Received:
17 September 2018
Revised:
13 November 2018
Accepted:
13 December 2018

Cite as: Jorge Camargo,
Maximiliano González,
Alexander Guzmán,
Enrique ter Horst,
María—Andrea Trujillo.
Topics and methods in
economics, finance, and
business journals: A content
analysis enquiry.
Heliyon 4 (2018) e01062.
doi: [10.1016/j.heliyon.2018.e01062](https://doi.org/10.1016/j.heliyon.2018.e01062)

Topics and methods in economics, finance, and business journals: A content analysis enquiry[☆]

Jorge Camargo^a, Maximiliano González^b, Alexander Guzmán^{c,*}, Enrique ter Horst^b,
María—Andrea Trujillo^c

^a School of Mathematics and Engineering, Konrad Lorenz University, Bogotá, Colombia

^b School of Management, Universidad de los Andes, Bogotá, Colombia

^c CESA School of Business, Bogotá, Colombia

* Corresponding author.

E-mail address: alexander.guzman@cesa.edu.co (A. Guzmán).

[☆] Authors are in alphabetical order and contributed equally to this work.

Abstract

This study analyzes the abstracts and titles of 33,454 business finance, economics, management, and business articles published in ISI (frequently cited) journals during 2013–14. The sample represents 46.4 percent of all papers published in ISI journals in those years, and 52.7 percent of the articles published in the selected categories. The journals were ranked in four Q categories according to their impact factors. The analysis revealed that some topics persisted in all Q groups, but others gained frequency by Q, which suggests that Q1 journals (those with higher impact factors) create trends that are followed by other publications. All Q groups have a methodological approach that is predominantly empirical rather than theoretical. In addition, while the business and management categories privileged case studies, economics studies emphasized panel data analyses. Finally, our study confirms the relevance of the English language in academia.

Keywords: Information science, Economics, Business

1. Introduction

All over the world, researchers are facing increasing pressure to “publish or perish”, and their preferences in terms of what to publish and where are weighed against the interests and trends of the academic editorial market. It has long been reported that journal editors influence the dissemination of certain ideas and trend topics (e.g., Hamelman and Mazze, 1974; Silverman, 1984; Chan et al., 2005; Bradbury, 2012). Our study shows how recent technological developments could help researchers undertake projects in their fields’ preferred subjects of interest. This is important because the proliferation of academic journals hinders researchers’ ability to choose the most appropriate place for their work. Moreover, in many institutions, tenure and promotion committees have trouble assessing a professor’s academic contribution when analyzing his or her research output (Weston, 1994).

While there are thousands of journals in all academic areas, the competition to be published in the leading ones remains as fierce as ever. Acceptance rates below 5 percent are common in top journals. Danielson and Heck (2010) demonstrated that, in a set of 15 high-impact accounting journals, a relatively small number of authors have published a disproportionate share of the articles. Using data for Ph.D. holders from over 25 years, Zivney and Bertin (1992) determined that less than 5 percent of the sample had published just one article per annum in finance, accounting, economics, and business.

Diamond (1986), Gomez-Mejia and Balkin (1992), Moore et al. (1998), Leahey (2007) and Hamermesh (2018) demonstrated the economic impact of citations for scholars; the better the outlet where they publish, the higher the number of expected citations. Even though the citation data can be biased (Haddad et al., 2014), they are still the main way to capture the influence and value of a research piece. Studies have long reported the link between publication rates and promotion and academic mobility (Skeels and Fairbanks, 1968; Kenny and Studley, 1995; Sabatier et al., 2006; Zeng et al., 2017). Swidler and Goldreyer (1998) went even further and calculated that the present value of an article in a top finance journal ranged between \$19,493 and \$33,754, with additional returns for subsequent publications.

Given the small odds of publishing in top journals in any field, Danielson and Heck (2014) suggest gaining a better understanding of the “next-best” journals so that both novice and established authors may make more informed decisions about where to submit their academic manuscripts. Through these and other findings (Borokhovich et al., 1995, 1998, 2000), researchers may become aware of prevailing and emerging topics in the literature and align their research agenda accordingly. Following Faria (2003), assistant professors applying for tenure could balance their publication portfolios toward maximizing the number of papers published (influence), while tenured

faculty may gear their publication effort toward the relevance of their papers (profusion).

There has been a rapid growth of bibliometric studies in areas such as medicine (Xianliang and Hongying, 2012), big data analysis (Akoka et al., 2017), environmental impact (Geng et al., 2017), engineering (Franceschini and Maisano, 2010), software engineering (Garousi and Mantyla, 2016), and groundwater research (Niu et al., 2014), among many other fields. Within a wider topic-review framework, Chen et al. (2016) applied co-word analysis on projects of China's National Natural Science Foundation, revealing "hot" topics such as game theory, supply chain management, and data mining. These studies use different methods to perform the analysis, such as counting key words frequency and publications, aggregating the *h index* of authors or the journal papers, or elaborating a systematic mapping of existence research. In this paper, we are not just counting or aggregating existing information. A simple word count for each category under analysis assumes independence among the different categories a priori. Instead, and as we explain in the methodology section, we calculate probabilities that are further modeled in a hierarchical manner that allows borrowing information from each category in order to have dependence among the four different categories (in our study, impact factor categories: Q1, Q2, Q3, and Q4).

All in all, progress in what is called the "science of science" and a better understanding of the scientific output of any field will significantly affect promotion, tenure and recruitment decisions in academia, as well as the allocation of resources to high-impact research (Zeng et al., 2017). Although there is general agreement that the key factor in publication is contributing something new and interesting to the literature, it is also true that finding an appropriate outlet is not the easy task that young researchers often take for granted.

This study reveals topics and methodological aspects in the finance, economics, management, and business literature during 2013–14. We analyzed the abstracts and titles of 33,454 papers published in 395 ISI journals under four categories: business (68 journals), business finance (61 journals), management (98 journals), and economics (168 journals). Our study reveals that some of the most frequent topics are present in all the Q groups (journal impact factors), but other topics gain frequency by Q groups.

Although we recognize that a trend represents a long-term phenomenon, our results suggest that Q1 journals attract researchers' attention and create trends that are followed by Q2, Q3, and Q4 publications. Moreover, all Q groups feature topics that also appear frequently in media and other outlets (e.g., financial crisis in finance and economics outlets; job satisfaction in business and management). This helps researchers keep abreast of issues in their disciplines and fosters dialogue between scholars and practitioners. As for methodology, our analysis found more empirical

than theoretical studies in business and finance in all Q groups. Case studies predominate in business and management, but not in finance and economics. The latter features panel data analysis. As expected, most papers were published in English, confirmation of the relevance of this language in academia.

Even though our inquiry focused on four areas and a particular time period, it could be replicated in other fields and for any time horizon. The remainder of this paper is organized as follows: first, we present a review of the literature regarding the publication process; we then explain our research methodology and subsequently report and discuss our results. We close with some conclusions.

2. Background

Why is it so difficult to publish in academic journals? The main reason of course could well be not finding interesting and novel questions to work on. However, other factors might also intervene, such as not being able to find the best outlet for a research piece. Through an opinion survey and content analysis, [Bradbury \(2012\)](#) explored the editorial policies of top accounting and finance journals. He analyzed 66 reviews of 33 manuscripts submitted to the journals and concluded that many papers were submitted prematurely to the wrong journals and were lacking a proper flow of ideas and contributions. Indeed, an important part of the research process is choosing the correct journal, and “selling” the contribution in appropriate ways.

[Macdonald and Kam \(2007\)](#) have argued that the pressure to publish has changed the “unit of measurement” of the quality of a paper in terms of, not *what* to publish in terms of contribution to knowledge but *where* is publish. [Flagg et al. \(2011\)](#) find that Ph.D. candidates outside the top ranked universities can signal their future research productivity by publishing or having revisions in top-tier journals while still enrolled in the Ph.D. program. Therefore, getting published or having research projects of interest to the academic editorial markets is of high importance even in the very first steps of an academic career. Even as far back as in [Hamelman and Mazze \(1974\)](#), there is a general call to make sense of the huge number of scientific publications in terms of the quality and utility. Back then, the main approach was to ask experts in each field to provide a “score” about the merit of a set of journals. Later, researchers used citation indexes to rank journals, and measure the concentration of citations across journals and across disciplines.

Journal editors play an important role in the scientific community as moderators of the scientific “conversation” among scholars. They decide which papers and related topics get published and which do not. Therefore, it is crucial that young researchers be aware of the types of conversations going on in their fields ([Silverman, 1984](#)) so that they may balance their interests with those of their peers.

The publication outlet is not only relevant for researchers but also for higher education institutions. For example, [Manning and Barrette \(2005\)](#) state that business schools' accreditation agencies, such as the Association to Advance Collegiate Schools of Business (AACSB) and EQUIS, use measurements of research quality in their accreditation processes. Consequently, some business schools have implemented bonuses and other incentives to push not only the quantity but also the quality of the research output of their faculty, where traditional measures about the research quality is the journal ranking ([Theoharakis and Hirst, 2002](#)).

The scientific analysis of journals' impact has become a discipline in itself (the science of science) and researchers have developed methods to address the importance of papers and journals. For example, [Everett and Pecotich \(1991\)](#) modeled the importance, similarity, and influence of journals using Poisson and Loglinear models to generate a "map" of journals' relative characteristics and configurations. In addition, [Tahai and Rigsby \(1998\)](#) study the "durability" journals analyzing the patterns of citations through the years and using this information to rank journals.

[Currie and Pandher \(2011\)](#) divide the methods to classify journals quality into two groups: the publication citation-based and the peer assessment methods. The Active Scholar Assessment (ASA) methods they proposed ask scholar to provide relative rankings as an endogenous function of perception of quality and awareness for each journal. They also compare their journal ranking with other sources (e.g., the ISI Citation Report) and found a more monotone and less steep descent in both quality and importance after the top ranked journals.

[Baden-Fuller et al. \(2000\)](#) point out a circularity issue when trying to define what a "quality journal" is. For instance, scholars from top universities publish their research in "top" journals, but the classification of "top" universities usually relays where they publish their work. In the same vein, [Johnson and Podsakoff \(1994\)](#), argue that of course high quality papers appear in high quality journals, but they are considered high quality papers because they were published in high quality journals.

The evaluation of academic productivity in terms of publication is the main driving force to hiring, promoting and compensating academics. [Faria \(2003\)](#) posits a method to classify economists into two groups: those who seek quality (influence) and those whose aim is quantity (profusion). The quality factor was measured by the number of citations, the quantity factor by the number of publications. Given the difficulty and ever-increasing competition in the publication market, researchers tend to diversify their research portfolio. In [Faria \(2005\)](#) the same issue is tackled, but the economists are deciding whether to publish in international or national journals. In the theoretical models of these papers, the best strategy is to find a balance between quality and quantity, and national versus international journals.

In the case of finance, given the diversity of this research field, there is no consensus on how to measure journal quality. Oltheten et al. (2005) analyze 862 survey responses by finance academics worldwide and find no major variations regarding perceptions of the top four finance journals. However, using a probit model specification, these authors find that journal quality perceptions for journals other than the top four exhibit significant differences across geographical regions, research interests, level of seniority, and journal affiliation. These findings demonstrate that it is not an easy task to select research outputs outside of the very top journals.

Borokhovich et al. (1998) report that high-quality finance journals favor certain areas or topics, and young researchers' awareness of these highly influences their tenure achievement. In this vein, the authors found that articles about corporate finance were more likely to be published in better-quality journals than papers on financial institutions. Borokhovich et al. (2000) reached similar conclusions when they ranked the quality of papers by using the SSCI's (Social Sciences Citation Index) impact factors. Papers citing other papers outside the finance field exhibited higher impact factors than those which did not.

Also in the area of finance, but applicable to other fields, Armstrong and Sperry (1994) found a strong link between the ranking of business schools and the quality of their financial research in terms of citations and journal status. Moreover, in their analysis of journal-quality measures, Borokhovich et al. (1995) observed that 20 percent of the institutions accounted for more than 76 percent of the total influence in terms of citations. Although there is theoretical and empirical evidence of the differences in the quantity and quality of research outputs by discipline (Swanson, 2004), the above-mentioned finding could be extrapolated to researchers and research teams that promote given topics not only in finance but in economics and business as well (Zeng et al., 2017). In addition, tools such as the Hirsch spectrum are recently being used to assess the academic quality and reputation of journals, authors, and papers (Franceschini and Maisano, 2010). According to Franceschini and Maisano, their paper "introduces the Hirsch spectrum (h-spectrum) for analyzing the academic reputation of a scientific journal. h-Spectrum is a novel tool based on the Hirsch (h) index. It is easy to construct: considering a specific journal in a specific interval of time, h-spectrum is defined as the distribution representing the h-indexes associated with the authors of the journal articles. This tool allows defining a reference profile of the typical author of a journal, comparison of different journals within the same scientific field, and a rough indication of prestige/reputation of a journal in the scientific community. h-Spectrum can be associated to every journal" (2010, pg. 66).

In terms of citational analysis, many fields have listed the most influential journals and authors. In finance, Alexander and Mabry (1994) produce a list of the fifty most influential articles and authors, and identify topical trends in the finance research

agenda. The citational analysis is also important to study the influence of certain disciplines on others. For example, [Chandy and Williams \(1994\)](#) show that management, economics, marketing, and finance disciplines had great influence in the international business disciplines. These analyses can be extended even further to show how individual scholars can influence a research agenda in a given field.

Related discussions also emerge in the management and business studies field. For example, [Pierce and Garven \(1995\)](#) argue that the proliferation of research outputs leads business researchers to deal with the necessity to develop a publishing strategy to achieve an appropriate and timely publication of their papers. Moreover, these authors argue that a low acceptance rate can be seen as a signal of journal quality. In addition, according to [Macdonald and Kam \(2007\)](#), management departments usually create a list of “quality” journals. However, these lists are created using as a benchmark other lists from other management departments, resulting in an endogenous relationship between the journal list and the quality of the journal: are the lists composed of “quality” journals, or is a journal of high “quality” because is on the list? And yet, these lists allow researchers, especially young researchers from lower-rated institutions, to make informed decisions when deciding where to submit their work ([Geary et al., 2004](#)).

According to [Manning and Barrette \(2005\)](#) the lists of ranked journals developed by prestigious business schools are followed by others. However, in business schools, due to the inherent diversity in research subjects and methods, there is no generally accepted ranking of journals to measure research quality. Moreover, the diversity present in business and management fields are not restricted to topics and research interest. There is also great diversity in terms of languages, cultures, countries, and, more importantly, research methodologies. For example, management fields use survey-based research more than in the finance field ([Baker and Mukherjee, 2007](#)).

Another empirical regularity observed in the discussion of the quantity and quality of research output in the management field is the concentration of articles from universities and individuals. As stated in [Swanson et al. \(2007\)](#) higher concentration occurs when journals acquire goods, in this case research articles, from fewer suppliers, which in this case are universities and individual researchers. Using the Herfindahl-Hirschman indices, Swanson finds that privately sponsored journals are more concentrated by school than association-sponsored journals. For the case of the main 14 business journals, 10 association-sponsor journals are less concentrated than any of the four privately sponsored journal. Much of the higher concentration in the privately sponsored journals arises from faculty members at private schools publishing a high proportion of the journal articles. These findings are important because in business areas the high concentration found could imply that

faculty at many schools find it very difficult to produce a research output comparable to their peers in other disciplines.

For those researchers who are not part of editorial boards, it is even more difficult to find an appropriate outlet for their research. For example, [Chan et al. \(2005\)](#) rank schools with an international business orientation using as a predictor the presence of faculty on the editorial boards of the leading international business journals. Among their findings, the top institutions share characteristics such as faculty getting published in top ranked journals.

Regarding trend topics in the literature, [Danielson and Heck \(2014\)](#) showed that authors in the highest productivity percentile were most likely to publish their latest articles in journals that had recently raised their impact factors. In the case of finance and business finance, they found that top academics were publishing in relatively new journals, such as *Financial Management* and the *Financial Analysts Journal*, and in new specialized publications such as the *Journal of Financial Markets*, the *Journal of Corporate Finance*, and the *Journal of Financial Intermediation*.

Literature reviews are another method widely used in the academic community to identify possible trends and areas for new contributions. For example, [Lu \(2003\)](#) reviews the strategic management literature and highlight areas in which key contributions are made and, more importantly, where new research questions could be pushed forward. Lu also identify the main institutions and researchers and examines the diversity of contributions in management research.

Some authors ([Griffith et al., 2008](#)) use Delphi study (panel of experts) to determine the future research agenda in the field of international business. With this methodology, experts in the field respond to the main problems to be addressed and the most important empirical regularities to be explained. This in part could move the field to address specific topics and create research trends.

Bibliometric studies represent another methodology that has been used to target the most prolific and influential articles, authors and trends. For example, [Pasadeos et al. \(1999\)](#) used this process to find the most important authors and most cited papers in the public relations scholarly literature. Moreover, with this method they can also identify and measure paradigms and topical diversity. Bibliometric studies can also be of interest to find how certain areas of knowledge are organized around topics and paradigms ([Vieira and Teixeira, 2010](#)). [Badua et al. \(2011\)](#) use bibliometric analysis to describe the evolution in terms of content in the field of accounting. Using this methodology, they were able to understand better the evolution of content and context of this literature. [Issa \(2016\)](#) uses bibliometric studies together with semi-structured interviews with editors, editorial boards, and selected authors to show that research in economics, finance, and entrepreneurship has an important influence on the published research for emerging economies, finding a small

percentage of papers tackling theoretical issues and many having a quantitative approach. Overall, new technological developments, such as the one we present in this paper, could be of help for scholars in developing a publication strategy in the publish and perish environment.

3. Methodology

3.1. Data collection

We developed a set of Python scripts to build the data set through a crawling process. Some journals offer an API (Application Programming Interface) which allows downloading of metadata related to each paper from the publishers' web sites. These APIs offer various search services using key words, time spans, and other fields, through certain filters. However, since not all journals provide APIs, we had to build specific scripts to download the information for those lacking APIs.

We run our Python scripts in a Linux virtual machine provided by Amazon Web Services (cloud platform). The Linux machine had 32GB of RAM, 2 virtual cores, and 30GB of solid-state disk (SSD).

3.2. Data set

We defined as the unit of analysis 72,129 abstracts and article titles that represent the universe of all papers published during 2013–14 in ISI journals. The four different categories covered business (120 journals), business finance (94 journals), management (192 journals), and economics (344 journals). However, because of the API restrictions mentioned above, it was impossible to collect this full corpus.

Using the crawling process, we collected 33,454 abstracts and titles, or approximately 46.4 percent of the full target data set. [Table 1](#) shows the distribution and coverage of sample journals by category; [Table 2](#) shows the distribution of the sample papers by publisher; and [Table 3](#) shows the distribution of sample papers by category.

Table 1. Distribution and coverage of sample journals by category.

Area	Journals (Population)	Journals (Sample)	Sample Coverage (%)
Business	120	68	56.7
Economics	344	168	48.8
Business Finance	94	61	64.9
Management	192	98	51.0
Total	750	395	52.7

We structured all the abstracts and titles as a corpus in a single text document, removing special characters such as HTML tags, punctuation marks, and mentions. These elements were tokenized in English bigrams (the most frequent two-word combinations). Then, we built a “bigram matrix” equivalent to a “term-document matrix,” where each abstract for a given journal category (business, economics, business finance, and management) was considered a “document.” The entries in each cell of this matrix corresponded to the presence/absence of each specific bigram in each journal abstract.

The journals were ranked in quartiles that reflected the statistical distribution of their impact factors. We then applied the Multinomial Inverse Regression (MNIR)

Table 2. Distribution of sample papers by publisher.

Publisher	Papers (count)
ACAD MANAGEMENT	13
ACADEMIC PRESS INC ELSEVIER SCIENCE	875
AMER ACCOUNTING ASSOC	26
AMER MARKETING ASSOC	16
ELSEVIER GMBH, URBAN & FISCHER VERLAG	38
ELSEVIER SCI LTD	1413
ELSEVIER SCIENCE BV	5206
ELSEVIER SCIENCE INC	1243
ELSEVIER SCIENCE SA	667
EMERALD GROUP PUBLISHING LTD	1363
INFORMS	449
PERGAMON-ELSEVIER SCIENCE LTD	749
PHYSICA-VERLAG GMBH & CO	200
ROUTLEDGE JOURNALS, TAYLOR & FRANCIS LTD	2780
SAGE PUBLICATIONS INC	1096
SAGE PUBLICATIONS LTD	682
SPRINGER	4770
SPRINGER HEIDELBERG	745
SPRINGER WIEN	109
SPRINGER/PLENUM PUBLISHERS	77
UNIV CHICAGO PRESS	305
WALTER DE GRUYTER GMBH	1002
WILEY PERIODICALS, INC	325
WILEY-BLACKWELL	9305
Total	33454

Table 3. Distribution of sample papers by category.

Category	Papers (count)
Business	5.693
Economics	14.67
Business Finance	5.752
Management	7.339
Total	33.454

method, described by Taddy (2013), modeling the journal impact factors corresponding to the abstracts. As Taddy mentions, the journal impact factor is a variable that proxies importance, and therefore it is directly linked to the abstract's content.

Content analysis is not new. It has been widely explored methodologically, employing regressions, support vector machines, and neural networks (Pang and Lee, 2008) in various disciplinary contexts, including the tracing of ideology in political texts (Yu et al., 2008), or of negative/positive nuances in economics and finance (Tetlock, 2007; Loughran and McDonald, 2011). For additional details on the MNIR method, and its R package, and for insight on related methodological drawbacks, see Taddy (2013).

3.3. Analysis procedure: a Bayesian approach

Jurafsky and Martin (2008) analyze each document (abstract or title) as an exchangeable set of tokens (uni-grams or, more generally, n-grams). When dealing with text corpora, tokens can be understood as regular stemmed words. For example, the words “taxation”, “taxes”, and “taxing” all become “tax”. For consistency, we use the same notation as in Taddy (2013), where the vector $x_i = (x_{i1}, \dots, x_{ip})'$ is the vector of counts of the p possible tokens, or in our case of the bigrams. We define the empirical frequencies $f_i = x_i/m_i$ where $m_i = \sum_{j=1}^p x_{ij}$. Each of the possible n documents (33,454 abstracts or titles) will be related to a content variable y_i which can be ordered into discrete increasing categories. Modeling the conditional distribution of $y_i|x_i$ can be computationally prohibitive. The approach in Taddy (2013) allows the collapse of token counts as $x_y = \sum_{i: y_i=y} x_i$ for every content category $y \in Y$. The basic multinomial inverse regression (MNIR) can then be written as in Taddy (2013):

$$x_y \sim MN[q_y, m_y] \text{ with } q_{yi} = \frac{\exp(\alpha_j + y\psi_j)}{\sum_{l=1}^p \exp(\alpha_j + y\psi_j)} \text{ for } j = 1, \dots, p, y \in Y, \quad (1)$$

where x_y is a p -dimensional multinomial distribution with size parameter vector $m_y = \sum_{i: y_i=y} m_i$ and probabilities $q_y = [q_{y1}, \dots, q_{yp}]'$. The Sufficient Reduction

Score z_i defined by Taddy (2013) is computed as $z_i = \psi f_i$. Intuitively the text sentiment variable z_i gives the “average” factor loading contribution of document i .

Therefore, the text content score reduction variable z_i is computed as the inner product between the multinomial inverse regression factor loadings $\psi = (\psi_1, \dots, \psi_p)'$ from each token (or n-gram counts) and the empirical frequencies f_i from the token counts (Taddy, 2013). This reduction score is similar in philosophy to Altman's z score, which gives a quantification of a company's credit quality that results in a credit rating or scoring (Altman, 1968). The higher the z score, the higher the contents of bigrams with large factor loadings (ψ). We select the most important bigrams on the basis of their decreasing order of probability of appearance, as in Eq. (1) of Taddy (2013).

It is worthwhile to highlight that a simple word count for each category assumes independence among the different categories a priori. As suggested in Taddy (2013), a more promising strategy is to use text-specific dimension reduction based on the multinomial implied by exchangeability of token counts. As shown in Taddy, a topic model treats documents as drawn from a multinomial distribution with probabilities arising as a weighted combination of “topic” factors. These probabilities are further modeled in a hierarchical manner that allows borrowing information from each category in order to have dependence among the four different impact factor categories (Q1, Q2, Q3, and Q4). A previous method that is similar in spirit is the one proposed by Blei et al. (2003), used during Trump's political campaign (Gautrais et al., 2017).

4. Results

The abstract bigrams collected from all Q journals were ordered from the most to the least frequent. We had a total of 2,942 bigrams for business finance journals, 2,280 for economics journals, 3,667 for management journals, and 4,879 for business journals. For the Q1 journals, we then determined the first 31 bigrams that referred to topics and methodological approaches. We chose 31 bigrams as a cutoff point to be able to collect at least the 20 most frequent bigrams regarding topics published in business finance, economics, management, and business. We consider this spectrum of topics wide enough for the reader to have a global appreciation of the most important topics discussed in each of the fields we study.

Subsequently, we looked for those bigrams in Q2, Q3, and Q4 journals and found that some were consistently present among those most frequent in all categories. For instance, in business finance, the bigram *financial crisis* was the most frequent in Q1, Q2, and Q3 journals, and it was the 5th most frequent in the Q4 journals. We categorized topics in Q2, Q3, and Q4 journals as persistent when their number was close to that of the bigram in the Q1 rank (less than 10 numbers in difference).

Some bigrams gained frequency from the Q4 to the Q1 journals. For example, in the economics category, *health care* was the 257th most frequent bigram in Q4 journals; 57th in the Q3 journals; 15th in the Q2 journals; and 2nd in the Q1 journals. Table 4 lists the persistent topics and the topics that gained presence as the journal quality increased. It also displays bigrams associated with methodological issues such as *empirical evidence*, *case study*, *panel data*, and *structural equations*, among others.

Tables 5, 6, 7, and 8 show the most frequent bigrams for Q1, Q2, Q3, and Q4 papers in the business finance, economics, management, and business categories, respectively. For each Q1 bigram, we compared its respective frequency in Q2, Q3, and Q4 papers.

4.1. Topic patterns

Some of the most frequent topics persist in all Q groups, but others lose frequency by category, which suggests that Q1 and Q2 journals attract researchers' attention and create trends that are followed by Q3 and Q4 publications. For example, in the business finance category, we found 10 persistent topics within the 22 most frequent Q1 bigrams: *financial crisis*, *stock market*, *exchange rates*, *corporate governance*, *earning management*, *stock returns*, *interest rates*, *stock price*, *cash flow*, and *information asymmetry*. For the same set of journals, the 10 topics within the 22 most frequent Q1 bigrams that lost frequency in Q2, Q3, and Q4 journals were: *monetary policy*, *risk management*, *financial reporting*, *credit risk*, *systematic risk*, *accounting research*, *integrated reporting*, *banking sectors*, *financial market*, and *management accounting*. For instance, *systematic risk*, which is the 11th most frequent Q1 bigram in the business finance journals, ranks only 21st in the Q2 journals, 73rd in Q3 journals, and 300th in Q4 publications (Table 5).

These topic patterns occurred in the economics category as well. There, the 11 persistent topics within the 31 most frequent bigrams for Q1 publications were: *financial crisis*, *economic growth*, *labor market*, *human capital*, *monetary policy*, *exchange rates*, *developing countries*, *stock market*, *business cycle*, *interest rate*, and *economic development*. For the same set of journals, the 9 topics out of the 31 most frequent bigrams that lost frequency by Q category were: *health care*, *United States*, *European Union*, *climate change*, *health insurance*, *risk aversion*, *oil price*, *stock returns*, and *credit risk*. For example, *European Union* is the 8th most frequent bigram in the Q1 journals, ranks 21st in the Q2 journals, 50th in Q3 publications, and 182nd in the Q4 papers (Table 6).

In the management category, 10 topics persisted within the 26 most frequent Q1 bigrams: *supply chain*, *firm performance*, *new product*, *social capital*, *job satisfaction*, *human resource*, *resource management*, *decision making*, *product development*, and *business model*. As was the case for business finance and economics journals, the

Table 4. Most frequent topics and methodology bigrams in abstracts of papers of Q1 journals by category.

Business Finance		Economics		Management		Business	
<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>
1 financial crisis	Persistent	using data	Methodological	supply chain	Persistent	supply chain	Gain-frequency
2 stock market	Persistent	health care	Gain-frequency	future research	Paper structure	future research	Paper structure
3 monetary policy	Gain-frequency	financial crisis	Persistent	case study	Methodological	erp environ	Gain-frequency
4 risk management	Gain-frequency	united states	Gain-frequency	firm performance	Persistent	family firms	Gain-frequency
5 exchange rate	Persistent	panel data	Methodological	erp environ	Gain-frequency	new product	Persistent
6 corporate governance	Persistent	economic growth	Persistent	data collected	Methodological	corporate social	Gain-frequency
7 earnings management	Persistent	find evidence	Methodological	human capital	Gain-frequency	chain management	Gain-frequency
8 financial reporting	Gain-frequency	european union	Gain-frequency	new product	Persistent	human capital	Gain-frequency
9 credit risk	Gain-frequency	empirical evidence	Methodological	social capital	Persistent	social capital	Gain-frequency
10 stock returns	Persistent	labor market	Persistent	job satisfaction	Persistent	social responsibility	Gain-frequency
11 systemic risk	Gain-frequency	data set	Methodological	human resource	Persistent	firm performance	Persistent
12 find evidence	Methodological	climate change	Gain-frequency	financial performance	Gain-frequency	case study	Methodological
13 accounting research	Gain-frequency	human capital	Persistent	corporate social	Gain-frequency	financial performance	Gain-frequency
14 interest rate	Persistent	monetary policy	Persistent	structural equation	Methodological	social media	Gain-frequency
15 integrated reporting	Gain-frequency	exchange rate	Persistent	using data	Methodological	job satisfaction	Gain-frequency
16 stock price	Persistent	developing countries	Persistent	resource management	Persistent	product development	Persistent

(continued on next page)

Table 4. (Continued)

Business Finance		Economics		Management		Business	
<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>
17 cash flow	Persistent	health insurance	Gain-frequency	performance measurement	Gain-frequency	product innovation	Gain-frequency
18 banking sector	Gain-frequency	risk aversion	Gain-frequency	project management	Gain-frequency	small mediumsized	Gain-frequency
19 empirical evidence	Methodological	stock market	Persistent	strategic management	Gain-frequency	strategic management	Gain-frequency
20 financial market	Gain-frequency	per capita	Methodological	competitive advantage	Gain-frequency	empirical evidence	Methodological
21 management accounting	Gain-frequency	general equilibrium	Methodological	social responsibility	Gain-frequency	structural equation	Methodological
22 information asymmetry	Persistent	business cycle	Persistent	product innovation	Gain-frequency	business model	Persistent
23 business cycle	Gain-frequency	interest rate	Persistent	empirical evidence	Methodological	data collected	Methodological
24 default risk	Gain-frequency	time series	Methodological	decision making	Persistent	using data	Methodological
25 firm value	Persistent	oil price	Gain-frequency	product development	Persistent	customer satisfaction	Gain-frequency
26 mutual fund	Gain-frequency	stock returns	Gain-frequency	business model	Persistent	value creation	Persistent
27 environmental reporting	Gain-frequency	empirical results	Methodological	social media	Gain-frequency	competitive advantage	Gain-frequency
28 data set	Methodological	statistically significant	Methodological	risk management	Gain-frequency	human resource	Gain-frequency
29 global financial	Gain-frequency	empirical analysis	Methodological	survey data	Methodological	literature review	Methodological
30 abnormal returns	Methodological	credit risk	Gain-frequency	case studies	Methodological	mediumsized enterprises	Gain-frequency
31 fair value	Gain-frequency	economic development	Persistent	job performance	Gain-frequency	sustainable supply	Gain-frequency

Table 5. Most frequent bigrams in abstracts for Q1, Q2, Q3, and Q4 papers in business finance.

	<i>Q1 most frequent bigrams</i>	<i>Q2 most frequent bigrams</i>	<i>Q3 most frequent bigrams</i>	<i>Q4 most frequent bigrams</i>
1	financial crisis	financial crisis	financial crisis	real estate
2	stock market	stock market	stock market	stock market
3	monetary policy	exchange rate	exchange rate	financial crisis
4	risk management	corporate governance	corporate governance	exchange rate
5	exchange rate	earnings management	earnings management	corporate governance
6	corporate governance	monetary policy	stock returns	earnings management
7	earnings management	stock returns	find evidence	stock returns
8	financial reporting	financial reporting	financial reporting	implied volatility
9	credit risk	find evidence	interest rate	find evidence
10	stock returns	credit risk	monetary policy	empirical results
11	systemic risk	interest rate	stock price	interest rate
12	find evidence	stock price	cash flow	stock price
13	accounting research	cash flow	empirical evidence	cash flow
14	interest rate	risk management	credit risk	stochastic volatility
15	integrated reporting	empirical evidence	real estate	empirical evidence
16	stock price	information asymmetry	information asymmetry	option prices
17	cash flow	firm value	firm value	stock markets
18	banking sector	data set	empirical results	financial reporting
19	empirical evidence	provide evidence	data set	information asymmetry
20	financial market	abnormal returns	abnormal returns	institutional investors
21	management accounting	systemic risk	stock markets	firm value
22	information asymmetry	financial market	institutional investors	trading volume
23	business cycle	stock prices	stock prices	time series
24	default risk	risk aversion	risk aversion	data set
25	firm value	liquidity risk	liquidity risk	monetary policy
26	mutual fund	default risk	trading volume	credit risk
27	environmental reporting	global financial	using data	panel data
28	data set	mutual fund	united states	abnormal returns
29	global financial	united states	financial markets	monte carlo
30	abnormal returns	financial markets	exchange rates	option pricing
31	fair value	banking sector	financial institutions	developing countries
73	return volatility	investor protection	systemic risk	strong evidence
300	commodity futures	stock options	stock options	systemic risk

frequency of some bigrams decreased from Q1 to Q4 publications. The 10 topics which showed that tendency within the 26 most frequent Q1 bigrams were: *ERP environment, human capital, financial performance, corporate social, performance*

Table 6. Most frequent bigrams in abstracts for Q1, Q2, Q3, and Q4 papers in economics.

	<i>Q1 most frequent bigrams</i>	<i>Q2 most frequent bigrams</i>	<i>Q3 most frequent bigrams</i>	<i>Q4 most frequent bigrams</i>
1	using data	economic growth	monetary policy	monetary policy
2	health care	using data	exchange rate	exchange rate
3	financial crisis	panel data	economic growth	economic growth
4	united states	monetary policy	panel data	interest rate
5	panel data	financial crisis	financial crisis	panel data
6	economic growth	exchange rate	human capital	human capital
7	find evidence	united states	using data	time series
8	european union	labor market	labor market	financial crisis
9	empirical evidence	find evidence	interest rate	labor market
10	labor market	human capital	find evidence	productivity growth
11	data set	data set	united states	labour market
12	climate change	empirical evidence	time series	empirical results
13	human capital	developing countries	data set	using data
14	monetary policy	interest rate	developing countries	general equilibrium
15	exchange rate	health care	empirical evidence	developing countries
16	developing countries	time series	empirical results	social welfare
17	health insurance	general equilibrium	general equilibrium	find evidence
18	risk aversion	stock market	stock market	united states
19	stock market	per capita	per capita	monte carlo
20	per capita	empirical results	productivity growth	data set
21	general equilibrium	european union	business cycle	empirical evidence
22	business cycle	business cycle	labour market	fiscal policy
23	interest rate	risk aversion	monte carlo	stock market
24	time series	statistically significant	statistically significant	real estate
25	oil price	empirical analysis	long run	per capita
26	stock returns	climate change	empirical analysis	long run
27	empirical results	economic development	economic development	business cycle
28	statistically significant	equilibrium model	risk aversion	tax rates
29	empirical analysis	long run	equilibrium model	central bank
30	credit risk	exchange rates	social welfare	statistically significant
31	economic development	stock returns	central bank	empirical analysis
50	crude oil	income inequality	european union	income tax
182	capital flows	production function	production function	european union

Table 7. Most frequent bigrams in abstracts for Q1, Q2, Q3, and Q4 papers in management.

	<i>Q1 most frequent bigrams</i>	<i>Q2 most frequent bigrams</i>	<i>Q3 most frequent bigrams</i>	<i>Q4 most frequent bigrams</i>
1	supply chain	supply chain	supply chain	human resource
2	future research	future research	future research	service quality
3	case study	case study	case study	case study
4	firm performance	data collected	human resource	future research
5	erp environ	human resource	data collected	job satisfaction
6	data collected	firm performance	job satisfaction	quality management
7	human capital	job satisfaction	structural equation	data collected
8	new product	new product	firm performance	structural equation
9	social capital	social capital	service quality	time series
10	job satisfaction	structural equation	new product	firm performance
11	human resource	resource management	social capital	decision making
12	financial performance	human capital	decision making	knowledge management
13	corporate social	decision making	resource management	resource management
14	structural equation	using data	empirical evidence	equation modeling
15	using data	empirical evidence	product development	supply chain
16	resource management	financial performance	equation modeling	united states
17	performance measurement	product development	united states	customer satisfaction
18	project management	business model	business model	social capital
19	strategic management	survey data	using data	new product
20	competitive advantage	case studies	survey data	empirical evidence
21	social responsibility	competitive advantage	case studies	product development
22	product innovation	empirical research	empirical research	business model
23	empirical evidence	social responsibility	customer satisfaction	survey data
24	decision making	transformational leadership	transformational leadership	case studies
25	product development	equation modeling	information technology	knowledge sharing
26	business model	product innovation	knowledge sharing	transformational leadership
27	social media	united states	literature review	using data
28	risk management	information technology	knowledge management	previous research
29	survey data	corporate social	financial performance	information technology
30	case studies	job performance	information systems	financial crisis
31	job performance	project management	competitive advantage	health care
46	operations management	customer satisfaction	human capital	economic growth
165	firm size	organizational citizenship	human resources	human capital

Table 8. Most frequent bigrams in abstracts for Q1, Q2, Q3, and Q4 papers in business.

<i>Q1 most frequent bigrams</i>	<i>Q2 most frequent bigrams</i>	<i>Q3 most frequent bigrams</i>	<i>Q4 most frequent bigrams</i>
1 supply chain	supply chain	future research	future research
2 future research	future research	new product	business model
3 erp environ	new product	case study	case study
4 family firms	case study	business model	productivity growth
5 new product	firm performance	data collected	data collected
6 corporate social	corporate social	product development	new product
7 chain management	family firms	firm performance	stochastic frontier
8 human capital	human capital	structural equation	product development
9 social capital	product development	supply chain	technical efficiency
10 social responsibility	social responsibility	using data	managerial implications
11 firm performance	social capital	human capital	structural equation
12 case study	business model	social responsibility	family business
13 financial performance	data collected	family business	distance function
14 social media	structural equation	corporate social	using data
15 job satisfaction	using data	social capital	service innovation
16 product development	job satisfaction	decision making	empirical results
17 product innovation	product innovation	product innovation	firm performance
18 small mediumsized	small mediumsized	survey data	panel data
19 strategic management	financial performance	job satisfaction	decision making
20 empirical evidence	empirical evidence	value creation	corporate governance
21 structural equation	value creation	corporate governance	financial crisis
22 business model	strategic management	empirical results	factor productivity
23 data collected	social media	equation modeling	information technology
24 using data	survey data	united states	efficiency scores
25 customer satisfaction	customer satisfaction	small mediumsized	returns scale
26 value creation	equation modeling	special issue	survey data
27 competitive advantage	competitive advantage	empirical evidence	exchange rate
28 human resource	united states	information technology	cost frontier
29 literature review	special issue	data set	technical change
30 sustainable development	decision making	competitive advantage	new venture
31 sustainable supply	equation modeling	equation modeling	corporate governance

measurements, project management, strategic management, competitive advantages, social responsibility, and product innovation. For example, *human capital*, ranked 7th in Q1 journals, 12th in Q2 journals, 46th in Q3 publications, and 165th in Q4 papers (Table 7).

In the business category, there were only 5 persistent topics within the 26 most frequent Q1 bigrams: *new product*, *firm performance*, *product development*, *business model*, and *value creation*. Unlike the more focused categories, of the 26 most frequent Q1 bigrams, 15 registered decreasing frequencies in Q2, Q3, and Q4 journals: *supply chain*, *ERP environment*, *family firms*, *corporate social*, *chain management*, *human capital*, *social capital*, *social responsibility*, *financial performance*, *social media*, *job satisfaction*, *product innovation*, *small-medium sized*, *strategic management*, and *customer satisfaction* (Table 8).

These results indicate the persistence of some topics and the emergence of others, which could help scholars align their research agenda with the trends in their fields. In this regard, assistant professors applying for tenure and aspiring to publish in top journals could redirect their efforts to finding alternative publication outlets, while tenured professors could become aware of new topics of interest and relevance vis-à-vis journal impact factors (Qs); and business, finance, and economics practitioners could keep abreast of their disciplines' knowledge frontiers.

Furthermore, our findings reveal that certain topics and issues that are discussed in the media and other public outlets are also present in the academic literature. For instance, *financial crisis* and themes related to corporate scandals such as *earnings management*, *integrated reporting*, and *corporate governance* are topics within the business finance and economics categories and are persistently covered in media, while *corporate social responsibility*, *job satisfaction*, *human capital*, *new products*, and *product development* are the kind of topics found in the business and management fields. Thus the academic literature reacts to issues of public concern, creating a two-way dialogue between scholars and practitioners.

4.2. Methodological approaches and other issues

Our content analysis inquiry also revealed certain patterns of methodological approach. In the business finance category, bigrams such as *find evidence*, *empirical evidence*, *empirical results*, and *data set* suggest a preference for empirical research that is common to all Q ranks.

The economics category also displays a consistent preference for empirical research in all Q groups, as revealed by bigrams such as *using data*, *find evidence*, *data set*, and *empirical results*. Furthermore, these category abstracts provide more methodological details by including the bigrams *panel data*, *per capita*, *general equilibrium*, *time series*, *statistical significant*, and *empirical analysis* among the most frequent bigrams.

In the management category, the third bigram in all Q ranks is *case study*, indicating the prevalence of this methodology within the field. Moreover, the frequencies of bigrams such as *data collected*, *structural equation*, *using data*, and *empirical*

evidence further confirm a preference for empirical studies. The business category displays a similar pattern. Case studies represent the most frequent research methodology, and bigrams such as *empirical evidence*, *structural equation*, *data collected*, and *using data* confirm an inclination for empirical inquiry, as was the case in all the other categories. Overall, methodological approaches in our sample of abstracts tend to be centered in empirical research; however, some categories show particularities.

Even though our full sample of abstracts leaned toward empirical research, the various field categories showed certain specificities. While the economics studies employed panel data sets and time series, management and business studies developed case studies. Interestingly, we found no bigram evidence of theoretical research. Finally, an expected higher frequency of papers written in the English language validates the relevance of this language in academic research.

These findings are useful to faculty facing tenure-track challenges and pressures to publish or perish because they reveal the methodological approaches most likely to be published. Theory-oriented scholars could realize their harder path to publication, while young management and business researchers could undertake case studies to increase their publishing possibilities. In addition, across all fields, authors would understand the academic relevance of the English language.

4.3. Analysis of title bigrams

We complemented our analysis by examining the presence of bigrams in papers' titles. In general, we found consistent results in terms of the topics and their Q rankings. For example, bigrams such as *corporate governance*, *financial crisis*, and *exchange rate* were among the most frequent for titles in the business finance journal set, and they remained persistent in all Q categories.

As for the bigrams that gained frequency from Q4 to Q1 publications, we determined that *health care*, *oil price*, and *health insurance* reflected this tendency in the economics journals, as had been the case in the abstracts' data set. In addition, we found methodological bigrams in some titles, such as *panel data* in economics, *case study* in management, and *literature review* in business, although with less frequency.

Although our findings for the titles data set were, in general, consistent, we determined that six bigram topics gained frequency and remained persistent in all Q ranks. These were: *financial reporting*, *credit risk*, and *global financial* in business finance journals; and *corporate social responsibility*, and *family firm* in business journals.

The analysis also revealed new high-frequency bigram topics in all categories, including *emerging market*, *mutual fund*, and *hedge fund* in the business finance journals; *crude oil*, *systematic risk*, and *climate change* in economics journals;

corporate governance, sustainable development, and venture capital in management journals; and, *socioemotional wealth, top management, and corporate governance* in business journals. Table 9 lists the 20 most frequent title bigrams per category.

5. Discussion & conclusion

What should I research? What is of interest to editors? What is the most appropriate methodology for a given project or research question? What are my peers publishing? What are the current hot topics in the literature? Which subjects are Q1 and Q2 journals publishing? Are there any subject differences between the Q1, Q2 publications and the Q3, Q4 ones? These are some of the questions that research-oriented professors must consider at some point in their academic career. In many cases, the answers are left to imagination or trusted to intuition, albeit they represent relevant decisions for academic productivity and professional development. The methodology we use in this paper, which departs from the most traditional surveys and expert opinions, could support researchers in answering this set of questions in any field and not only the ones under analysis in our study.

For the period under analysis, our study determines topics present in all ISI journals and Q ranks and suggests their consolidation as pertinent subjects within the fields. Moreover, it shows how certain topics gain frequency by Qs, which suggests that Q1 and Q2 journals raise awareness of emerging and relevant topics, and set trends that are followed by editors and authors in Q3 and Q4 publications. Our findings also stress the relevance and predominance of certain methodologies. Business, finance, and economics favor empirical research over theoretical inquiries, making it easier to publish the former. And while many economists employ panel data in their research, business and management scholars formulate structural equations and develop case studies.

These findings are valuable for different reasons. For example, they could support young doctoral students (and their supervisors), and young scholars in streamlining their research agenda from a broad set of possible topics of interest, to those topics with more visibility and likelihood of publication. This is not only relevant in terms of subjects, but also in terms of methodological issues. For instance, following our results, a young researcher in the economics field will know that publishing theoretical work will be more difficult to publish than empirical-oriented papers.

The previous reasoning leads us to another contribution of this methodology, which is to help scholars develop their research and publications agenda in a more conscious and strategic way. A proper research and publication strategy allows professors to concentrate their research efforts around subjects and methodologies according to their visibility and impact aims. Furthermore, more established researchers could also find this kind of methodology useful in order to validate their

Table 9. Most frequent topics and methodology bigrams in paper titles of Q1 journals by category.

Business Finance			Economics			Management			Business		
<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>In comparison with Abstracts' bigrams</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>In comparison with Abstracts' bigrams</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>In comparison with Abstracts' bigrams</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>In comparison with Abstracts' bigrams</i>
1 corporate governance	Persistent	Already identified	1 european union	Gain-frequency	Already identified	1 supply chain	Persistent	Already identified	1 supply chain	Gain-frequency	Already identified
2 financial crisis	Persistent	Already identified	2 health care	Gain-frequency	Already identified	2 corporate social	Gain-frequency	Already identified	2 corporate social	Persistent	Identified as gain-frequency
3 stock market	Persistent	Already identified	3 economic growth	Persistent	Already identified	3 social responsibility	Gain-frequency	Already identified	3 social responsibility	Persistent	Identified as gain-frequency
4 systemic risk	Gain-frequency	Already identified	4 stock market	Persistent	Already identified	4 firm performance	Persistent	Already identified	4 family firm	Persistent	Identified as gain-frequency
5 exchange rate	Persistent	Already identified	5 panel data	Methodological	Already identified	5 case study	Methodological	Already identified	5 new product	Persistent	Already identified
6 monetary policy	Gain-frequency	Already identified	6 financial crisis	Persistent	Already identified	6 new product	Persistent	Already identified	6 firm performance	Persistent	Already identified
7 stock return	Persistent	Already identified	7 monetary policy	Persistent	Already identified	7 literature review	Methodological	New	7 social capital	Gain-frequency	Already identified
8 corporate bond	Gain-frequency	New	8 labor market	Persistent	Already identified	8 project management	Gain-frequency	Already identified	8 venture capital	Persistent	New
9 accounting research	Gain-frequency	Already identified	9 exchange rate	Persistent	Already identified	9 business model	Persistent	Already identified	9 sustainable development	Gain-frequency	New
10 emerging market	Persistent	New	10 crude oil	Gain-frequency	New	10 human resource	Persistent	Already identified	10 corporate governance	Persistent	New

(continued on next page)

Table 9. (Continued)

Business Finance			Economics			Management			Business		
<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>In comparison with Abstracts' bigrams</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>In comparison with Abstracts' bigrams</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>In comparison with Abstracts' bigrams</i>	<i>Q1 most frequent bigrams</i>	<i>Bigrams Classification</i>	<i>In comparison with Abstracts' bigrams</i>
11 mutual fund	Persistent	New	systemic risk	Gain-frequency	New	risk management	Gain-frequency	Already identified	top management	Gain-frequency	New
12 risk management	Gain-frequency	Already identified	venture capital	Gain-frequency	New	social capital	Persistent	Already identified	business model	Persistent	Already identified
13 hedge fund	Gain-frequency	New	oil price	Gain-frequency	Already identified	corporate governance	Persistent	New	literature review	Methodological	Already identified
14 earnings management	Persistent	Already identified	stock return	Gain-frequency	New	sustainable development	Gain-frequency	New	social media	Gain-frequency	Already identified
15 financial reporting	Persistent	Identified as gain-freq.	empirical evidence	Methodological	Already identified	venture capital	Persistent	New	socioemotional wealth	Gain-frequency	New
16 management accounting	Gain-frequency	Already identified	human capital	Persistent	Already identified	sustainable supply	Gain-frequency	New	human capital	Gain-frequency	Already identified
17 credit risk	Persistent	Identified as gain-freq.	climate change	Gain-frequency	New	citizenship behavior	Gain-frequency	New	research agenda	Paper structure	New
18 business cycle	Gain-frequency	Already identified	health insurance	Gain-frequency	Already identified	strategic management	Gain-frequency	Already identified	product development	Persistent	Already identified
19 global financial	Persistent	Identified as gain-freq.	global financial	Gain-frequency	New	product development	Persistent	Already identified	strategic management	Gain-frequency	Already identified
20 asset prices	Gain-frequency	New	new evidence	Persistent	New	research agenda	Paper structure	New	empirical evidence	Methodological	Already identified

beliefs regarding where academic discussions are focusing. That is, which topics are consolidated and which are emerging as new in their field. They also can do a similar assessment regarding applicable methodologies for their work.

Even the editors of Q3 and Q4 journals could find this methodology and analysis useful in terms of gearing their journals toward certain topics being published by Q1 and Q2 journals. This could help the journals gain a better positioning among researchers in their fields. Overall, our paper shows the relevance of content analysis to help researchers face the challenges of their academic career and help editors in better editorial management.

Lastly, our analysis raises venues for future research. For example, it could be interesting to analyze the research outlets of professors after they get tenure to identify possible changes in terms of quantity and influence of their publications. Another valuable analysis would be to perform this study in the same fields and same methodology we apply, with the aim of identifying time patterns with a time horizon of 5 or 10 years, a period long enough to identify changes in methodologies, topics and trends in these fields. Finally, this method could be used to find regional or geographical analysis with the aim of identifying differences in terms of topics and methods for several research fields.

Declarations

Author contribution statement

Jorge Camargo, Maximiliano González, Alexander Guzmán, Enrique ter Horst, María—Andrea Trujillo: Conceived and designed the analysis; Analyzed and interpreted the data; Contributed analysis tools or data; Wrote the paper.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing interest statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

References

- Akoka, J., Comyn-Wattiau, I., Laoufi, N., 2017. Research on Big Data — a systematic mapping study. *Comput. Stand. Interfac.* 54, 105–115.
- Alexander Jr., J.C., Mabry, R.H., 1994. Relative significance of journals, authors, and articles cited in financial research. *J. Finance* 49 (2), 697–712.
- Altman, E.I., 1968. Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *J. Finance* 23 (4), 589–609.
- Armstrong, J., Sperry, T., 1994. The ombudsman: business school prestige-research versus teaching. *Interfaces* 24, 13–43.
- Baden-Fuller, C., Ravazzolo, F., Schweizer, T., 2000. Making and measuring reputations: the research ranking of European business schools. *Long. Range Plan.* 33 (5), 621–650.
- Badua, F.A., Previts, G.J., Vasarhelyi, M.A., 2011. Tracing the development of accounting thought by analyzing content, communication, and quality in accounting research over time. *Account. Hist. J.* 38 (1), 31–56.
- Baker, H.K., Mukherjee, T.K., 2007. Survey research in finance: views from journal editors. *Int. J. Manag. Finance* 3 (1), 11–25.
- Blei, D.M., Ng, A.Y., Jordan, M.I., 2003. Latent dirichlet allocation. *J. Mach. Learn. Res.* 3 (Jan), 993–1022.
- Borokhovich, K., Bricker, R., Brunarski, K., Simkins, B., 1995. Finance research productivity and influence. *J. Finance* 50 (5), 1691–1717.
- Borokhovich, K., Bricker, R., Brunarski, K., Simkins, B., 1998. Finance research productivity and influence by topic area. *J. Financ. Educ.* 8–20.
- Borokhovich, K., Bricker, R., Simkins, B., 2000. Analysis of finance journals impact factors. *J. Finance* 55 (3), 1457–1469.
- Bradbury, M., 2012. Why don't you get published: an editor's view. *Account. Finance* 52 (2), 343–358.
- Chan, K.C., Fung, H.G., Lai, P., 2005. Membership of editorial boards and rankings of schools with international business orientation. *J. Int. Bus. Stud.* 36 (4), 452–469.
- Chandy, P.R., Williams, T.G., 1994. The impact of journals and authors on international business research: a citational analysis of JIBS articles. *J. Int. Bus. Stud.* 25 (4), 715–728.

- Chen, X., Chen, J., Wu, D., Xie, Y., 2016. Mapping the research trends by co-word analysis based on keywords from funded project. *Proc. Comput. Sci.* 91, 547–555.
- Currie, R.R., Pandher, G.S., 2011. Finance journal rankings and tiers: an active scholar assessment methodology. *J. Bank. Finance* 35 (1), 7–20.
- Danielson, M., Heck, L., 2010. Giving credit where credit is due: summary analysis of the most prolific authors in 15 high-impact accounting journals. *Adv. Account.* 26, 195–206.
- Danielson, M., Heck, L., 2014. Voting with their feet: in which journals do the most prolific finance researchers publish? *Financ. Manag.* 1, 1–27.
- Diamond, A., 1986. What is a citation worth? *J. Hum. Resour.* 21 (2), 200–215.
- Everett, J.E., Pecotich, A., 1991. A combined loglinear/MDS model for mapping journals by citation analysis. *J. Am. Soc. Inf. Sci.* 42 (6), 405–413.
- Faria, J.R., 2003. What type of economist are you: r-strategist or K-strategist? *J. Econ. Stud.* 30 (2), 144–154.
- Faria, J.R., 2005. Is there a trade-off between domestic and international publications? *J. Soc. Econ.* 34 (2), 269–280.
- Flagg, D., Gilley, O.W., Park, J.C., 2011. Job market signaling: what drives the productivity of finance Ph. Ds? *Financ. Manag.* 40 (2), 483–513.
- Franceschini, F., Maisano, D., 2010. The Hirsch spectrum: a novel tool for analyzing scientific journals. *J. Informetrics* 4, 64–73.
- Garousi, V., Mantyla, M., 2016. Citations, research topics and active countries in software engineering: a bibliometric study. *Comput. Sci. Rev.* 19, 56–77.
- Gautrais, C., Cellier, P., Quiniou, R., Termier, A., 2017. Topic signatures in political campaign speeches. In: Association for Computational Linguistics (Ed.), *The Conference on Empirical Methods in Natural Language Processing*. Paper Presented at the 2017 Conference on Empirical Methods in Natural Language Processing, Copenhagen, Denmark, September 7–11, 2017, pp. 2342–2347.
- Geary, J., Marriott, L., Rowlinson, M., 2004. Journal rankings in business and management and the 2001 research assessment exercise in the UK. *Br. J. Manag.* 15 (2), 95–141.
- Geng, S., Wang, Y., Zuo, J., Zhou, Z., Du, H., Mao, G., 2017. Building life cycle assessment research: a review by bibliometric analysis. *Renew. Sustain. Energy Rev.* 76, 176–184.

- Gomez-Mejia, L.R., Balkin, D.B., 1992. Determinants of faculty pay: an agency theory perspective. *Acad. Manag. J.* 35 (5), 921–955.
- Griffith, D.A., Cavusgil, S.T., Xu, S., 2008. Emerging themes in international business research. *J. Int. Bus. Stud.* 39 (7), 1220–1235.
- Haddad, K., Chan, H., Chow, C., 2014. Exploring the existence and drivers of selection biases in finance articles' citations. *Quart. J. Finan. Account.* 50 (3 & 4), 24–50.
- Hamelman, P., Mazze, E., 1974. Citation patterns in finance journals. *J. Finance* 29 (4), 1295–1301.
- Hamermesh, D.S., 2018. Citations in economics: measurement, uses, and impacts. *J. Econ. Lit.* 56 (1), 115–156.
- Issa, S., 2016. Appeal for paradigmatic research in emerging economies: findings from an analysis of the Business Management Review (BMR) journal articles, 1993-2014. *Bus. Manag. Rev.* 18 (1), 70–109.
- Johnson, J.L., Podsakoff, P.M., 1994. Journal influence in the field of management: an analysis using Salancik's index in a dependency network. *Acad. Manag. J.* 37 (5), 1392–1407.
- Jurafsky, D., Martin, J.H., 2008. *Speech and Language Processing*. Prentice Hall: Series in Artificial Intelligence.
- Kenny, L.W., Studley, R.E., 1995. Economists' salaries and lifetime productivity. *South. Econ. J.* 382–393.
- Leahey, E., 2007. Not by productivity alone: how visibility and specialization contribute to academic earnings. *Am. Sociol. Rev.* 72 (4), 533–561.
- Loughran, T., McDonald, B., 2011. When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. *J. Finance* 66 (1), 35–65.
- Lu, J.W., 2003. The evolving contributions in international strategic management research. *J. Int. Manag.* 9 (2), 193–213.
- Macdonald, S., Kam, J., 2007. Ring a ring o'roses: quality journals and gamesmanship in management studies. *J. Manag. Stud.* 44 (4), 640–655.
- Manning, L.M., Barrette, J., 2005. Research performance management in academe. *Can. J. Adm. Sci. Rev. Canad. Sci. Adm.* 22 (4), 273–287.
- Moore, W.J., Newman, R.J., Turnbull, G.K., 1998. Do academic salaries decline with seniority? *J. Labor Econ.* 16 (2), 352–366.

- Niu, B., Loaiciga, Wang, Z., Zhan, F., Hong, S., 2014. Twenty years of global groundwater research: a science citation index expanded-based bibliometric survey. *J. Hydrol.* 519, 966–975.
- Oltheten, E., Theoharakis, V., Travlos, N.G., 2005. Faculty perceptions and readership patterns of finance journals: a global view. *J. Financ. Quant. Anal.* 40 (1), 223–239.
- Pang, B., Lee, L., 2008. Opinion mining and sentiment analysis. *Foundations and Trends in Information Retrieval* 2 (1–2), 1–135.
- Pasadeos, Y., Renfro, R.B., Hanily, M.L., 1999. Influential authors and works of the public relations scholarly literature: a network of recent research. *J. Publ. Relat. Res.* 11 (1), 29–52.
- Pierce, B., Garven, G., 1995. Publishing international business research: a survey of leading journals. *J. Int. Bus. Stud.* 26 (1), 69–89.
- Sabatier, M., Carrere, M., Mangematin, V., 2006. Profiles of academic activities and careers: does gender matter? An analysis based on French life scientist CVs. *J. Technol. Tran.* 31 (3), 311–324.
- Silverman, R., 1984. Publishing patterns evidenced in the core higher education journal. *Res. High. Educ.* 21 (2), 159–177.
- Skeels, J., Fairbanks, R., 1968. Publish or perish: an analysis of the mobility of publishing and nonpublishing economists. *South. Econ. J.* 35 (1), 17–25.
- Swanson, E., 2004. Publishing in the majors: a comparison of accounting. *Financ. Manag. Mark. Contemp. Account. Res.* 21 (1), 223–255.
- Swanson, E.P., Wolfe, C.J., Zardkoohi, A., 2007. Concentration in publishing at top-tier business journals: evidence and potential explanations. *Contemp. Account. Res.* 24 (4), 1255–1289.
- Swidler, S., Goldreyer, E., 1998. The value of a finance journal publication. *J. Finance* 53 (1), 351–363.
- Taddy, M., 2013. Multinomial inverse regression for text analysis. *J. Am. Stat. Assoc.* 108 (503), 755–770.
- Tahai, A., Rigsby, J.T., 1998. Information processing using citations to investigate journal influence in accounting. *Inf. Process. Manag.* 34 (2–3), 341–359.
- Tetlock, P.C., 2007. Giving content to investor sentiment: the role of media in the stock market. *J. Finance* 62 (3), 1139–1168.

- Theoharakis, V., Hirst, A., 2002. Perceptual differences of marketing journals: a worldwide perspective. *Market. Lett.* 13 (4), 389–402.
- Vieira, P., Teixeira, A., 2010. Are finance, management, and marketing autonomous fields of scientific research? An analysis based on journal citations. *Scientometrics* 85 (3), 627–646.
- Weston, J., 1994. A (relatively) brief history of finance ideas. *Financ. Pract. Educ.* 4, 7–26.
- Xianliang, L., Hongying, Y., 2012. A bibliometric analysis on China sport science (2001–2010) based on CSSCI literature. *Phys. Proc.* 33, 2045–2054.
- Yu, B., Kaufmann, S., Diermeier, D., 2008. Classifying party affiliation from political speech. *J. Inf. Technol. Polit.* 5 (1), 33–48.
- Zeng, A., Shen, Z., Zhou, J., Wu, J., Fan, Y., Wang, Y., Stanley, H.E., 2017. The science of science: from the perspective of complex systems. *Phys. Rep.* 714, 1–73.
- Zivney, T., Bertin, W., 1992. Publish or perish: what the competition is really doing. *J. Finance* 47 (1), 295–329.