0.49 | Journal of Management |
| 3,721 | 19.40 | Others (686) | 1,585.00 | 18.60 | Others (686) | 1,617.00 | 18.36 | Others (686) |

lists obtained in this study to ensure that they are subscribed to the outlets in which their IS faculty members publish, and are also likely to read. It is acknowledged that decisions made by each stakeholder are usually based on more information than is reported in the current study. However, our findings do offer useful information that has a quantitative, objective basis and can be used by stakeholders for decision making.

Our study also has implications for future scientometric research. The recently proposed Publication Power Approach by Holsapple (2008a, 2009) seems to be a valid methodology that offers results comparable to those produced by other journal ranking techniques. This approach can take into account issues that are specific to particular categories of scholars and thus is a fruitful method to rank academic outlets at the national level. Since no statistically significant correlation was observed between the ranking score and the number of articles the journal published, the application of the Publication Power Approach eliminates the confounding effect caused by the journal's circulation, which may be inherent in other ranking methods.

The results produced by three different productivity and impact calculation methods correlated very strongly. Almost perfect nonparametric correlations (over 0.9) were found for impact measures, and very strong correlations (over 0.8) for productivity credits. Therefore, these methods may be used as substitutes. It was also observed that GS and WOS offer very comparable citation results overall. However, the coverage of GS is more comprehensive; on average, it returned three times as many citations as WOS. It was also observed that in some cases WOS did not return any citations to articles, whereas GS did. This happened when a journal or its older volumes were not indexed by WOS. Therefore, the usage of GS is recommended in future IS scientometric investigations.

## Future Research Directions

With regard to future research, several avenues may be explored. First, it would be interesting to employ other

**Table 10**
*The Nature of Journals – Percentage of Articles Published*

| Rank | Main topic of the journal | % of Articles |
|---|---|---|
| 1 | General and niche IS journals, including e-commerce and human-computer interaction | 55.80 |
| 2 | General management and administrative studies (i.e., non-IS) | 9.34 |
| 3 | Health care and medicine (including electronic health care) | 6.06 |
| 4 | Computer science, engineering, and networking | 5.35 |
| 5 | Human resources, organizational behaviour, and applied psychology | 5.27 |
| 6 | Management science, operations management, supply chain management, and operations research | 4.56 |
| 7 | Economics and finance | 2.79 |
| 8 | Education (including IS/IT education) | 2.65 |
| 9 | Artificial intelligence | 1.55 |
| 9 | Knowledge management and intellectual capital | 1.55 |
| 11 | Physics | 1.33 |
| 12 | Communications | 0.80 |
| 13 | Mathematics, statistics, and methods | 0.66 |
| 14 | Marketing | 0.62 |
| 15 | Sociology | 0.49 |
| 16 | Natural sciences | 0.31 |
| 17 | Accounting | 0.27 |
| 18 | Geography | 0.27 |
| 19 | Innovation | 0.18 |
| 20 | Law | 0.18 |
| **Total** | | **100.00** |

**Table 11**
*Most Influential Publications*

| Rank | Article | NCII |
|---|---|---|
| 1 | Legris, P., Ingham, J., & Collerette, P. "Why do people use information technology? A critical review of the technology acceptance model." *Information & Management, 40*(1), 2003, 191–204. | 85.80 |
| 2 | Moore, G.C., & Benbasat, I. "Development of an instrument to measure the perceptions of adopting an information technology innovation," *Information Systems Research, 2*(3), 1991, 192–222. | 75.59 |
| 3 | Compeau, D.R., & Higgins, C.A. "Computer self-efficacy: Development of a measure and initial test," *MIS Quarterly, 19*(2), 1995, 189–211. | 66.00 |
| 4 | Iacovou, C.L., Benbasat, I., & Dexter, A.S. "Electronic data interchange and small organizations: Adoption and impact of the technology," *MIS Quarterly, 19*(4), 1995, 465–485. | 59.31 |
| 5 | Benbasat, I., & Zmud, R.W. "The identity crisis within the IS discipline: Defining and communicating the discipline's core properties," *MIS Quarterly, 27*(2), 2003, 183–194. | 57.00 |
| 6 | Benbasat, I., Goldstein, D.K., & Mead, M. "The case research strategy in studies of Information Systems," *MIS Quarterly, 11*(3), 1987, 369–386. | 56.33 |
| 7 | DeSanctis, G., & Gallupe, R.B. "A foundation for the study of group Decision Support Systems," *Management Science, 33*(5), 1987, 589–609. | 52.00 |
| 8 | Compeau, D., Higgins, C., & Huff, S. "Social cognitive theory and individual reactions to computing technology: A longitudinal study," *MIS Quarterly, 23*(2), 1999, 145–158. | 44.78 |
| 9 | Wasko, M., & Faraj, S. "'It is what one does': Why people participate and help others in electronic communities of practice?" *Journal of Strategic Information Systems, 9*(2–3), 2000, 155–173. | 42.00 |
| 10 | Benbasat, I., & Zmud, R.W. "Empirical research in Information Systems: The practice of relevance," *MIS Quarterly, 23*(1), 1999, 3–16. | 39.11 |

(Continues)

**Table 11**
*(Continued)*

| Rank | Article | NCII |
|---|---|---|
| 11 | Hartwick, J., & Barki, H. "Explaining the role of user participation in information system use," *Management Science, 40*(4), 1994, 440–465. | 36.50 |
| 12 | Chwelos, P., Benbasat, I., & Dexter, A.S. "Empirical test of an EDI (Electronic Data Interchange) adoption model," *Information Systems Research, 12*(3), 2001, 304–321. | 36.43 |
| 13 | Barclay, D.W., Higgins, C.A., & Thompson, R.L. "The Partial Least Squares approach to causal modeling: Personal computer adoption and use as an illustration," *Technology Studies, Special Issue, Research Methodology, 2*(2), 1995, 285–324. | 35.38 |
| 14 | Wand, Y., & Weber, R. "Research commentary: Information systems and conceptual modeling - A research agenda," *Information Systems Research, 13*(4), 2002, 363–376. | 33.83 |
| 15 | Wand Y., & Wang R. "Anchoring data quality dimensions in ontological foundations," *Communications of the ACM, 39*(11), 1996, 86–95. | 33.25 |
| 16 | Ngwenyama, O.K., & Lee, A.S. "Communication richness in electronic mail: Critical social theory and the contextuality of meaning," *MIS Quarterly, 17*(2), 1997, 145–167. | 33.18 |
| 17 | Faraj, S., & Sproull, L. "Coordinating expertise in software development teams," *Management Science, 46*(12), 2000, 1554–1568. | 32.13 |
| 18 | Teo, H.H., Wei, K.K., & Benbasat, I. "Predicting predisposition toward IT-based inter-organizational linkages: An institutional perspective," *MIS Quarterly, 27*(1), 2003, 19–49. | 30.80 |
| 19 | Dubé, L., & Paré, G. "Rigor in IS positivist case research: Current practices, trends, and recommendations," *MIS Quarterly, 27*(4), 2003, 597–635. | 29.60 |
| 20 | Chan, Y., Huff, S., Barclay, D., & Copeland, D. "Business strategic orientation, information systems strategic orientation, and strategic alignment," *Information Systems Research, 8*(2), 1997, 125–150. | 29.36 |
| 21 | Reich, B.H., & Benbasat, I. "Factors that influence the social dimension of alignment between business and information technology objectives", *MIS Quarterly, 24*(1), 2000, 81–111. | 28.75 |
| 22 | Thompson, R.L., Higgins, C.A., & Howell, J. "Personal computing: Toward a conceptual model of utilization," *MIS Quarterly, 15*(1), 1991, 125–143. | 25.71 |
| 23 | Compeau, D.R., & Higgins, C.A. "Application of social cognitive theory to training for computer skills," *Information Systems Research*, *6*(2), 1995, 118–143. | 25.69 |
| 24 | Sabherwal, R., & Chan, Y. "Alignment between business and IS strategies: A study of prospectors, analyzers, and defenders," *Information Systems Research, 12*(1), 2001, 11–33. | 25.43 |
| 25 | Howell, J., & Higgins, C.A. "Champions of technological innovation," *Administrative Sciences Quarterly, 35*(2), 1990, 317–341. | 24.61 |
| 26 | Webster, J., & Hackley, P. "Teaching effectiveness in technology-mediated distance learning," *Academy of Management Journal, 40*(6), 1997, 1282–1309. | 24.09 |
| 27 | Barki, H., & Hartwick, J. "Measuring user participation, user involvement, and user attitude," *MIS Quarterly, 18*(1), 1994, 59–82. | 24.07 |
| 28 | Reich, B.H., & Benbasat, I. "Measuring the linkage between business and information technology objectives," *MIS Quarterly, 20*(1), 1996, 55–81. | 23.08 |
| 29 | Yuan, Y., & Shaw, M. "Induction of fuzzy decision trees," *Fuzzy Sets and Systems, 69*(2), 1995, 125–139. | 22.38 |
| 30 | Kersten, G., & Noronha S. "WWW-based negotiation support: Design, implementation, and use," *Decision Support Systems, 25*(2), 1999, 135–154. | 20.78 |

methods to assess research productivity—for example, by analyzing book publications. In particular, the research potential of universities may be assessed by looking at the amount of research funding attracted. Second, it is important to know how the works of Canadian IS scholars are cited. Are they cited by their Canadian or international colleagues? Do their citations appear in IS journals? Third, it would be beneficial to employ the Publication Power Approach to develop a list of IS journals by analyzing the publication behaviours of leading IS scholars from other countries. Fourth, it is important to compare the overall research productivity and impact of Canadian IS scholars with those of academics from other management disciplines. Fifth, future studies examining key IS research areas and themes at the national level and contrasting findings with those obtained at the international level may facilitate a better understanding of concentration, strengths, and gaps of Canadian IS research. Eventually, knowing answers to these questions will help us better understand the identity of the Canadian IS discipline. We hope that this study will inspire other lines of inquiry and serve as a springboard for future research.

**Table 12**
*The Ranking of IS Journals in Canada – The Publication Power Approach*

| Rank | Journal | Publishing power | Publishing intensity | Publishing breadth |
|---|---|---|---|---|
| 1 | MIS Quarterly | 1633 | 71 | 23 |
| 2 | Information & Management | 1056 | 44 | 24 |
| 3 | Journal of Management Information Systems | 760 | 40 | 19 |
| 4 | Information Systems Research | 602 | 43 | 14 |
| 5 | Communications of the Association for Information Systems | 450 | 45 | 10 |
| 6 | Communications of the ACM | 364 | 26 | 14 |
| 7 | Decision Support Systems | 308 | 22 | 14 |
| 8 | Gestion - Revue internationale de gestion | 304 | 38 | 8 |
| 9 | Data Base for Advances in Information Systems | 242 | 22 | 11 |
| 10 | Canadian Journal of Administrative Sciences | 208 | 16 | 13 |
| 11 | Journal of the Association for Information Systems | 187 | 17 | 11 |
| 11 | Management Science | 187 | 17 | 11 |
| 13 | European Journal of Operational Research | 168 | 21 | 8 |
| 14 | Information Systems Journal | 160 | 16 | 10 |
| 15 | Group Decision and Negotiation | 147 | 21 | 7 |
| 16 | International Journal of Human-Computer Studies | 112 | 16 | 7 |
| 17 | INFOR | 88 | 11 | 8 |
| 17 | Internet Research | 88 | 11 | 8 |
| 17 | Journal of Strategic Information Systems | 88 | 11 | 8 |
| 20 | Organization Science | 80 | 10 | 8 |
| 21 | Small Group Research | 72 | 9 | 8 |
| 22 | Journal of Computer Information Systems | 70 | 10 | 7 |
| 23 | International Journal of Electronic Business | 64 | 8 | 8 |
| 24 | OMEGA-The International Journal of Management Science | 63 | 9 | 7 |
| 25 | Journal of Information Technology | 56 | 8 | 7 |
| 26 | IEEE Transactions on Systems, Man, and Cybernetics | 54 | 9 | 6 |
| 27 | Technologies de l'information et société | 50 | 10 | 5 |
| 28 | IEEE Transactions on Engineering Management | 42 | 7 | 6 |
| 28 | International Journal of Information Management | 42 | 7 | 6 |
| 28 | Journal of Information Technology Management | 42 | 7 | 6 |
| 31 | Journal of the American Society for Information Science & Technology | 36 | 9 | 4 |
| 32 | European Journal of Information Systems | 35 | 7 | 5 |
| 32 | Interacting with Computers | 35 | 7 | 5 |
| 34 | Decision Sciences | 32 | 8 | 4 |
| 35 | Journal of Small Business Management | 28 | 7 | 4 |
| 36 | Behaviour and Information Technology | 25 | 5 | 5 |
| 36 | Information Technology & People | 25 | 5 | 5 |
| 36 | International Journal of Electronic Commerce | 25 | 5 | 5 |
| 36 | Journal of Organizational and End-User Computing | 25 | 5 | 5 |
| 36 | Journal of Global Information Management | 25 | 5 | 5 |
| 41 | Journal of Applied Psychology | 24 | 6 | 4 |
| 42 | Electronic Markets | 20 | 5 | 4 |
| 42 | Information Resources Management Journal | 20 | 5 | 4 |
| 42 | Information Systems Frontiers | 20 | 5 | 4 |
| 42 | International Journal of E-Collaboration | 20 | 5 | 4 |
| 46 | Journal of Enterprise Information Management | 16 | 4 | 4 |
| 46 | Journal of the Operational Research Society | 16 | 4 | 4 |
| 46 | Revue internationale PME | 16 | 8 | 2 |
| 49 | Computers in Human Behavior | 15 | 5 | 3 |
| 49 | Human Systems Management | 15 | 5 | 3 |
| 49 | IEEE Transactions on Software Engineering | 15 | 5 | 3 |
| 49 | Système d'information et Management | 15 | 5 | 3 |
| 53 | AI & Society | 12 | 4 | 3 |

(Continues)



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**Table 12**
*(Continued)*

| Rank | Journal | Publishing power | Publishing intensity | Publishing breadth |
|---|---|---|---|---|
| 53 | Industrial Management and Data Systems | 12 | 4 | 3 |
| 53 | Information Processing & Management | 12 | 4 | 3 |
| 53 | Information Technology & Management | 12 | 4 | 3 |
| 53 | International Journal of Management Reviews | 12 | 4 | 3 |
| 53 | Journal of Global Information Technology Management | 12 | 4 | 3 |
| 53 | Organizational Behavior and Human Decision Processes | 12 | 4 | 3 |
| 60 | International Journal of Medical Informatics | 10 | 5 | 2 |
| 60 | Journal of Systems Management | 10 | 5 | 2 |

**Table 13**
*Spearman Correlations for Productivity and Impact Calculation Methods ($p < 0.001$)*

| | Direct count-equal credit | Direct count-author position | Equal credit-author position |
|---|---|---|---|
| Individual Research Output (Table 1) | 0.83 | 0.81 | 0.99 |
| Individual Research Impact – Google Scholar (Table 2) | 0.95 | 0.93 | 0.98 |
| Individual Research Impact – Web of Science (Table 3) | 0.97 | 0.96 | 0.99 |
| Institutional Research Output (Table 4) | 0.95 | 0.94 | 0.99 |
| Institutional Research Impact – Google Scholar (Table 5) | 0.93 | 0.93 | 0.99 |
| Institutional Research Impact – Web of Science (Table 6) | 0.96 | 0.98 | 0.99 |
| List of Journals – Research Output (Table 7) | 0.94 | 0.95 | 0.99 |
| List of Journals – Research Impact – Google Scholar (Table 8) | 0.91 | 0.91 | 0.97 |
| List of Journals – Research Impact – Web of Science (Table 9) | 0.94 | 0.93 | 0.98 |

**Table 14**
*Comparison of Google Scholar and Web of Science: Spearman Correlations for Impact Scores ($p < 0.001$) and Percentage of Google Scholar Citations vs. Web of Science Citations*

| | Direct count | | Equal credit | | Author position | |
|---|---|---|---|---|---|---|
| | Rho | % of GS | Rho | % of GS | Rho | % of GS |
| Individual Research Impact – Table 2 vs. Table 3 | 0.89 | 36.84 | 0.89 | 35.89 | 0.87 | 35.91 |
| Institutional Research Impact – Table 5 vs. Table 6 | 0.94 | 36.54 | 0.95 | 35.51 | 0.95 | 35.23 |
| List of Journals – Research Impact – Table 8 vs. Table 9 | 0.83 | 38.26 | 0.85 | 37.92 | 0.87 | 37.98 |

## Notes

1. Even though these outlets accept articles on IS topics, IS-related issues are not their primary objective and most articles are not devoted to IS. Therefore, these journals may not be considered pure IS outlets.

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