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Bibliographic Measures of Top-Tier Finance, Information Systems, and Management Science Journals

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ORIGINAL ARTICLE

Bibliographic Measures of Top-Tier Finance, Information Systems, and Management Science Journals

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Abstract

Purpose: Faculty research is frequently the basis of pay, tenure, and promotion decisions in the university arena. Meanwhile, perceptions regarding the quantity and quality of the research produced by a faculty is often the basis of departmental, college, and university reputation. The journal in which research findings are published is often used to assess the overall research quality. In order to better benchmark journal quality, this report provides findings of a meticulous investigation of leading journals in the finance, information systems and management science disciplines. It examines four different citation-based measures of quality and four journal characteristics that are exogenous to the quality of any individual piece of research. In unison, these investigative paths provide a clearer understanding of journal quality across the business realm, and hence of the quality of research appearing in business journals.

Design: This study assists in the development of an accurate perception regarding business research through a careful analysis of the popular Journal Citation Reports (JCR) impact factor across leading journals in three diverse business disciplines. By considering three newer journal quality metrics, a.) SCImago Journal Rank (SJR), b.) Source Normalized Impact per Paper (SNIP), and c.) Percentage of articles cited, this research builds on past research. Top-tier journals in finance, information systems, and operations research and management science (referred to here as “management science”) are compared to evaluate the consistency of these measures across disciplines. The differences in journal characteristics and their impact on the citation-rate based measures of quality are also analyzed. Further, the potential impact of a discipline-based variation in the acceptance rate, issue frequency, the time since journal inception, and total reviewers are put forth as additional potential exogenous factors that may influence the perception of the overall journal quality. T-tests are applied for discipline comparisons, while correlation and multiple regression are employed in the analysis of journal characteristics.

Findings: There is a significant difference in the JCR impact measures of high-quality finance and management science journals versus high-quality information systems journals. However, only the JCR measures for finance journals correlate with a variety of journal-specific factors, including the journal's acceptance rate and frequency of issue. The SJR measures for finance and management science journals are, on the other hand, consistently higher than information systems journals, though the SJR value of any individual journal can be quite volatile. Most importantly, finance and management journals also report significant relations between the SJR measures and the journal's acceptance rate and year of initial issue. By comparison, the SNIP metric rates suggest that information systems and management science journals have higher quality. Moreover, underscoring the SNIP metrics for both the base years of the current study, articles in leading information systems and management journals are cited over twelve percentage points more than those in finance journals. Overall, results show that given the metric, the measured variance in the quality of finance, information systems, and management science journals is correlated with the identified journal-specific factors.

Research limitations: The present research is limited to three business disciplines, making the examination of journals in other business disciplines a logical extension of it. Whereas this research takes journal quality as fixed, one could also evaluate a quality measures reaction to a variation in journal characteristics (i.e. changes in acceptance rates). Furthermore, one could include other measures of journal quality, comprising the h-index or the more recently-released

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CiteScore metric. Such research would not only build on the present research, but also improve the accuracy of scholarly outlets and consequently the research quality.

Practical implications: Discipline-specific traits should be considered, and adjusted for, when making inferences about the long-term value of recently-published research. Our investigation demonstrates that citation-based research measures and journal-specific factors vary systematically across disciplines, which is why discipline-specific differences in journal characteristics, leading to the differences in citation-based quality measures, need to be considered, when making inferences about the long-term value of recently-published research. As a result, this research has significant implications for the basis upon which recommendations regarding salary adjustments, retention, and promotion are made.

Social implications: Research quantity and quality are two hallmarks of leading research institutions. Assessing research quality is very problematic, because its definition has changed from being based on the review process (i.e. “blind refereed”) to currently standing on acceptance rates and impact factors. Furthermore, the impact factor construct has been a lightning rod of controversy among researchers and administrators. Even journals themselves argue over which metric to employ, in the end supporting those putting them in the best light. This research assesses how impact factors and journal characteristics, which may influence the impact factors, vary by business discipline. The research is especially important and relevant to the authors who separately chair faculty departments that include finance, information systems, and management science, and are therefore in roles requiring an assessment of faculty research productivity, including quality.

Originality/value: This study is a detailed analysis of bibliographic aspects of the top-tier journals in three quantitative business areas. In addition to the popular JCR, SJR, and SNIP measures of performance, our analysis studies the seldom-examined percentage of articles cited metric. articles-citation metrics. A deeper understanding of citation-based measures is obtained through an evaluation of changes in how journals have been rated on these metrics over time. Our research shows firstly, that there are discipline-related systematic differences in both citation-based research measures and journal-specific factors, and secondly, that these discipline-specific traits should be considered when making inferences about the long-term value of recently published research. Furthermore, discipline-specific differences in journal characteristics, leading to the differences in citation-based quality measures, should in any case be considered when making personnel and remuneration decisions.

Keywords: impact actors, research quality, information systems, finance, management science, journal demographics, acceptance rates, bibliographic measures, JCR, SJR, SNIP, citation rates

JEL classification: D83

Introduction

For many years, acceptance rates were viewed as the appropriate measure of scholarship quality. Presumably, the lower the acceptance rate, the higher the research quality. Being a function of the number of manuscripts submitted, leakages in the review process, and a reflection of a journal's review process, acceptance rates may in fact have little to do with the quality of any individual piece of research. In addition, since submission statistics are maintained by editors, they also are heavily dependent upon the whims of these editors. Unscrupulous editors may count re-submissions as new submissions in order to expand the acceptance rate denominator and reduce the published acceptance rate. Being less susceptible to manipulation, impact factors have recently replaced acceptance rates as the primary measure of research quality. A more comprehensive history of journal impact factors can be found in [Van Rann \(2006\)](#), and [Archambault and Lariviere \(2009\)](#).

Research extending beyond one's own narrow discipline is frequently viewed as a measure of quality ([Belcher et al., 2016](#); [Schermann et al., 2014](#)). On one hand, joint exploration by parties from multiple disciplines helps to address complex issues faced in the real world. However, [Bromham et al. \(2016\)](#), and [Williams \(2016\)](#) find that joint exploration is frequently funded at a level that is less than that of pure, single discipline endeavors. [Krueger and Shorter \(2019\)](#) contend that the joint analysis of finance journals and information systems journals facilitates an understanding of journal impact for readers within these (and other) disciplines.

Reliance upon impact factors does not, in and of itself, provide a solution to the challenge that exists when one attempts to make accurate inferences regarding research quality. As will be pointed out in the literature review below, there are a variety of journal impact measures arising from the existence of various definitions of “impact.” Contrasting impact factors are dealt with in a separate section of this paper. The initial focus here is one of assessing the robustness of the popular and most widely-disseminated Journal Citation Reports (JCR) value across business disciplines. The analysis identifies

exogenous journal characteristics which are correlated with the JCR impact measure and the extent to which these journal characteristics vary across three quantitative business disciplines. The three research issues studied here, related to the research hypotheses, alternative hypotheses, and implications of each that is evaluated in this study, are provided below.

1.1 Hypothesis concerning JCR journal impact measure variation across disciplines

Hypothesis A. JCR values are similar across top-tier journals in finance, information systems, and management science disciplines.

Alternative A. JCR values of top-tier journals in finance, information systems, and management science are significantly different.

Variation in research quality itself is controlled by limiting the sample to only highly-regarded academic journals. One of the most quality-conscious lists of academic journals is the Chartered Association of Business School's *Academic Journal Guide* (AJG). Hypothesis A supports the contention that the JCR impact factors of quality journals will be similar across business disciplines. The importance of this analysis lies in the possibility that researchers may claim that their research is abnormally good based upon a higher JCR measure, however, these measures may be typical of the research topic area.

1.2 Hypothesis concerning journal characteristics correlation with JCR impact factors

Hypothesis B. Research quality, when measured using the JCR values, is independent of journal specific factors (i.e. acceptance rate, frequency of issue, time since initial publication, number of reviewers, etc.).

Alternative B. JCR values are correlated with journal-specific factors.

Ideally, the JCR values are independent of journal factors as is the factor of time since initial publication. In such a case, the JCR measure tends to be a better indicator of research quality, however, journal longevity may, quite on the contrary, be indicative of the quality of the journal and shed light on the quality of its articles.

1.3 Hypothesis concerning the robustness of journal quality measures

Hypothesis C. Alternative bibliometric measures of journal quality provide consistent rankings of journal quality across disciplines.

Alternative C. Alternative bibliometric measures give conflicting ratings of journal quality across disciplines.

To the extent that journal “quality” is an all-encompassing construct, one would detect consistent rankings of journal quality across disciplines. Nevertheless, differences in ranking may provide insight into the utilization of new research by the citing authors in a given discipline. Researchers in a given discipline will typically want to be cognizant of the bibliometric measure being employed by supervisors and champion that measure which puts their scholarly productivity in the best possible light. The literature review in the continuation focuses on a scholarly performance assessment across disciplines, including past studies of impact factors and acceptance rates, and alternative measures of impact. Finally, the research method and findings are revealed in the following two sections, where implications of the findings that are relative to the research hypotheses and proper evaluation of scholarly performance are addressed and suggestions for future research provided.

2 Literature review

2.1 The importance of research quality in faculty assessment

Numerous researchers have tackled the topic of what constitutes excellence in research. This issue is addressed by members of promotion and tenure committees, as well as those regularly called upon to write reference letters for candidates. One major element of these evaluations is the quality and quantity of the candidate's research publications. The quality of the journals the researcher actually publishes in is frequently used as an indicator of a long-term impact of the candidate's research. This is especially true for the disciplines studied within this paper, as demonstrated by recent articles in both finance (see, for example, [Brogaard et al., 2018](#); and; [Netter et al., 2018](#)) and information systems (see, for example, [Dennis et al., 2006](#); and; [Bernardi & Collins, 2018](#)).

Even after making the heroic assumption that journal quality can be used as a surrogate for research quality, several issues remain to be resolved. A variety of measures have been used, over time, to assess the quality of journals. A popular measure of journal quality has been whether submissions are reviewed by peers, and whether the journal follows a blind review style ([Blank, 1991](#); [Crane, 1967](#)). Double-blind reviews, wherein the identity of both the author and reviewer are

unknown to the other party, are typically perceived to provide greater quality. In a comparison of the single-blind with the double-blind review process, Snodgrass (2007) found that when a double-blind review process was used, acceptance rates were lower and referees turned in more critical reviews. However, using the broad-brush requirement that an article be in a peer-reviewed journal essentially created only two classes of articles and said little about the relative quality differences of journals. Therefore, blind review was replaced by acceptance rates as a means to compare journal quality.

2.2 Past studies comparing business disciplines

Perhaps the most relevant set of prior research is the analyses of acceptance rates in finance, information systems, and other areas, conducted by Krueger and Shorter. In their initial study, Krueger and Shorter (2012) investigate variation in acceptance rates over time in the finance and information systems areas. They then add data from the accounting discipline (Krueger et al., 2012) and the marketing discipline (Shorter et al., 2012), while studying the acceptance rate variation across time and national boundaries. Instead of treating all journals in finance equally, the next analysis considers acceptance rates across seven finance sub-disciplines, among them insurance, real estate, and corporate finance, and establishes significant variations across finance sub-disciplines (Krueger, 2013). Meanwhile, Shorter (2013) takes a more careful look at the impact of time to review, manuscript length, and also how journal sponsorship impacts information system journal acceptance rates. Management journals are added to the investigation stream by Krueger (2014), whose analysis documents the relative impact of publication fees on acceptance rates. This report is a natural outgrowth of these research streams, because it firstly, investigates the analysis of JCR, SJR, SNIP, and the citation score variation across the finance and information systems disciplines, limiting them to top-tier journals, and secondly, uses updated values and journal characteristics.

Frequently is a journal quality measurement simplified to the requirement that a publication be included on a predetermined list of premier journals. Krueger compares journals included in the Chartered Association of Business Schools' *Academic Journal Guide* (AJG) and Australian Business Deans Council's (ABDC) Journal Quality List with the journals included in Cabell's Directory of Publishing Opportunities in Finance (Krueger, 2017). As with this research, demographic characteristics of

journals are examined. Instead of going across listings of finance journals, this study compares the AJG listing for finance, information systems, and management science. This listing provides a much larger sample of journals than the Schaffer et al. (2011) bibliometric study of 4 finance journals, or La Paz et al. (2020) study of 8 information systems journals, or even La Paz et al. (2020) analysis of purely the *Information Systems Journal*.

One precursor to this research is the comparison of bibliometric measures and journal characteristics by Krueger and Lelkes (2019). Their study in addition utilizes the Journal Citation Reports (JCR), the SCImago Journal Rank (SJR), and the Source Normalized Impact per Page (SNIP) citation-based quality measures. Within their research, accounting journals tend to be older, with higher acceptance rates, fewer issues, fewer referees, and shorter initial reviews. JCR measures are virtually identical, while finance journal SJR ratings and accounting journal SNIP scores prove higher. In any case, this current study adds not only management science journals to the list of disciplines evaluated, but also the informative citation percentage metric.

Another precursor to this research is the recent popular bibliometric analyses in the management science area. A timeline of bibliometric research in the management science arena is provided by Liao et al. (2019) who apply the concept of "leading" to the articles themselves, by studying only the one percent most cited manuscripts. The authors, institutions, and nation representation are ranked, though little thought is given to journal characteristics or bibliometric measures. Conversely, while focusing purely on 79 leading journals in the Operations Research-Management Science (OR-MS) discipline, over the 2001–2011 period, Merigó and Yang (2017) present an interesting set of bibliometric measures, including total citations, citations per article, how many of the 200 most-cited articles are in a given journal, impact factor, and h index. While noting the value of the Academic Journal Guide, they study the universe of journals in the Web of Science database and nonetheless end up with approximately the same number of journals as this study, using the Academic Journal Guide as a selection criterion. The current paper is a dramatic step forward in that it benchmarks results in Management Science against two other business disciplines.

2.3 Journal impact factors

What is impact? Are there a variety of impacts, such as one on the business world and one in the

realm of scholarship itself? The frequently-discussed gap between research and practice in this field has been a concern of business schools, in terms of their legitimacy in the eyes of students, employers, and political entities (Kieser & Leiner, 2009; Johnson & Orr, 2020). Further, Birkinshaw et al. (2016) find that academic papers that are cited in bridge journals, such as *Sloan Management Review* and finance's Practical Applications, tend to have a high academic impact factor. A variety of alternative impact measures have been created, each of which attempts to gauge the relative importance of a journal. The initial impact factor was devised by Eugene Garfield (2006), with data published yearly since 1975 in the Journal Citation Reports (JCR) and now available from Clarivate Analytics. The SCImago Journal Rank (SJR) is another measure of the scholarly value of journal articles based on perceived journal quality. Journal quality is defined by SJR in terms of both the number of citations and the prestige of the journals, in which a given journal's articles are cited. One essentially ends up with a measure of the average prestige per article for each Scopus journal. In a ranking of 300 economics journals, Moosa reports that the *Journal of Finance* moves up one notch, if one uses this “prestige articles in prestige journals” measure (Moosa, 2017). Meanwhile, Currie and Pandher (2020) demonstrate a means to enhance the JCR and SJR ratings, using a survey of active researchers.

The source normalized impact per paper (SNIP) measure was developed by Moed (2011). This ratio's numerator is the number of citations per journal, while the denominator is a value based on what is referred to as the citation potential. The citation potential may be viewed as the average length of a list of references in a discipline (Moed, 2010, 2011).

In this analysis, we initially concentrate on the JCR measure and how it estimates the impact of finance, information systems, and management science journals. We discuss how the other bibliometric measures (SJR, SNIP, and CITE scores) affect the three journal disciplines in section 4.3 Analysis of Additional Bibliometric Measures. The Scientific Journal Ranking (SJR) provides additional “points” for prestigious journals, and may thereby be self-perpetuating, according to the Chartered Association of Business Schools (CABS). CABS also warns that the Source Normalized Impact per Paper (SNIP) does accommodate multi-disciplinary journals, but is also sensitive to the number of reviews published and the “game playing” arising from self-citation (ABS, 2015 Academic Journal Guide, p. 11). Given the documented increase in self-citation (see, for instance, Chorus & Waltman, 2016) and the

recently created CiteScore metric (see for, instance, Kim & Chung, 2018); Sugimoto & Lariviere, 2018; and Memon, 2018), the authors chose to initially concentrate on the historical standard of research quality, the JCR measure.

There has been a significant amount of research regarding which bibliographic measures provide the best estimate of journal quality. In an expansive study, Mingers and Yang (2017) contrast the JCR, SRJ, and SNIP ratings of 37 business journals, including four finance journals and two information systems journals. Whereas in information systems, Lowry et al. (2013) contrast expert opinion and bibliographic measures, finding a high degree of agreement in terms of journal quality. While some researchers (i.e. Merigo et al. (2015) study a single journal's bibliometric measures across extended periods, our focus is one of analyzing and contrasting the current environment, in which finance, information systems, and management science scholars find themselves.

An important contribution of the current article is the examination of the percentage of articles cited. Hu and Wu (2014) note that the current literature on citations gives more attention to the percentage of papers that are never cited than to the time-dependent pattern of citations. Nevertheless, a highly relevant finding made by Hu and Wu is that the percentage of never-cited papers in a relative short time period begins to approach a stable value. Making the citation rates reported here, which are based on three years of a subsequent citation activity, is a good measure of the percentage of articles which will ever be cited. Teixeira et al. (2020) examine 19,419 international business papers and find that only 8 (0.04%) ever gain a significant amount of attention after having been uncited for at least 5 years. The U.S.-based accounting, finance, and information systems journals have higher citation-based journal quality, according to Krueger et al. (2021), while the U.S. acceptance rates tend to be lower. However, a discipline-based variation in the journal quality measures and characteristics is identified, thus supporting the evaluation of these variables in the management science discipline.

3 Research method

The initial sample consisted of finance, information systems, and management science journals, included in the 2015 *Academic Journal Guide* (AJG), published by the Association of Business Schools. The research was completed before the 2018 AJG interim revision was released, which added relatively few journals to the 105 finance, 79 information

Table 1. Journal characteristics.

	Finance (N = 46)	Information Systems (N = 46)	Management Science (n = 34)
Acceptance Rates			
Mean	25.8%	20.0%	23.3%
Median	20%	18%	20%
Minimum	4%	5%	9%
Maximum	80%	70%	80%
Issues per Year			
Mean	5.1	5.9	7.4
Median	4	4	6
Minimum	1	1	4
Maximum	15	12	24
Journal Launch Year			
Mean	1992	1986.9	1978.3
Median	1996	1990	1980
Minimum	1921	1901	1950
Maximum	2012	2013	2005
Total Reviewers			
Mean	2.5	3.4	2.9
Median	2	3	2
Minimum	1	2	2
Maximum	5	6	3

systems, and 65 management science journals in the 2015 guide, where the added journals typically have the lowest AJG ranking possible. The next comprehensive analysis of journals is expected to be published in 2020. Though not unanimous, Bryce et al. (2020) find a high level of correlation between AJG ratings in research perception.

The AJG is unfortunately only a listing of journals, with no journal demographic information. Following the approach of Krueger (2018), we apply the editor supplied information, reported to and published by Cabell's Directory of Publishing Opportunities online. This single source of data is used as a means to capture journal demographics, which are generically defined and readily available,

putting this research in line with the prior bibliometric studies. Using Cabell's Directories reduced the maximum sample size to altogether 90 finance, 59 information systems, and 34 management science journals. The sample, on which each comparison is based, varies with the availability of dependent and independent data and is provided in the tables that follow.

Journal characteristics of the three disciplines in this study are presented in Table 1. The mean acceptance rates and total reviewers for management science journals align between finance and information systems journals. Most notable in Table 1 is that management science journals are more mature or older with a mean launch year of 1978.3, 14 years before finance journals, and 8.6 years before information systems journals. For a subsequent analysis, it might also be significant that the management science set of journals' maximum launch year is 2005, which is more than 15 years before the time of the current research. Secondly, management science also has the highest average number of issues per year at 7.4, with a maximum of 24. Table 2 reflects these two aspects in the correlation coefficients.

In order to assess the multi-collinearity of the sample, Pearson product-moment correlation coefficients were computed for the four numeric independent variables, shown in Table 2. The variable correlations across finance journals are presented in Panel A, while the correlations across information systems journals are exhibited in Panel B, and the correlations for management science are shown in Panel C. The average of the absolute value of the correlation coefficients for finance journals is 0.170, with none of the correlations being above 0.308. The

Table 2. Pearson product correlation coefficients.

	Acceptance Rate	Year of Initial Publication	Issue Frequency per Year	Number of Reviewers
Panel A: Finance journals (n = 46)				
Acceptance Rate	1.0			
Year of Initial Publication	0.308	1.0		
Issue Frequency per Year	−0.050	−0.038	1.0	
Number of Reviewers	0.165	−0.293	−0.160	1.0
Panel B: Information systems journals (n = 46)				
Acceptance Rate	1.0			
Year of Initial Publication	−0.160	1.0		
Issue Frequency per Year	0.019	−0.252	1.0	
Number of Reviewers	−0.155	−0.021	−0.012	1.0
Panel C: Management science journals (n = 34)				
Acceptance Rate	1.0			
Year of Initial Publication	0.021	1.0		
Issue Frequency Per Year	−0.248	−0.267	1.0	
Number of Reviewers	−0.324	0.150	0.250	1.0

latter value can be found in the acceptance rate column and the year of initial publication row, which is essentially the first computed value in Table 2. The positive value means that as journal origin becomes more recent, acceptance rates tend to rise. A positive correlation is not surprising, in light of more recently originating journals having to set a lower standard in order to attract submissions. Or, they may need to accept a higher percentage of submissions to provide a perceived necessary number of articles to justify existence. The coefficient of determination for the combination of acceptance rate and year of initial issue is only 0.095 (i.e. 0.308^2), meaning that less than ten percent of the variation in the finance journal acceptance rates can be explained by how long the journal has been in existence.

Correlation coefficients for information systems journals are exhibited in Panel B of Table 2, where one finds lower correlation values than those exhibited in Panel A. The highest absolute value below the diagonal is the -0.252 correlation coefficient for the relationship between the date of issue and issue frequency. The implication of the negative sign is that more recent information systems journals tend to have fewer issues per year. Over the years, older information systems journals might have had more of a chance to build a following, resulting in a demand for more frequent publication. Supporting this contention, in Panel A, one can see that the relationship between issue frequency and year of initial issue is also negative among finance journals. Squaring this information systems journals' correlation coefficient for these independent variables provides a value of 0.064 (i.e. 0.252^2), suggesting that only about six percent of the

variation in publication frequency can be explained by when the journal first appeared.

Correlation coefficients for management science are exhibited in Panel C of Table 2. Panel C displays negative correlation values for issue frequency paired with acceptance rate and year of initial publication, similar in direction to the values in Panel A. Most notable among the three panels, the set of correlation values for issue frequency is strongest in Panel C. The management science coefficients indicate that leading up to 2005 (see Table 1), journals launched in later years had fewer issues per year. Relatedly, coefficients show that as issue frequency decreases, acceptance rate increases, which could support more articles per publication.

In order to assess the robustness of the comparison between finance, information systems, and management science journals, information regarding the SCImago Journal Rank (SJR indicator), SNIP, and citation rates were obtained. The SJR indicator accounts for both the number of citations received by a journal and the prestige of the journals, in which such citations are located. Further, the SCImago Lab produces the SJR index and freely provides a variety of additional journal quality metrics at www.scimagojr.com, some of which go back to 2002. As regards the Source Normalized Impact per Paper (SNIP Indicator), it adjusts citation counts for the number of citations in a given field. The SNIP measure is issued by Scopus, which publishes SNIP data going back to 2012. In addition, Scopus publishes the percentage of journals that have been cited over the subsequent three years, which is the third bibliometric measure beyond JCR that is reported in this paper.

Table 3. Comparison of JCR impact factors.

	Finance Journals	Information Systems	Management Science
Panel A: JCR values by discipline			
N	46	46	34
Mean	1.31	2.45	1.64
Median	1.32	2.28	1.38
Minimum	0.03	0.52	0.20
Maximum	6.04	7.27	5.91
Panel B: Statistical significance of difference in JCR values			
Disciplines:	Finance & Information Systems	Finance & Management Science	Information Systems & Management Science
t-statistic	4.22	1.35	2.58
p-value	0.000	0.090	0.006
significance	***	*	***

Asterisks signify p-value significance at the 0.01 and 0.10 levels using *** and *, respectively.

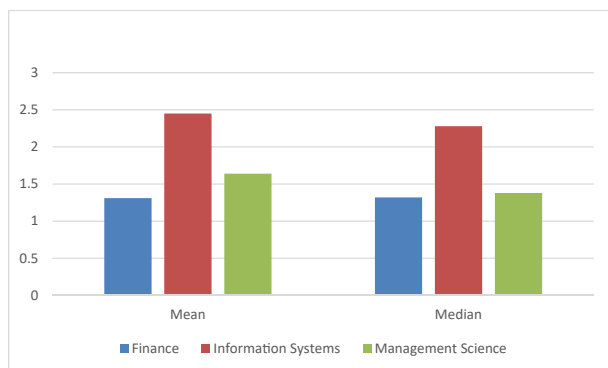


Fig. 1. Comparison of JCR measures.

4 Findings

4.1 Discipline-based differences in JCR values

Interestingly, as shown in the first row of Table 3 and 46 journals in both finance and information systems were listed in the 2015 *Academic Journal Guide* (AJG) with a JCR impact measure, and only 34 for management science. Further, the mean JCR value of information systems journals is notably higher than that of finance and management science journals. In addition, information systems journals have higher minimum and maximum JCR impact factors. Consequently, it is not surprising to find that the impact as measured by the JCR metric is significantly different at the 0.01 level. The dominance of information systems journals over finance and management science journals, in terms of JCR-measured impact factors, is illustrated by the chart in Fig. 1.

The implication is that quality information systems articles are cited 1.87 times more than top-tier finance articles, and 1.49 times more than management science articles. Although one potential explanation for such values is that there are more information systems journals, which could have more articles citing other information systems research, and hence the higher impact factor, the counter argument is that as the number of journals rises, so too does the denominator in the JCR index, which would reduce this measure. The actual number of finance journals in the AJG listing exceeds the number of information systems journals by a ratio of 1.56 to 1 (i.e. $86 \div 55$). Regardless of the cause, the evidence does not support the first hypothesis, but does support the alternative hypothesis. That means that the JCR values of research without information regarding the discipline should be used with great caution.

One may wonder about the relative level of these JCR means concerning other journals. Across the

12,061 journals with JCR scores, as reported by Gann (2017), 205 journals have the score above 10. The *MIS Quarterly* at 7.27 has a ranking that is in the top 3.3 percent, while the *Journal of Finance* with a ranking of 6.04 is in the top 4.6 percent of academic journals. With an overall score of 2.45, the average quality information systems journal has an impact ranking, which is in the top 28.6 percent of all journals. By comparison, with an overall score of 1.31, the average impact of quality finance journal is in the top 55.4 percent of all journals.

4.2 JCR correlation with key journal characteristics

This section reveals the results discovered in a quest to identify why information systems journals have higher JCR impact values. Specifically, we studied four numeric journal characteristics: acceptance rate, annual frequency of issue, launch date, and the total number of reviewers. Given the limited amount of multi-collinearity, as exhibited in Table 2, a multiple regression analysis was completed in order to gain an understanding of the explanatory power of these journal characteristics. Multiple regression itself is required due to the testing of the impact of several journal characteristics, while the multiple regression coefficients values provide an understanding of how citation-based quality measures vary across changes in journal characteristics. All together enable one to assess the overall significance of the models, as well as the significance of each individual independent variable.

The results of the multiple regression computation are provided in Table 4, where model-related statistics are reported in the left set of columns, while the regression model coefficients with their significance are reported in the right set of columns. These results are based on the 43 finance, 37 information systems, and 34 management science journals included in the AJG, with complete information available in Cabell's Directories. The multiple regression model F value is highly significant for finance journals and approaching the significance for information systems journals. The ability of these four variables to explain the JCR metric registers at 25.2 percent finance journals and 8.3 percent for information systems journals, with almost no influence on management science journals (1.4 percent).

Multiple regression coefficients are presented on the right side of Table 4, with coefficient p-values and asterisks to help the reader locate the terms that are significantly different from zero. As shown in the table, no key journal characteristics are significant for management science journals, however, the

Table 4. JCR multiple regression model results.

	Regression Model Significance			Regression Model Coefficients			
	F-value	P-value	Adjusted R ²	Acceptance Rate	Year of Initial Issue	Annual Issue Frequency	Number of Reviewers
Finance Journals (n = 43)	4.54	0.004**	0.252	–0.054 (0.000***)	–0.005 (0.151)	0.081 (0.026**)	0.213 (0.526)
Information Systems Journals (n = 37)	1.81	0.151	0.083	–0.078 (0.044**)	–0.003 (0.574)	–0.012 (0.395)	–0.093 (0.385)
Management Science (N = 34)	1.11	0.370	0.014	–0.010 (–0.549)	–0.002 (–0.892)	0.007 (0.549)	0.452 (0.120)

Asterisks signify p-value significance at the 0.01 and 0.05 levels using *** and **, respectively.

acceptance rate proves to be significant in two regression models, that is for finance and information systems journals. The negative sign of the term is expected, because it indicates that as the acceptance rate rises, there is a decline in the JCR value. For instance, an increase in the acceptance rate of ten percent, for instance from 20 to 30 percent, is likely to reduce the JCR metric among finance journals by 0.54 and among information systems journals by 0.78. Stated in terms of citations, the number of citations is likely to drop by about half of a citation per top-tier finance article as the acceptance rate rises by ten percent. The overall decline is about three-fourths of a citation among information systems journals.

In the discussion of correlation coefficients above, it is noted that one of the highest correlations among finance journals exists between acceptance rate and year of initial issue. Although the year of initial issue is approaching significance, one cannot say that this variable adds a significant contribution to the explanation of the JCR measure. The negative sign of the year of initial issue and acceptance rate correlation, found in Table 2, is matched by a negative sign in the regression model, computed and exhibited in Table 4. The implication, arising from Table 4, is that more recent journals tend to have a lower JCR value. A negative sign is also found in the equation with the information systems journals' year of initial issue, with the coefficient again being insignificant.

There is a difference established in the significance and sign attached to the annual issue frequency by finance journals and information systems journals. Greater frequency each year results in a higher JCR value among finance journals, with the term being significant at the 0.05 level. Among the many reasons for this positive coefficient is the possibility that journals with many issues have a greater opportunity to cite prior research appearing in the same journal. Although the information systems journals' coefficient on this term is negative, it is not significant. In addition, the Number of Reviewers term turns out not statistically significant for journals in either discipline.

4.3 Analysis of additional bibliometric measures

4.3.1 SJR metric

In light of the dichotomy of the JCR results reported above, journal ratings on three additional bibliometric metrics were obtained and analyzed. Comparisons based on the SCImago Journal Rank (SJR) metric, which considers both the citation and quality of the journal in which a journal is being

cited, are reported in Panel A of Table 5. The Source Normalized Impact per Paper (SNIP) metric, which corrects for citation frequency differences across fields of study and considers three years, is shown in Panel B. Meanwhile, the percentage of journal articles cited is shown in Panel C. To further enhance the analysis, we present both the most recent, i.e. reported in 2017, values of these measures and their level for at least one historical period. The SJR measures are reported for 2002, 2007, 2012, and 2017, while SNIP and citation percentages are reported for 2012 and 2017. Table 5 includes mean, median, maximum, and minimum values for these bibliographic measures among premier finance, information systems, and management science journals. For ease of reading, the larger value within each period and measure is highlighted in bold.

The SJR measures for finance journals are consistently higher than for information systems journals, regardless whether one is considering mean, median, or maximum values. In 2017, finance journal SJRs were 61 percent higher on average, though with the median only eleven percent higher. The diminished minimum SJR rating among information systems journals may be a reflection of a diminished quality of the *Information Resources Management Journal*, which experienced a 58.1 percent decline, from 0.258 to 0.08, in its SJR rating. Meanwhile, the most cited journal appears to be the *Journal of Finance* with a SJR rating that is over three times that of *MIS Quarterly*.

From 2002 to 2017, average SJR measures of top-tier finance journals rose by fifty-nine percent, however, the 2017 SJR value was lower than it had been in 2012. By comparison, information systems journals rose by 78 percent over the period

2002–2017, but with the highest reported SJR value occurring in 2007. The median values present a picture of stability over the period 2007–2017, regardless of whether one is considering finance journals or information systems journals. In view of the journals with the maximum SJR measure on a year-by-year basis, the *Journal of Finance's* SJR value peaked in 2014, at a level of 21.42, while the *MIS Quarterly's* SJR value reached its zenith at 9.42 in 2007. Overall, while finance journals rate higher on this quality metric, the SJR value of any individual journal can be quite volatile.

The 2012 and 2017 SJR measures for management science journals advance meaningful insight, concerning the distribution of values for its 34 journals. Compared to finance and information systems journals, from minimum values to mean and maximum values, management science journals present more linearity in the relationships between the three values. More linearity holds for both years. The stronger linearity implies that the JCR values for management science journals reflect more normality.

4.3.2 SNIP metric

By comparison, the SNIP metric rates premier information systems and management science journals higher, no matter whether considering the mean, median, or minimum SNIP rating. Bold lettering in Panel B of Table 5 only exists on the finance side of the ledger, when it comes to the maximum SNIP rating, which would be the results from the *Journal of Finance*. The difference in the SNIP values grew over the period 2012–2017 from an average difference of 16 percent to 29 percent. In fact, the average SNIP values of all three journal

Table 5. Analysis of alternative bibliometric measures across time.

	Finance Journals			Information Systems			Management Science		
	2012	2017	Change	2012	2017	Change	2012	2017	Change
Panel A: SJR measures									
Mean	2.18	1.87	−0.31	1.03	1.16	0.13	1.32	1.34	0.02
Median	0.90	0.89	−0.01	0.77	0.80	0.03	1.21	0.95	−0.26
Minimum	0.21	0.16	−0.05	0.22	0.11	−0.11	0.27	0.29	0.02
Maximum	19.47	18.32	−1.15	5.23	5.08	−0.15	3.74	5.36	1.62
Panel B: SNIP measures									
Mean	1.31	1.16	−0.15	1.52	1.50	−0.02	1.59	1.45	−0.14
Median	0.91	0.96	0.05	1.48	1.42	−0.06	1.30	1.28	−0.02
Minimum	0.04	0.14	0.10	0.15	0.21	0.06	0.51	0.38	−0.13
Maximum	5.16	5.80	0.64	5.05	4.48	−0.57	2.97	2.91	−0.06
Panel C: Citation rate									
Mean	0.50	0.54	0.04	0.63	0.66	0.03	0.63	0.67	0.04
Median	0.50	0.54	0.04	0.70	0.67	−0.03	0.64	0.69	0.05
Minimum	0.06	0.17	0.11	0.18	0.29	0.11	0.33	0.34	0.01
Maximum	0.96	1.00	0.04	0.92	0.95	0.03	0.87	0.91	0.04

*Source: Scopus. <https://www.scopus.com/sources.uri>.

The larger value within each period and measures is highlighted in bold.

Table 6. Multiple regression model results.

	Regression Model Significance			Regression Model Coefficients		
	F-value	P-value	Adjusted R2	Acceptance Rate	Year of Initial Issue	Annual Issue Frequency
Panel A: JCR metric						
Finance Journals (n = 43)	4.54	0.004**	0.252	–0.054 (0.000***)	–0.005 (0.151)	0.081 (0.026**)
Information Systems Journals (n = 37)	1.81	0.151	0.083	–0.078 (0.044**)	–0.003 (0.574)	–0.012 (0.395)
Management Science Journals (N = 34)	1.11	0.370	0.014	–0.010 (–0.549)	–0.002 (–0.892)	0.007 (0.549)
Panel B: SJR metric						
Finance Journals (n = 46)	3.07	0.027*	0.235	–0.127 (0.013**)	–0.053 (0.070*)	0.312 (0.076*)
Information Systems Journals (n = 36)	2.49	0.064	0.250	–0.052 (0.009**)	0.006 (0.530)	–0.024 (0.712)
Management Science Journals (N = 34)	2.72	0.048*	0.174	–0.012 (0.417)	–0.028 (0.039**)	0.062 (0.215)
Panel C: SNIP metric						
Finance Journals (n = 69)	5.96	0.006**	0.275	–0.019 (0.004***)	–0.016 (0.008***)	0.053 (0.142)
Information Systems Journals (n = 50)	2.21	0.082	0.164	–0.019 (0.123)	–0.004 (0.629)	0.054 (0.234)
Management Science Journals (N = 34)	1.27	0.302	0.032	–0.001 (0.883)	–0.002 (0.792)	0.063 (0.066)
Panel D: Citation Rate metric						
Finance Journals (n = 53)	1.28	0.291	0.096	–0.027 (0.205)	–0.121 (0.586)	1.310 (0.200)
Information Systems Journals (n = 48)	3.84	0.009**	0.263	–0.045 (0.048**)	–0.071 (0.598)	0.234 (0.777)
Management Science Journals (n = 34)	0.790	0.541	0.026	–0.111 (0.567)	0.168 (0.345)	0.690 (0.301)
						0.163 (0.964)
						–7.372 (0.003***)
						1.205 (0.719)

Asterisks signify p-value significance at the 0.01, 0.05 and 0.10 levels, using ***, **, and * respectively.

disciplines declined over the five-year period. However, the median SNIP value increased among finance journals, but declined among information systems and management science journals. All else being equal, the comparison of the SJR and SNIP ratings suggests that extending the citation window an extra year and/or considering the relatively fewer citations in information systems journals increases the SNIP-perceived perception of information systems journals.

4.3.3 Citation rates

Even within top-tier journals, citation rates are far from spectacular, with only 54 percent of finance articles cited in 2017, 66 percent of information systems journals cited, and 67 percent of management science journals cited over the initial three-year period. For instance, articles in 2014 could have been cited in 2015, 2016 and 2017. Citation rates across the three journal disciplines were up about six percent from where they had been in 2012. Median numbers are quite similar, with the typical top-tier information systems article being 13 percent more likely to be cited than a finance article, but 2 percent less likely than a management science article.

At the lowest extreme, in 2017, only seventeen percent of the articles in the *Journal of Emerging Markets Finance* were cited. By comparison, the worst showing among information systems journals in 2017 was the *International Journal of Information Technology and Management*, a journal with only 29 percent of its articles being cited. At the higher extreme, 95 percent of the *MIS Quarterly's* articles were being cited, meaning that 5 percent had not been considered worthy of citation over the ensuing three years. By comparisons, it is surprising that all of the articles in the *Journal of Finance* appearing in 2014 were cited over the following three years. Even among what are considered to be top-tier journals, this evidence is consistent with the naysayer's view that a large percentage of articles are not read by more than the authors, reviewers, and editors. These results also lend support to the third alternative hypothesis, which states that the relative measure of journal quality varies across bibliometric measures.

4.3.4 Factors leading to differences in additional bibliometric measures bibliometric metrics

Considering the divergence in ratings given to finance, information systems, and management science journals by these alternative bibliometric measures, an important question is one of, whether the differences are tied to variation in specific

journal characteristics. For ease of comparison, Panel A of Table 6 restates the JCR metric information found in Table 4. In that prior discussion, it was reported that acceptance rate is significantly related to the JCR of both finance and information systems journals. Going down the Annual Issue Frequency column in Table 6, one can see that this independent variable was only tied to the finance JCR measures, but unrelated to the variation in any of the four journal quality measures of information systems journals.

As one would expect, there are several similarities across regression equations. For instance, a significant proportion of the SJR measure variation can be explained by these independent variables. As acceptance rates rise, the SJR values drop by a significant amount for finance and information systems journals. Looking at the three right columns of Panel B for finance and information systems journals, one finds that the SJR is the only journal quality measure that is independent of journal longevity, issue frequency, and number of reviewers. This lack of significance may make SJR a better measure of journal quality for finance and information systems journals, because perceived article quality is not correlated with these journal factors that are extraneous to the article itself.

Nonetheless, for management science journals, SJR is the only metric, where the set of exogenous factors, acceptance rate, launch, issue frequency, and the number of reviewers combine to produce a significant prediction. Launch, i.e. the year of the initial issue, is the lone significant factor—a closer look links to the observations from Tables 1 and 2. A launch window running from 1950 to 2005 and the older mean of 1978.3 provide the basis for predicting SJR, while the frequency of prestigious citations drives SJR. The current study indicates that the more mature management science journals are more established and thus recognized for their quality and prestige, as evidenced by the significant connection with the SJR metric.

By comparison, journal longevity is significantly related to the finance SNIP ratings. With the significance of the acceptance rate and relatively large sample size, the F ratio reaches its highest level (i.e. 5.96) in the regression, wherein the finance SNIP values serve as the dependent variable. The explanatory power (i.e. adjusted R^2) reaches a height of 27.5 percent for the finance SNIP measures. As regards the independent variables, none of them are significantly related to the information systems and management science SNIP journal ratings.

As was reported in Panel C of Table 5, the percentage of articles cited during the subsequent three

years is higher among information systems journals. Further, as shown in Panel D of Table 6, the explanatory power of these independent variables among information systems journals reaches 26.3 percent, with acceptance rate being significant at the 0.05 level and number of reviewers being significant at the 0.01 level. Ironically, as the number of reviewers rises, the percentage of articles cited drops. A careful investigation of this finding revealed that several of the journals with limited reviewers being used actually found themselves among those with the highest citation ratings. Finance and management science journal citation ratings proved not significantly tied to any of the listed independent variables, resulting in low F statistic values and explanatory power. What is evident from Table 6 is that the drivers of perceived journal quality vary from discipline to discipline, which is nevertheless consistent with the third alternative hypothesis.

5 Conclusion

It is a fact that quantity and quality of research are the two hallmarks of leading research institutions. Nevertheless, assessing research quality is very problematic, because its definition has changed from being based on a review processes (i.e. “blind refereed”) to acceptance rates and more recently to impact factors. Furthermore, the impact factor construct has been a lightning rod of controversy, as researchers, administrators, and journals argue over which metric to employ. The present research assesses how impact factor estimates and journal characteristics, which may impact the impact factors, vary by business discipline. The research proves especially important and relevant for the authors who separately chair faculty departments, which include finance and information systems, and are therefore in the roles requiring assessment of not only faculty scholarly productivity, but also quality.

In order to limit the impact of journals with lesser quality on our findings, the empirical sample consists of journals identified by London's Association of Business Schools as having the best work in the field. Only 105 finance, 79 information systems, and 65 management science journals are listed in the most recent comprehensive *Academic Journal Guide* (AJG). This study uses arguably the most popular journal citation reports, or the JCR measure of impact. A subset of the AJG empirical sample comprises of 46 finance and information systems journals, along with 34 management science, journals for which JCR values are reported by Clarivate Analytics. In addition, a special section of this paper is focused on briefly discussing some of the other

popular bibliometric measures, namely the SJR, SNIP, and citation rates.

Using t-tests, we find that there is a significant difference in the JCR values of quality journals across disciplines, with information systems journals publishing research cited more frequently. The information systems journals' domination over finance journals persists, when one considers mean, median, minimum, or maximum impact factors. For instance, finance faculty publishing in journals with the JCR readings of 2.0 are in journals that are 53 percent above the discipline's average, while information systems faculty publishing in journals with the JCR readings of 2.0 are in journals that are 18 percent below the discipline's average.

In the continuation, correlation analysis and multiple regression techniques were employed to verify that several journal characteristics can be used to explain a journal's JCR measure. Or stated another way, research quality, as measured by this factor, can be foreshadowed by quantitative factors, such as the acceptance rate and annual issue frequency. Further, finance faculty can court higher citation rates for their research by scouting out journals which have a lower acceptance rate, have been in existence for a longer period of time, and have more annual issues. Interestingly, regarding the latter journal characteristics, information systems journals with fewer annual issues tend to have higher JCR values.

The SJR measures for finance journals are consistently higher than for information systems journals, when mean, median, or maximum values are considered. While finance journals do rate higher on this metric, the SJR value of any individual journal can be quite volatile. Similarly, the mean, median, and minimum SJR values of management science journals factor higher than those of information systems journals. By comparison, the SNIP metric rates premier information systems journals higher, regardless whether considering the mean, median, or minimum SNIP rating. Other things held constant, the comparison of the SJR and SNIP ratings suggests that extending the citation window an extra year and/or considering the relatively fewer citations in information systems journals increases the perceived perception of information systems journals. Even among top-tier journals, citation rates are far from spectacular in 2017, with over 46 percent of finance articles, 34 percent of information systems, and 33 percent of management science articles not being cited over the within three years of publication criteria.

Even among what are considered to be top-tier journals, this evidence is consistent with the

naysayer's view that a large percentage of articles are not read by none other than the authors, reviewers, and journal editors. What is evident from our brief analysis of the SJR, SNIP, and citation rates, utilizing multi-regression, is that the drivers of perceived journal quality vary from discipline to discipline.

Logical extensions of this research include examining journals in other business disciplines. One could study the correlation of changes in bibliographic measures and journal bibliometric measures across other disciplines, such as marketing and accounting. Furthermore, one could include other measures of journal quality, such as the recently-released CiteScore metric. A challenging pursuit would be computation and an analysis of JCR, SJR, SNIP, and citation rates at the researcher level, as such an investigation would surely build on the present research and improve the accuracy of quality assessment.

Declaration of competing interest:

There is no conflict of interest.

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