Technovation 32 (2012) 257–271

Contents lists available at SciVerse ScienceDirect

Technovation

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

The changing landscape of technology and innovation management: An updated ranking of journals in the field

Narongsak (Tek) Thongpapanl *

Brock University, Faculty of Business, 500 Glenridge Avenue, St. Catharines, Ontario, Canada L2S 3A1

ARTICLE INFO

Available online 17 January 2012

Keywords:
Citation analysis
Journal ranking
Technology and innovation management
Management of technology

ABSTRACT

This paper presents an up-to-date ranking of the leading technology and innovation management (TIM) specialty journals. Citation data from the years 2006–2010 of the fifteen base journals are collected and analyzed. Based on the total citation score, frequency adjusted score, age adjusted score, self-citation adjusted score, and overall adjusted score, the new top 50 journals list for TIM is offered. Compared with the results from the earlier period, no statistically significant change is detected in the top half of the list; however, a significant number of well-regarded journals that did not appear in the 1997–2001 period have surfaced in the bottom half of the list. Overall, the top ten journals of this latest ranking are *Research Policy*, *Strategic Management Journal*, *Journal of Product Innovation Management*, *Management Science*, *Academy of Management Journal*, *Harvard Business Review*, *Academy of Management Review*, *Research-Technology Management*, *Organization Science*, and *Technovation*. The ranking order of the top ten TIM specialty journals is as follows: *Research Policy*, *Journal of Product Innovation Management*, *Research-Technology Management*, *Technovation*, *R&D Management*, *Industrial and Corporate Change*, *IEEE Transactions on Engineering Management*, *Journal of Technology Transfer*, *Technological Forecasting and Social Change*, and *Journal of Engineering and Technology Management*. A fresh perspective on how TIM specialty journals relate to each other and how they link to business, economics, and management disciplines is provided. A detailed discussion of these findings, together with concluding remarks, also helps answer the question "Do things change or remain the same?"

1. Introduction

The ranking of Technology and Innovation Management (TIM) journals has attracted renewed attention and interest during the past two decades (see Cheng et al., 1999; Liker, 1996; Linton and Thongpapanl, 2004). As noted by scholars in various disciplines (Bauerly and Johnson, 2005; Cheng et al., 1999; Eom and Lee, 1993; Henderson et al., 1990; Holsapple et al., 1994; Steward and Lewis, 2010; Zinkhan and Leigh, 1999; Zivney and Reichenstein, 1994), journal rankings are critically important and practically useful because they help (1) researchers determine the appropriate outlets for their work in terms of knowledge utilization, generation, and dissemination, (2) journal editors evaluate the quality of their selections and guide their editorial agendas, (3) libraries develop and maintain a relevant and comprehensive collection of print and online materials, (4) universities make their hiring, tenure, promotion, and salary increase decisions as well as assess the research performance of individuals and departments, and (5) government and private agencies judge the quality of research proposals and reach appropriate funding decisions. Based on these reasons, the periodical update of TIM journal rankings is essential in facilitating the forward movement of the field.

Moreover, researchers in the TIM area are academically and professionally trained, and come from diverse backgrounds, including economics, engineering, entrepreneurship, management, marketing, and strategy. Thus, their research focuses correspondingly include strategic, managerial, behavioral, and operational perspectives (Linton and Embrechts, 2007; Thieme, 2007). Given the interdisciplinary nature of the TIM area, it can be argued that continued updates of TIM journals rankings might be even more important than in many other fields because the journals significant to the TIM area may not be as apparent as in traditional disciplines (Cheng et al., 1999; Liker, 1996; Linton and Thongpapanl, 2004). Although the field is now more than 25 years old, it continues to evolve through different growth and development phases (Yanez et al., 2010), which makes issuing a definitive ranking of the top journals a challenging undertaking. The situation becomes even more strenuous as changes in editors-in-chief, area editors, and editorial board members often shift the focus and emphasis

* Tel.: +1 905 688 5550x5195; fax: +1 905 378 5716.
E-mail address: nthongpa@brocku.ca

0166-4972/$ - see front matter Crown Copyright © 2012 Published by Elsevier Ltd. All rights reserved.
doi:10.1016/j.technovation.2012.01.001

of a journal. Because of the evolving nature of the field, it is imperative that we continue to address this constant expansion and diversification by periodically reviewing and revising the relative rankings of the top TIM journals.

To date, three journal ranking studies have been performed which offer insight into the specialty and non-specialty journals that greatly influence the TIM field. First, Liker (1996) administered and analyzed an opinion-based ranking survey of the TIM field to journal editors and members of the TIM division of the Academy of Management (AOM) and reported the summary results. Liker's study was unavoidably considered by many as being subjective as the differences in opinions of AOM researchers interested in TIM are significant when it comes to their top journal choices. Second, using Liker's top five TIM specialty journals as the basis of their analysis, Cheng et al. (1999) carried out a citation analysis of the TIM literature by reviewing the reference section of every article in these five journals, over a 5-year reference period, to determine the frequency of all the journals that were cited. In doing so, their analysis reveals the importance of both TIM specialty journals and other journals that may publish TIM research infrequently but that tend to print articles with high impact in the field (examples include *Harvard Business Review*, *Management Science*, and *Academy of Management*). Because of its objective nature and its reconstruction and replication capability, Cheng et al.'s study offers advantages over Liker's study both in terms of reliability and validity. Third, in an attempt to resolve the inconsistencies between Cheng et al.'s (1999) and Liker's (1996) rankings, Linton and Thongpapanl (2004) conducted a citation analysis of 10 leading TIM specialty journals employing five different citation scoring methods, namely total citation, frequency adjusted, age adjusted, self-citation adjusted, and overall adjusted scoring methods. Their analysis illustrated that methodological improvements—particularly in the selection of base journals—provide a more consistent assessment of the TIM journal rankings. According to their study, the top 10 specialty journals in the TIM field are *Journal of Product Innovation Management*, *Research Policy*, *Research-Technology Management*, *R&D Management*, *IEEE Transactions on Engineering Management*, *Technological Forecasting and Social Change*, *International Journal of Technology Management*, *Technovation*, *Technology Analysis and Strategic Management*, and *Journal of Engineering and Technology Management*. Their article has sparked a renewed interest of many scholars in closely examining the impact and significance of these top 10 TIM specialty journals (e.g., Ball and Rigby, 2006; Biemans et al., 2010, 2007; Durisin et al., 2010; McMillan, 2008; Merino et al., 2006; Page and Schirr, 2008). The data considered in their citation analysis were collected between the years 1997–2001; thus, now that we are approaching the 10-year mark, it is important that we revisit the ranking of TIM journals.

Against this aforementioned background, the main objectives of this study are to update the rankings of TIM journals reported in Linton and Thongpapanl's (2004) study and to further evaluate the relations among different TIM specialty journals as well as between TIM specialty journals and traditional disciplines. In the ensuing sections, the method employed in this study is explained, followed by the presentation of the results and the discussion of the implications of the findings. Conclusions are then offered.

2. Data and methodology

This study adopts the same methodological procedure used in Linton and Thongpapanl's (2004) study. Fifteen TIM specialty journals were chosen as the base journals for citation analysis. Specifically, *Engineering Management Journal*, *Journal of Technology Transfer*, *Science and Public Policy*, *Industrial and Corporate Change*, and *Industry and Innovation* were considered in addition to the top 10 TIM specialty journals reported by Linton and Thongpapanl. Each issue of the 15 base journals was considered for the 2006–2010 period. For each base journal, the number of articles and citations in each issue were documented. A record was made of which journals were cited in each article of the base journal. This information was then tabulated in order to indicate the number of times a journal was referred to by a base journal in each of the five years. The total number of citations and number of articles for the base journal were also documented. The compilation and organization of this information from each of the base journals over the 5-year period allowed us to rank the cited journals based on citation frequency. The bibliographic data used in this citation-based analysis were obtained from Scopus (the largest abstract and citation database containing over 19,000 titles of peer-reviewed research literature and quality web sources). Due to the dissimilarities when it comes to the age of the journal, number of articles published during the studied period, and number of journal self-citations found in the base journals, the same five different scoring methods used in Linton and Thongpapanl's study were applied in order to highlight what, if any, differences in the rankings exist when we adjust for age, frequency, and self-citation. The application of multiple scoring methods is also needed as scholars in many fields including TIM have detected an increase in article size and in the number of references per article published (e.g., Kerin, 1996; Merino et al., 2006; Phelan et al., 2002). Two Wilcoxon rank sum tests were conducted: the first test was to determine which, if any, of the rankings (resulting from the years 2006–2010) were significantly different among the five citation ranking methods used, and the second test was to assess similarities and differences between the rankings found in the period 1997–2001 and those of the 2006–2010 period.

3. Results and discussion

Table 1 ranks the top 50 journals during the years 2006–2010 based on their overall adjusted scores. The table also compares and contrasts the rankings of these top journals against the rankings from the 1997–2001 period. Journals are listed with their rank for each of the five citation scoring methods used for both periods. The results reported here include some important and interesting departures from Linton and Thongpapanl's (2004) earlier study. While most of the top 25 rankings found this time were also among the top 25 journals in the previous period, *Industrial and Corporate Change* (ranked 29th previously but is now 12th on the overall adjusted ranking), *Journal of Business Venturing* (ranked 43rd previously but is now 16th), *Journal of Technology Transfer* (ranked 51st previously but is now 17th), *Journal of Engineering and Technology Management* (ranked 27th previously but is now 20th), and *Science and Public Policy* (ranked 38th previously but is now 25th) are the exceptions to this generalization. When we consider the 26th–50th rank, a slightly different picture emerges. More than half of the journals in the 26th–50th rank (i.e., 13 out of the 25 journals shown) did not appear on the list of top 50 journals during the years 1997–2001. Notably, *Industry and Innovation* moves up 107 ranking points from the earlier period based on the overall adjusted scorings, *Economics of Innovation and New Technology* improves 97 points, *Engineering Management Journal* advances 81 points, *Small Business Economics* progresses 61 points, *Journal of Operations Management* jumps 55 points, and *International Journal of Project Management* betters its ranking by 51 points.

Tables 2 and 3 show the results of the two Wilcoxon signed rank tests. Taking into account all the combinations of ranking