

Impact factor as a metric to assess journals where OM research is published

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ABSTRACT

This paper investigates *impact factor* as a metric for ranking the quality of journal outlets for operations management (OM) research. We review all prior studies that assessed journal outlets for OM research and compare all previous OM journal quality rankings to rankings based on impact factors. We find that rankings based on impact factors that use data from different time periods are highly correlated and provide similar rankings of journals using either two-year or five-year assessment periods, either with or without self-citations. However, some individual journals have large rank changes using different impact factor specifications. We also find that OM journal rankings based on impact factors are only moderately correlated with journal quality rankings previously determined using other methods, and the agreement among these other methods in ranking the quality of OM journals is relatively modest. Thus, impact factor rankings alone are not a replacement for the assessment methods used in previous studies, but rather they evaluate OM journals from another perspective.

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1. Introduction

This paper investigates *impact factor* (Garfield, 2006) as a metric for ranking the quality of journal outlets for operations management (OM) research and compares journal rankings based on impact factors to those previously determined using other methods. Recent editorials from the *Journal of Operations Management* (Boyer and Swink, 2008; Boyer and Swink, 2009) and *Operations Research* (Simchi-Levi, 2009) highlight the increasing use of impact factors in assessing scholarly contributions of journals where OM research is published. In addition, Nisonger (2004) discusses the increasing use of impact factors for selecting and deselecting journals from a library's collection, and Cameron (Cameron, 2005, pp. 105) notes that impact factors are increasingly being used as a "performance measure by which scientists and faculty are ranked, promoted, and funded." Some editors compare their journal's impact factor to others within a discipline (Boyer and Swink, 2008; Boyer and Swink, 2009), and when its impact factor slips concern may be expressed (Simchi-Levi, 2009). Simchi-Levi (Simchi-Levi, 2009, pp. 2) expresses an ambivalent view towards using impact factor to assess journals: "Clearly, the value of the impact factor as a single measure of quality is fairly limited. Nevertheless, it is used by libraries, funding agencies, and deans of schools and university

administrators as a factor in promotion and tenure decision, and therefore cannot be ignored."

Given this increasing use of impact factors, the need to investigate the appropriateness of using this metric to assess the quality of journals where OM research is published is clear. Specifically, we review all 14 prior studies that identified, rated, and/or ranked journals where OM research is published, and compare the assessments of quality in those studies with the results from using impact factors. As Thomson Reuters has expanded the coverage of these journals in its Journal Citation Reports® (JCR), it has become easier to determine and compare impact factors. Therefore, if impact factors provide comprehensive measures of quality, their use could substantially reduce the need for the time-consuming task of manually extracting citation data and/or developing a survey instrument and fielding it to assess journal quality.

The next section provides background on citation analysis and impact factor. Section 3 reviews prior studies that identified, rated, and/or ranked OM journals. Section 4 presents our hypotheses, while Section 5 describes the methods we used to select OM journals, collect impact factor and citation data, determine impact factors, and test the hypotheses. Section 6 describes our results, Section 7 discusses our findings, and Section 8 presents concluding remarks.

2. Background

Citation analysis involves evaluating citations from a set of target or "base" journals (Tahai and Meyer, 1999). Without an automated database, the set of citations must be manually extracted

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from each article in the base journals, and then these citations are counted and summed. Thomson Reuters Web of Science® database has been the standard automated tool to identify article citation counts and conduct citation analysis. Google Scholar and subscription-based Scopus are other citation databases available since 2004. Thomson Reuters' JCR is an annual subscription-based online citation data report for any journal included in its Web of Science® database, which includes the Science Citation Index (SCI) and the Social Science Citation Index (SSCI). The JCR draws on citation data from more than 8000 journals from more than 3300 publishers in over 66 countries (Thomson Reuters, 2010). Citations are compiled annually, and each unique article-to-article link is counted as a citation. *Cited* journal data show how many citations articles in a journal received in a given year. *Citing* journal data show how many citations articles in a journal made to articles in other journals and/or articles in the citing journal (self-citations) in a given year.

Since the impact of a specific article usually cannot be assessed until several years after an article appears in a publication, the quality of a research article is often measured by the perceived quality of the journal in which it is published (Gorman and Kanet, 2005; Olson, 2005). Even recent methods, such as the h-index (Hirsch, 2005) and the g-index (Egghe, 2006), that attempt to measure both the scientific productivity and apparent impact of a researcher depend on the researcher's citation record over time. Also, it is becoming common for schools and departments to generate target journal lists that select or rank journals based on perceived quality (Olson, 2005). In such situations, the mechanisms used to determine quality and establish target lists can have a substantial impact on promotion and tenure processes for faculty.

An outgrowth of citation analysis is the *impact factor*. The impact factor was first introduced in 1955 by Eugene Garfield as a way of

“evaluating the relative importance of scientific journals” (Garfield, 1955, pp. 109) and is now used by the JCR to rank, compare, and categorize journals (Garfield, 2006). Impact factors have been the subject of debate since they were introduced. For example, a number of authors have noted that impact factors are not appropriate to use for cross discipline comparisons since different disciplines have different citation expectations and customs (Amin and Mabe, 2000; Glänzel and Moed, 2002; Gorman and Kanet, 2005). Cameron (2005) notes other criticisms; for example, he points out that using a two-year window in calculating the impact factor favors disciplines that have a faster publication lifecycle. Nisonger (2004) observes that a journal with many self-citations could potentially provide a high impact factor ranking and that being cited by other journals has more validity than do self-citations.

These references show that (1) use of impact factor in academia to evaluate and rank journals is increasing, (2) the quality of an article is often measured by the journal in which it was published and (3) this assessment can influence faculty promotion and tenure decisions. Given this increasing role for impact factor, it is important to ascertain whether impact factor is an appropriate measure of quality for OM journals relative to other approaches that are used to assess journal quality. In the next section, we review previous studies that evaluated journal outlets where OM research is published.

3. Previous evaluations of journal outlets for OM research

This section reviews the 14 previous studies of journal outlets for OM research articles published through the end of 2010. Such studies have generally been author-based, behavior-based, citation-based, or empirical-based (Fig. 1).

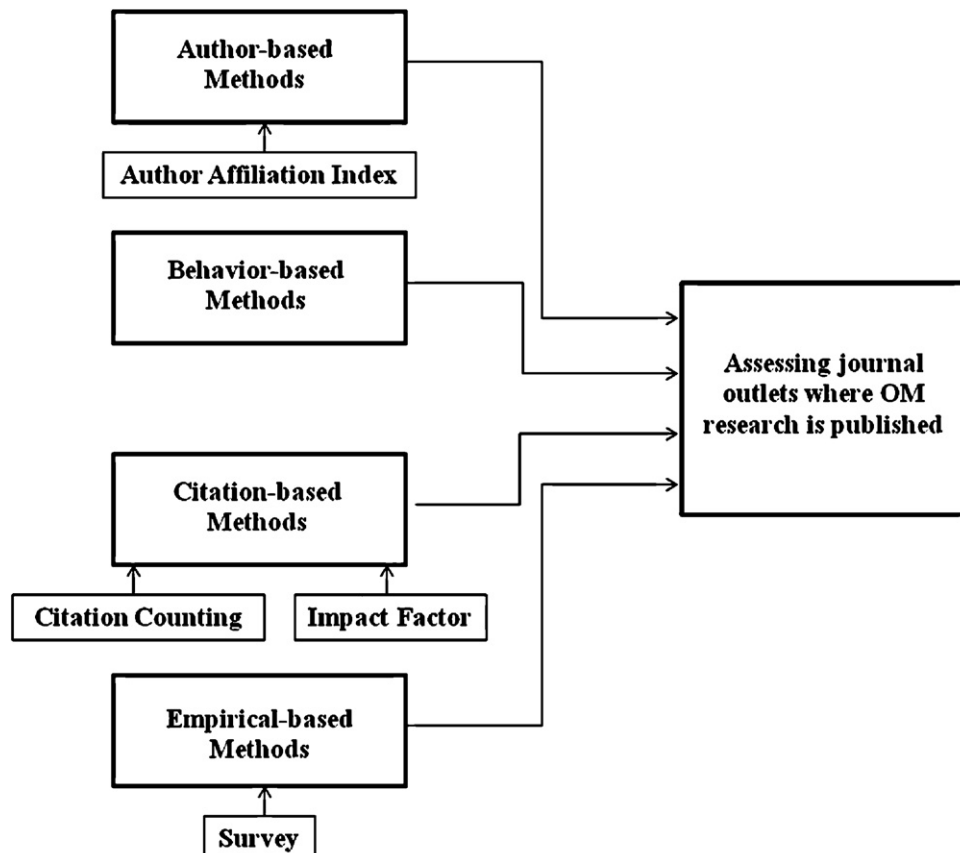


Fig. 1. Methods used to evaluate journal outlets where OM research is published.

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