The Journal of Academic Librarianship xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

The Journal of Academic Librarianship

journal homepage: www.elsevier.com/locate/jacalib

Composite journal rankings in library and information science: A factor analytic approach

William H. Walters

Mary Alice & Tom O'Malley Library, Manhattan College, 4513 Manhattan College Parkway, Riverdale, NY 10471, USA

ARTICLE INFO

Keywords:
Citation
Factor analysis
Impact
Ranking
Rating
Stated preference

ABSTRACT

This study uses citation data and survey data for 55 library and information science journals to identify three factors underlying a set of 11 journal ranking metrics (six citation metrics and five stated preference metrics). The three factors—three composite rankings—represent (1) the citation impact of a typical article, (2) subjective reputation, and (3) the citation impact of the journal as a whole (all articles combined). Together, they account for 77% of the common variance within the set of 11 metrics. Older journals (those founded before 1953) and nonprofit journals tend to have high reputation scores relative to their citation impact. Unlike previous research, this investigation shows no clear evidence of a distinction between the journals of greatest importance to scholars and those of greatest importance to practitioners. Neither group's subjective journal rankings are closely related to citation impact.

Introduction

Academic journals differ widely in their reputation and impact (Bradford, 1934; Nisonger, 2008; Seglen, 1992). The differences between the highest- and lowest-impact journals can be striking. In 2015, for instance, the top 32 chemistry journals were cited more than the next 790 combined (SCImago Research Group, 2017). The evaluation of journals is therefore central to the work of faculty and librarians in their roles as scholars, authors, and collection managers. Journal rankings have been used for nearly a century to identify the foremost journals in each subject field, to evaluate the differences between journals, and to track changes in reputation and impact over time (Nisonger, 1999, 2004).[1]

Two broad types of journal rankings have been identified: revealed preference rankings and stated preference rankings (Tahai & Meyer, 1999). Revealed preference rankings generally focus on scholarly impact, and most are based on citation metrics such as the impact factor (IF) and the *h* index. They can be defined more broadly, however, as any rankings that reflect the actual behavior of scholars, librarians, or readers—rankings based on publishing productivity, for instance, or on the extent to which journal articles are included in dissertation bibliographies or course reading lists (Esteibar & Lancaster, 1993; Sugimoto, 2011; Tjoumas, 1994). In contrast, stated preference rankings are subjective assessments based on the opinions of authors, faculty, or other subject experts. Surveys, interviews, or focus groups are used to elicit respondents' ratings of journals based on criteria such as scholarly impact, reputation, prestige, utility for research, utility for teaching, or importance in tenure and promotion decisions (Walters, 2017b).

Within the field of library and information science (LIS), both kinds of metrics are readily available. Many LIS journals are covered by citation databases such as Web of Science and Scopus, and at least nine studies have presented rankings of LIS journals based on surveys of faculty, deans, and practitioners (Blake, 1991, 1994, 1996; Kohl & Davis, 1985; Manzari, 2013; Nisonger & Davis, 2005; Nkereuwem, 1997; Tjoumas, 1991; Tjoumas & Blake, 1992). Different ranking methods can lead to different results, however. Citation-based rankings are not always consistent with stated preference rankings, and the ratings assigned by library directors do not always match those assigned by the deans of MLIS programs (Kim, 1991; Kohl & Davis, 1985; Nisonger & Davis, 2005; Walters, 2017a).

This study presents a factor analysis of journal ranking metrics based on data for 55 LIS journals. Specifically, it (1) identifies the factors (dimensions) underlying a set of six citation metrics and five stated preference metrics, and (2) generates a set of composite rankings that represent the 11 metrics in a more parsimonious way. Two questions are central to this research. First, can the 11 metrics be represented fully by a single factor? If one factor is sufficient to represent all 11 metrics, we can conclude that they all measure the same underlying construct. A second question—What are the underlying factors represented by the set of 11 metrics?—comes into play if more than one factor emerges. For instance, we might plausibly identify two factors,

E-mail address: william.walters@manhattan.edu.

[1] *Rankings* and *ratings* are used interchangeably here, since every rating system is an implicit ranking system.

http://dx.doi.org/10.1016/j.acalib.2017.06.005
Received 23 May 2017; Received in revised form 8 June 2017; Accepted 13 June 2017

one representing citation impact and another representing the various subjective journal rankings. Alternatively, we might discover that the opinions of LIS faculty are closely aligned with the citation metrics but that an additional factor is needed to account for the journal ratings assigned by academic library directors.

Because factor analysis, in this context, is an exploratory technique, we cannot know in advance which factors will emerge. For instance, the results may draw attention to the distinctions between objective citation impact and subjective reputation, LIS faculty and library practitioners, information science and library science, importance to readers (as an information resource) and importance to authors (as a publication outlet), international and local emphasis, orthodox and heterodox approaches to LIS research, older and more recently established journals, or earlier and more recent journal rankings. If the results reveal the existence of two or more factors along any of these dimensions (or a combination of them), we can conclude that multiple dimensions of perceived quality or impact ought to be considered by those who seek to fully understand each journal's place within the discipline.

Context and previous research

The LIS journal literature

The LIS literature has several distinctive aspects that may influence the impact and reputation of particular journals. First, library and information science is unusual in the extent to which it relies on the contributions of scholars working outside LIS departments. Of the 8407 articles published in 31 well-known LIS journals from 2007 to 2012, 46% were contributed by scholars and practitioners in other disciplines such as computer science and management. Likewise, six of the ten most prolific LIS scholars are based in departments other than LIS (Huang & Chang, 2012; Odell & Gabbard, 2008; Walters & Wilder, 2015, 2016).

LIS is also notable for the extent to which practitioners (e.g., librarians and archivists) contribute. Roughly 15–25% of college and university librarians have published, and practitioners account for 25–40% of the LIS journal literature. The percentage is higher—about 70%—if we consider just the more practice-oriented journals (Finlay, Ni, Tsou, & Sugimoto, 2013; Joswick, 1999; Powell, Baker, & Mika, 2002; Stewart, 2010, 2011; Swigger, 1985; Weller, Hurd, & Wiberley, 1999; Wiberley, Hurd, & Weller, 2006). These data suggest that librarians contribute to the professional literature to a greater extent than practitioners in other fields, perhaps due to the promotion and tenure requirements in place at many colleges and universities (Bushouse et al., 2011; Candler, 2006; Su, Yu, Lin, & Hung, 2013; Walters, 2016a, 2016b).

Not all author groups contribute equally to every LIS journal, however. Differences in authors' affiliations suggest a basic distinction between the core research journals (e.g., the *Journal of the Association for Information Science and Technology* [*JASIST*], *Library & Information Science Research*, and the *Journal of Documentation*) and the more practice-oriented journals (e.g., *College & Research Libraries*, the *Journal of Academic Librarianship*, and *Portal: Libraries and the Academy*). Practitioners account for nearly 80% of the articles published in *College & Research Libraries* but for just 5% of those published in *JASIST* (Bales, Sare, Coker, & vanDuinkerken, 2011; Brown & Ortega, 2005; Finlay et al., 2013).

Regardless of the publishing outlet, practitioners' research tends to be different from that of full-time faculty. Librarians' scholarly work is especially likely to have direct implications for practice and to focus on short-term organizational goals (Pymm & Hider, 2008; Schlögl & Stock, 2008; Watson-Boone, 2000). In at least some cases, this emphasis results in a tension between scholarly objectives (e.g., improving our understanding of individuals' information-seeking behavior) and professional objectives (e.g., improving patrons' ability to find relevant literature). In LIS and other professional fields, theoretical relevance and methodological sophistication are sometimes sacrificed in the name of practical significance (Bartunek & Rynes, 2014; Blake & Tjoumas, 1995).

Journal ranking metrics

The first large-scale, survey-based ranking of LIS journals, by Kohl and Davis (1985), has served as a model for subsequent stated preference rankings within the field of library and information science. The eight most comprehensive rankings published since 1985 are similar in their survey designs, rating methods, and journal lists (Blake, 1991, 1994, 1996; Manzari, 2013; Nisonger & Davis, 2005; Nkereuwem, 1997; Tjoumas, 1991; Tjoumas & Blake, 1992). They differ, however, in their respondent groups, which may include LIS faculty, LIS deans, library directors, and other librarians. The two most recent studies (Manzari, 2013; Nisonger & Davis, 2005) were used as data sources for the factor analysis and are described in the Methods section.[2]

Just two papers have examined the relationships between stated preference rankings and revealed preference rankings in LIS. These studies may provide insight into the results that are likely to emerge from the factor analysis. The more recent study, by Cronin and Meho (2008), reported only a modest correlation between the subjective rankings of Nisonger and Davis (2005, pp. 350–353) and the author affiliation index, a revealed preference metric based on the percentage of authors who are affiliated with top-rated departments. In an earlier but more extensive investigation, Kim (1991) compared six stated preference metrics with nine revealed preference metrics for a set of 28 LIS journals. She found that

1. the ratings assigned by survey respondents—LIS faculty and librarians—are more closely related to the total number of citations (which varies with the number of articles published in each journal) than to the impact factor (which does not);
2. although both faculty and practitioners give higher ratings to journals with higher impact factors, the faculty's ratings are more closely linked to citation impact;
3. practitioners, but not faculty, tend to favor journals with a high immediacy index—those that accrue most of their citations soon after publication;
4. respondents' ratings are directly but only modestly associated with journal age and circulation;
5. both faculty and practitioners give higher ratings to journals that are indexed by the major bibliographic databases.

These relationships may not hold true worldwide, however. For instance, Schlögl and Stock (2004) found that librarians and LIS faculty in Germany, Austria, and Switzerland tend not to read the more highly cited journals, which are published in English. A strong, direct relationship between IF and frequency of reading emerges only when the sample is limited to German-language journals.

Two studies have presented composite rankings of LIS journals based on multiple characteristics. Nixon (2014) rated 82 LIS journals on a scale of 1 to 7, assigning one point for each of seven attributes: ranking among the top 42 journals in a survey of LIS deans; ranking among the top 40 journals in a survey of library directors; acceptance rate lower than 50%; print circulation greater than 5000; assignment of a Web of Science impact factor (any value); *h* index greater than 7; and status as a publication outlet for three or more articles by Purdue University librarians over a 10-year period. Although Nixon's rating system is not unreasonable, it does have three flaws. First, several of the

[2] Earlier stated preference surveys were excluded from the analysis on the grounds that they represent past rather than current opinions. As Sutter and Kocher (2001) have demonstrated, journal rankings change relatively little from year to year but can differ significantly over periods of ten years or more. For a comprehensive overview of pre-2000 journal rankings in LIS, see Nisonger (1999).