Bibliometric articles in Business and Management: Factors affecting production and scholarly impact

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Abstract

Based on different theoretical and publishing approaches, this study reveals that the publication of bibliometric articles in business and management follows a logistic diffusion pattern. Fist, the analysis of citation concentration -using the Gini index, concludes that a minority of articles capture most scholarly interest, there is a moderate concentration of articles in some outlets, and a large and diverse group of authors, forming a long tail distribution. Second, a set of hypotheses are tested by alternative regression models (OLS, semi-logarithmic, and negative binomial models). Results support the importance of specific characteristics such as the synthesis of previous contributions, the methodological sophistication, or the cosmopolitanism of the collaboration of the authors. In addition, there is an inverse effect of bibliometric expansibility on the impact of each article. The authors built a database from a content analysis of 835 bibliometric articles in WoS (1981-2022). The results raise several implications and recommendations.

Keywords: Bibliometrics, Citation analysis, Collaborative cosmopolitanism, Knowledge production, Scholarly impact, Theory building

1. Introduction

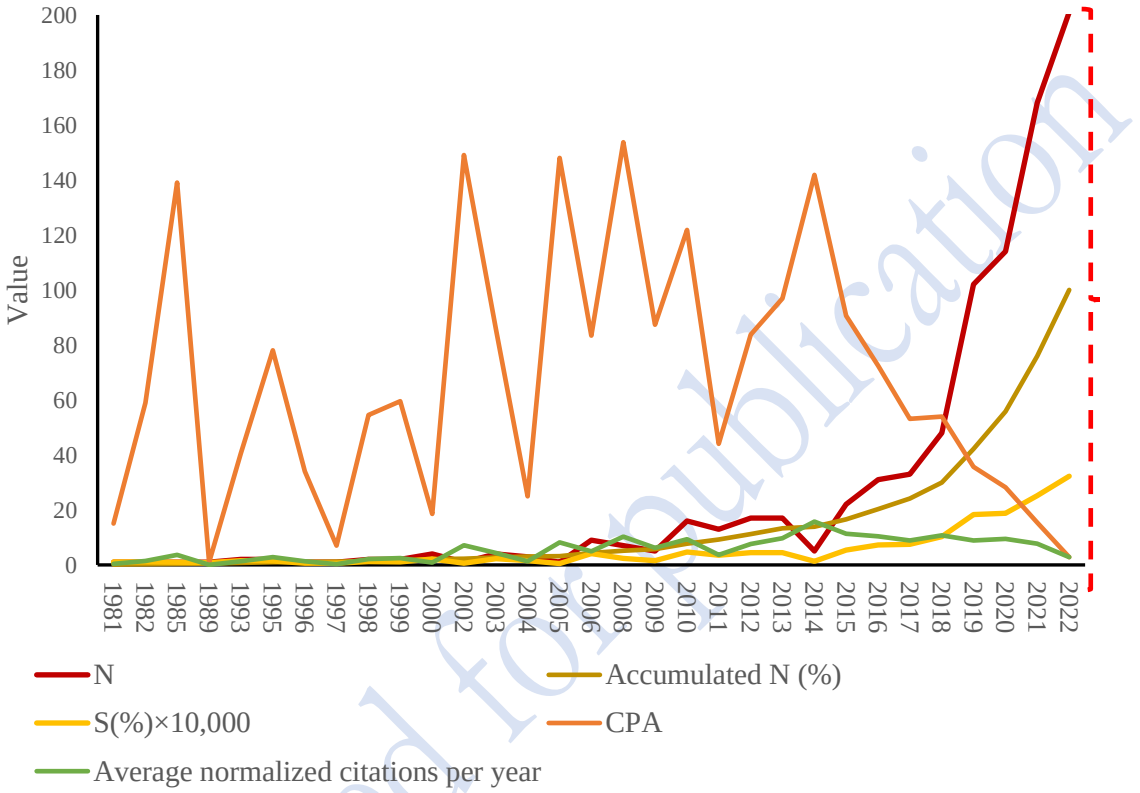
Understanding the motivations and different approaches to research content and methodology is an ongoing debate of unquestionable academic interest (Piazza & Abrahamson, 2020). Review articles have gained prominence for their role in understanding existing contributions, theorising, and guiding future research (Kunisch et al., 2018). Using the Web of Science (WoS) database, González-Alcaide (2021) reported that between 1965 and 2019 a total of 5,370 bibliometric documents (including articles, reviews, letters and conference proceedings) were published within the area of knowledge area. Donthu et al's (2021) analysis, based on the Scopus database, found that the number of articles had doubled each year from 2011 to 2020 in all fields of economics and business. In particular, the growth and popularity exhibited by bibliometric analysis in the field of business and in management stands out against other review techniques (e.g., replication studies, see Köhler & Cortina, 2021).

Beyond this consensus on the recent popularity of bibliometric papers, using data from the WoS Core Collection, first, an evolutionary analysis of the 42-year period of the publication of bibliometric articles on business reveals some interesting facts. Until 2006, the bibliometric parameters showed a low and flat profile (see Fig. 1). After this year, coinciding with the propagation of the software BibExcel (developed by Olle Persson, from Umeå University, Sweden), and the publication of some hallmark bibliometric articles (e.g., Ramos-Rodríguez & Ruiz-Navarro, 2004), an escalation takes place in the number of bibliometric articles (N), eventually exploding after 2014, with the software VOSviewer and SciMAT, among others, becoming freely available.

Thus, the number of bibliometric articles published in the WoS between 2015 and 2022 represents 83.5% of all those published since 1981 and 55.8% of all articles published between 2020 and 2022 (all details are available in the research data). However, citations exhibit a different pattern. Although some specific papers are significantly cited, after 2014 the average

citation per article (CPA) reveals a downward trend each year. Bibliometric articles published from 2015 to 2022 account for 58.2% of the total number of citations, and only 11.2% for the period 2020 to 2022.

Fig. 1. Evolution of the main indicators of bibliometric articles (1981-2022).



The opposing paths of publications and citations are indeed noteworthy (see the dotted line in Fig. 1). In addition, the relative share of bibliometric articles in all business articles has also multiplied, growing steadily since 2014 and becoming a typical business and management topic (see the share of bibliometric articles -S, in Fig. 1). The intense and growing evolution of bibliometric publications, their rapid emergence as a business topic, their presence in curricula, together with the perpendicularity between the number of bibliometric publications and the citations received, merit a reflection on their justification, possible causes, and drivers that aid the understanding of how business and management research topics develop.

We can detect several debates in the literature that affect bibliometric research in management. The first debate focuses on the reasons for this boom and the role of bibliometric

articles in scientific development. On the one hand, in the field of business, some contributors argue that the accumulation of knowledge is worthy of scrutiny, and the growth of bibliometric articles is a consequence of the development of bibliometric databases (e.g., Scopus, WoS) and software (e.g., Leximancer, SciMAT, VOSviewer) that produced high research impact (Donthu et al., 2021). This trend may be enhanced by the fact that bibliometric articles have spread to most high-quality outlets (Mukherjee et al., 2022a). Others, however, have described it as a 'fashion' (Post et al., 2020, p. 370), linking this phenomenon to the fads and fashions literature, a recursive problem of research in the field of management (Starbuck, 2009).

Second, another debate is about the methodological value of bibliometric analysis. Undoubtedly, the task of reviewing existing knowledge to identify gaps in the literature to guide future research is critical due to the logical accumulation of knowledge over the years (Kunisch et al., 2018; MacInnis, 2011). Furthermore, bibliometric analysis provides objective indicators with which to analyse existing research (Zupic & Čater, 2015). Indeed, an inherent benefit of bibliometric work is that most articles include access to data or can be retrieved from the platform, allowing for the reproducibility of the study, thus avoiding problems of fabrication, falsification, and plagiarism. Thus, scholars have identified interesting contributions from bibliometric analysis (Mukherjee et al., 2022a), and these could be recognised as an avenue for advancing theory with reviews through the analysis of the intellectual structure (cf. Post et al., 2020). However, from an analytical point of view, bibliometric analysis per se is considered primarily descriptive and thus insufficient for providing an understanding of the extant literature (Jones & Gatrell, 2014) and is just a starting point (Alegre et al., 2023).

The interpretation phase is qualitative in nature (Donthu et al., 2021), and may involve biases of mimicking the quantitative tradition of the factor analytic approach (Cornelissen, 2017), and of standardisation (Symon et al., 2018), impacting its potential for theorising. One standard to improve the rigour of the process is the sensemaking approach, involving a step-

by-step approach of scanning, sensing, and substantiating, involving not only analysis but also making meaningful sense of the bibliometric results (Lim & Kumar, 2024).

A third discussion is about the validity of bibliometric analysis to provide novel or counterintuitive contributions. For some management theorists, bibliometric methods may help develop research, as the originality of the research may be based on its incremental understanding of existing knowledge (Corley & Gioia, 2011). It is widely acknowledged that review articles in general are valuable for presenting updates in a specific field and identifying novel or relevant topics which can be taken up by future research (Blümel & Schniedermann, 2020; Donthu et al., 2021). However, others cast doubt on the usefulness of research methods based on the 'literature norm' (Alvesson & Sandberg, 2013) to provide influential and high-impact theories, as they lean heavily on reaffirming existing knowledge instead of breaking new ground. Tellis (2017, p. 3-4) questions research methodologies based on reviewing existing literature because they can limit researchers with regard to adopting new perspectives and study visions: "He or she may see the world through the eyes of the established researcher and be less likely to refute it". Post et al. (2020, p. 370) point out that they "do not explore, analyse, and demonstrate how they advance theory", also considered some review methodologies as "over-descriptive in their analysis" (Breslin & Bailey, 2020). Furthermore, from other scientific fields, it should be noted that focusing on the examination of existing research ('short-term stakes') rather than research about what is unknown ('long-term stakes') can change the direction of future research and undermine the achievement of important long-term goals (Hunter, 2013), or represent a waste of resources (Lunny et al., 2022). An intermediate position identified is to consider that the method of review depends on the state of the field, whether nascent or mature (Hoon & Baluch, 2020).

It should be noted that many concepts are tested at a micro-level, often formulated on the basis of particular markets or sectors, environments with limited conditions, or at a specific

point in time (Homer & Lim, 2024). But the process of theory building involves developing multiple studies in different contexts, so that 'the theory begins to encompass multiple industries within a nation, each adding layers of generalization' (p. 131), moving to broader levels in the range of theories. Thus, bibliometric analysis can be a facilitating tool to identify research gaps across contexts (e.g. geographical areas, industries), which provide the opportunity to develop theory in these uncharted or underexplored areas, contributing to the generalisation process involved in theory building. In this direction, the bibliometric analysis of Liu et al. (2020) reveals great differences in customer relationship management research across regions, with implications for cross-cultural studies.

Finally, the academic impact that bibliometric work can generate is also relevant. The social constructivist view of science (cf. Bornmann & Daniel, 2008) contends that the aim of producing a research paper may be the feasibility of its realisation to publish with promotion purposes 'publish-or-perish principle' (Alvesson & Sandberg, 2013). This may have resulted in a great increase in the number of publications and authors (Bornmann & Mutz, 2015). This situation has been fostered by the fact that the number of publications or citations is the most common metric for faculty evaluation (Stremersch et al., 2021), and bibliometric papers have good citation rates (the average citation of a bibliometric article in WoS for the period 1981-2022 is 34.34 citations, while for a management article, it is 31.8). Specifically, the ease of obtaining bibliometric data and the availability of analysis software have led some journals to highlight the frequency with which they have been used in their own research, authors perform bibliometric analyses for the sake of performing bibliometric analyses due to a lack of both purpose and contribution to research goals (Block & Fisch, 2020, p. 311). These factors foster a Darwinism behaviour in publishing, typical of science (Hunter, 2013).

Previous research shows that journal quality is a key driver of citation for the case of empirical papers, but not for reviewing theoretical papers and review articles (Mingers & Xu,

2010), while there is no evidence regarding bibliometric articles. Studies have then provided only partial, and mostly theoretical, views to explain bibliometric publication. The methodological and technical improvements in bibliometric methods (e.g., Calof et al., 2022; Donthu et al., 2021; Lim et al., 2024) have increased the interest of scholars for bibliometrics. Alegre et al. (2023) indeed highlight that bibliometric analyses are valid review methods as long as they are conducted in a rigorous manner and demonstrate their ability to offer novel and insightful contributions. Top journals do not deny that research based on previous literature can be interesting, creative or important (Barney, 2017). The question that arises is whether the upgrading, growth and popularity of bibliometric articles may have translated into changes in their scholarly impact, or, conversely, there may have been a drop in impact in relative terms (dilution effect). Further, it is worth asking whether the methodological and theoretical contributions to bibliometrics have translated into a research specialisation that does not even match the editorial policies of some journals.

The effective contribution of bibliometric articles to knowledge construction and discipline development requires a proper understanding of their drivers and triggers for publication. We suggest that a systematic evolutionary analysis contributes to the understanding of the proliferation of bibliometric articles in business, and the growth of their publication share, in terms of their scholarly impact. Thus, we pose the following research question. What are the main drivers affecting the scholarly impact of bibliometric business articles?

To address this question, we draw on the literature of concept diffusion, theory building, scholarly communication, and research evaluation to elaborate a set of hypotheses on the evolution and diffusion of bibliometric articles, their content, and different citation drivers. We built a database based on a content analysis of all bibliometric articles published in the field of business from 1981 to 2022 and listed in the WoS. The hypotheses are tested using a mixed methods approach consisting of SLR methods, concentration analysis, and regression analyses.

2. Theoretical review and hypotheses

As part of the evaluation and synthesis of literature review methodologies (SLR) (Kunisch et al., 2018), bibliometric analysis is a method for review, coming under the broad umbrella of SLR alongside review protocols such as PRISMA and SPAR-4-SLR (Kraus et al., 2022). It has proven to be a useful tool for researchers, to, for example, understand the intellectual structure of a subject or field (Ramos-Rodríguez & Ruiz-Navarro, 2004), determine relationships between subfields (Nerur et al., 2008), identify trends (Yadav, 2010), or conduct an integrative review avoiding speculation (Cronin & George, 2020). An important property of bibliometric analyses is that they are reproducible, an essential property for theory development (Hulland, 2020).

Though many factors and drivers can contribute to the impact of a publication, by adopting a principle of parsimony, the scholarly impact of a publication can be explained as a function of different attributes, at the journal, article, and author level (Wagner et al., 2021). This means assuming agreed definitions and relationships, such as the theory (Mingers & Xu, 2010) according to which the impact factor is a good measure of the quality of the journal. Additionally, since the basic unit of analysis is the publication, we use the scholarly impact as a measure of the impact (Abramo, 2018). Under these premises, we proceed to justify the proposed variables and hypotheses.

2.1. Hypotheses on the evolution and distribution of bibliometric articles

2.1.1. Evolution of the volume of bibliometric articles published

We can provide different arguments to support the sharp growth of bibliometric articles. First, it has been proposed in the bibliometric literature that natural accumulation of knowledge and contributions leads to a corresponding accumulation of citations. Furthermore, the increase in publications and the 'success-breeds-success' phenomenon (Cozzens, 1985, p. 149) may result in additional increases in citations to be received in the future (Bornmann & Daniel,

2008). These citation drivers could explain the expected linear growth of bibliometric article citations. A second line of argument is drawn from the fads and fashions management theory (Abrahamson, 1996), it has been evidenced that some management practices and techniques emerge and spread rapidly, waxing and waning in popularity, regardless of their benefits, in a wave-like fashion phenomenon. Based on this perspective, Bort & Kieser (2011) suggest that the discipline of management is susceptible to trends that are not driven exclusively by the need to solve problems, and other factors, such as the frequency of previous articles introducing concepts, have a significant effect on new publications. Also, boosted by interdisciplinary influences and fuelled by the availability of data (e.g. Scopus, WoS) and freely available software (e.g., VOSviewer or SciMAT), methodologies and practices are spread among the research community (Piazza & Abrahamson, 2020).

The perhaps fashionable diffusion of a bibliometric analysis does not necessarily imply that it will be abandoned at some point, but that it can be retained for the interest of scholars or also reborn or improved (Mol et al., 2019). Abrahamson (1991) has proposed that fashions have the greatest power in explaining the diffusion of management tools, using the logistic curve to explain this pattern as derivatives to describe longitudinal changes in diffusion rates (Rogers, 1983). In fact, the growth rate of bibliometric articles may experience asymptotic growth, suggesting testing that function. Thus, we propose a logistic evolution pattern for bibliometric articles as follows:

H_1: As scientific contributions accumulate, the number of bibliometric articles grows logistically.

2.1.2. The timeliness of the impact of bibliometric articles

As the scholarly impact of articles depends on the time period over which their citations are considered, this time period can be considered of interest for assessing the influence of scholarly impact on the publication activity of other authors. This is the 'citation window',

according to which citations are counted within a precise period after the appearance of an article (Waltman, 2016). This time-based consideration is of particular interest for assessing the contribution and impact of bibliometric studies or to the specific context of management publication practices, research fronts, and current impact. A citation window includes two dimensions, namely, the accuracy and timeliness of citations (Wang, 2013). Accuracy requires a longer citation window, while timeliness requires a shorter citation window. Furthermore, of these two dimensions, timeliness has been recognised as a common concern across multiple domains for analysing the influence in the mimetic effect or influence on other authors, as they can more quickly observe the relevance of a paper and the immediate impact of their work (Leydesdorff et al., 2016). Furthermore, as the content of a paper becomes outdated after some time, its citations will decrease rapidly (Parolo et al., 2015). Thus, in the case of determining management publication practices, research fronts, and current impact, a time window is justified along with total citations (Wang, 2013).

However, the greater appreciation of more recent papers contrasts with the need to consider a broader temporal period for evaluating the scholarly impact of articles because social science research has a slower pace of theoretical development than other sciences (Nederhof, 2006), and it takes much longer to be recognised and cited in fields such as the social sciences (Wang, 2013). However, for both scholars and managers who focus their efforts on achieving performance in the immediate future, more recent publications are more appreciated than older publications (Leydesdorff et al., 2016). Bibliometric articles can make a valuable contribution to understanding past contributions, thanks to review and theoretical synthesis processes. They thus facilitate the identification of research opportunities (Yadav, 2010), which may be valid and interesting during only a specific time, that is, its temporal validity is ephemeral or limited. Similarly, the popularisation of bibliometric studies has led them to gain greater consideration when reviewing the literature (González-Alcaide, 2021). Therefore, we propose the following.

H_2: The timeliness of the scholarly impact of bibliometric articles has increased with time.

2.1.3. Distribution and concentration of the impact of bibliometric articles

The analysis of citing behaviour literature yields two opposing streams of thought regarding the timeliness of citing bibliometric articles, in particular, and review articles, in general. On the one hand, some researchers question their ability to generate knowledge on the grounds that genuine new knowledge is not produced, although they recognise that the use of bibliometric work is unlikely to decrease the use of bibliometrics (Lunny et al., 2022). Indeed, the limited ability of review papers to represent its field or its us or realm of study of such articles has also been highlighted (Blümel & Schniedermann, 2020). Specifically, it has been also argued that original research articles be perceived as the 'gold standard', as the main carrier of scientific knowledge (Van Raan, 2004), and bibliometric studies should receive less attention. In particular, in fields with a longer tradition of bibliometric analysis, such as medicine, it has been claimed that multiple reviews conducted on the same topic may represent a waste of research resources and generate redundancy of ideas, which in the end leads to having to cite one or other work and, necessarily, failing to cite some of them (Lunny et al., 2022). Moreover, reviews may be increasingly dealing with very close or even overlapping topics, fostered by digital research discovery tools (i.e. academic search engines and recommender systems) that may reproduce bibliometric redundancy, as opposed to bibliometric variety (Nishikawa-Pacher, 2023).

On the other hand, reviews and the production of multiple reviews on the same topic ('overlapping overviews') can contribute to the field of management by providing valuable insights, analysis and updates of previous overviews (Donthu et al., 2023). Indeed, this merit allows bibliometric articles to serve several functions beyond the representation of topics and research fields or shaping research agendas (Blümel & Schniedermann, 2020), having argued

that they receive more citations than other types of article (Miranda & Garcia-Carpintero, 2018). Further, it has been argued that researchers tend to use recognition heuristics (Goldstein & Gigerenzer, 2002), so that a bibliometric paper may be more recognisable when it comes to understanding the extant contributions, thus being more likely to be selected. Even the limitation on the number of words in journals favours the citation of articles that review previous literature. Researchers are more likely to cite the most recent previously published work to support their arguments (recency of exposure), based on its more up-to-date status and memory (Dougherty et al., 2021). These phenomena may favour the citation of review articles in general and bibliometric articles in particular, at the expense of the original reviewed articles.

However, not all articles are equally likely to be cited. The highly skewed distribution of article citations has been proven to be a general pattern in business and management (Mingers & Burrell, 2006), marketing (Baumgartner & Pieters, 2003), and even extensible to all fields (Ruiz-Castillo & Costas, 2018). The influence of certain factors in explaining this differential behaviour in the citation of an article has been demonstrated, such as the tendency to cite more articles in more specialised journals than in generalist journals (Baumgartner & Pieters, 2003), the school of thought underlying the editorial policy (Merigó & Yang, 2017) -being the American school the most dominant in operation research and management, or the positive effect of the author's productivity (Ruiz-Castillo & Costas, 2018). As a consequence, some bibliometric articles may receive more citations (high in redundancy), while others are more isolated (high in variety), receive less attention, or are perceived as low-influential. Formally stated:

H_3: The impact of bibliometric articles is skewed and concentrated in certain articles.

2.1.4. Agglomeration of bibliometric articles in specific journals

Journal-related factors such as the quality of the journal, the acceptance rate, the total number of articles published, or the scope and the editorial policies of the journals, may have

implications in the distribution of bibliometric papers among journals (cf. Rowley et al., 2020). Thus, journals with a narrow, limited scope will attract fewer articles than those with a general, broader scope. Therefore, authors of bibliometric articles may prefer to submit their studies to more generalist outlets (Mukherjee et al., 2022).

Furthermore, in relation to the acceptance rate (Wijewickrema & Petras, 2017), we consider that our study context is influenced by the fact that authors of bibliometric studies are more prone to send their articles to journals that are likely to accept studies of this type and avoid sending them to journals that are more restrictive in terms of the publication of bibliometric studies. Therefore, without a doubt, the fact that some 'top-tier' journals accept bibliometric articles while others do not may also lead authors to decide to submit their bibliometric articles to those more open to publishing them. In this regard, some journals have been emphatic in their publication stance. For example, although the *International Journal of Management Reviews* (IJMR) has published a few bibliometric papers, its editors (Breslin & Gatrell, 2023, p. 259) stated that the journal 'shall not publish bibliometric articles that are simply based on a quantitative analysis of the literature, as such an approach certainly does not meet one of the key criteria for publication in IJMR'. Similarly, Post et al. (2020, p. 370) in a recent editorial of the *Journal of Management Studies* (JMS) indicated that 'the present fashion for bibliometric analyses (especially those using software packages that privilege quantitative measures) may produce articles that do not meet the JMS criteria for publication in terms of theoretical contribution.' In contrast, other journals have shown an openness to publishing bibliometric papers (e.g., *Journal of Business Research*) or have even published special issues in which bibliometric analysis has been very well received (e.g., *International Journal of Consumer Studies*). Furthermore, Mukherjee et al. (2022) revealed that 38 out of 50 leading business and management journals listed by the Financial Times (FT50) have published at least one bibliometric article, although they also indicated that some journals in this list are more

likely to publish this type of work, highlighting *Research Policy*, *Journal of Business Ethics*, and *Strategic Management Journal*. This results in the publication of bibliometric articles being spread across several journals with different policies and acceptance rates. These reflections lead us to assume that a few journals bring together a large number of bibliometric papers. Thus, we posit:

> H_4: Journal editorial policies mean that the publication of bibliometric articles spread across a breadth of journals, with a core of journals representing high impact, and the majority of journals having low impact.

2.1.5. Concentration of authorship in bibliometric articles

A basic assumption in sociometrics is that as the number of scientists increases, the number of publications increases, although according to Price's law (Price, 1963) the productivity of authors and publications is decreasing. According to this model, roughly 50% of all scientific articles are produced by approximately 10% of scientists, revealing the concentration of works in a reduced number of authors (Cole & Cole, 1972). However, it is not so evident whether the advances are due to the contributions of a minority group of authors (elitist view) or to the small contributions of many average authors (nonelitist view).

In scientific research, knowledge and discovery progress are usually strongly influenced by key researchers (Beske-Janssen et al., 2015). According to the Newton hypothesis (that is, 'standing on the shoulders of giants'), scientific progress is driven by a small number and percentage of researchers in a discipline. Additionally, some researchers specialise in certain areas of study in which they invest considerable time in developing their findings and therefore maximise their productivity, leading to a more specialised way of doing research, 'boxed-in research' in a broad sense (Alvesson & Sandberg, 2014). It implies that "people are strongly and sometimes rigidly committed to the specific setup in their particular research specialization" (p. 971). It should be made clear that boxed-in research refers to a research mode

adopted by a researcher, group or institution, not a specific methodology, and is characterised as instrumental, strongly specialised and aimed for incremental contributions. As each research box provides particular resources to increase its research output, this could explain why certain 'boxed authors' have published a large number of bibliometric articles.

Alternatively, the Ortega hypothesis claims that scientific development is the outcome of numerous smaller discoveries made by many modest and nonoutstanding scientists (Cole & Cole, 1972). Adapting to our case would mean assuming that the authorship of bibliometric articles is evenly distributed among a wide range of researchers, with no minority having contributed in a particularly significant way. In the case of bibliometric studies, the latter can be supported by the availability of large databases and free analytical software (Moral-Muñoz et al., 2020), which facilitates their diffusion to multiple subject areas and fields, as well as the attractiveness of producing high-impact research (Donthu et al., 2021). This intensification of dissemination makes it more likely that each additional article is authored by different authors, forming a long-tailed pattern that can be observed in other bibliometric domains such as the use of keywords (Mela et al., 2013). Consequently, although there may be some authors with a large number of papers, the publication pattern will be one of a large number of authors publishing some bibliometric articles on a large and broad number of topics. Therefore, we propose the following.

H_5: The publication of bibliometric articles is distributed among a large number of authors.

2.2. Hypotheses on the citation drivers of bibliometric articles

2.2.1. Effect of the quantity of bibliometric articles published on their impact

The growing interest in bibliometric articles has recently led to proposals to improve their application and capacity to advance business theory and practice (Donthu et al., 2021, Mukherjee et al., 2022). Bibliometric articles can play several roles, such as disseminating

existing knowledge, sourcing references, ranking, guiding further studies, boosting new fields, influencing editorial strategies, academic evaluations or science assessments (Blümel & Schniedermann, 2020). These multiple applications may explain the agreement in the literature that review articles are, on average, more cited than other research items. Miranda and Garcia-Carpintero (2018), in a study focused on the fifteen largest subject categories of the SCI-WoS database (not including management), show that review articles were cited, on average, three times more than original research articles. On average, this higher citation behaviour can be attributed to its comprehensive nature, although little research has been done in the management field.

On the other hand, evidence from social science disciplines reveal that the increase of articles within a given scientific field or using the same technique can also lead to some papers being highly cited and others less so. As an example, taking the sharing economy as a field of research, Sánchez-Pérez et al. (2021) found that of the 941 articles collected, 40% of the total citations in the field were concentrated in 29 articles and that, in fact, 269 (29%) articles had received no citations, which generated a pronounced concentration of citations. In a similar vein, using different measures of citation concentration on a sample of WoS documents, Chi (2016) demonstrated that citation distribution in the social sciences is highly unequal. González-Alcaide (2021) found a similar pattern, with almost 26% of the bibliometric documents published in the Social Sciences not having received citations. Therefore, despite the high citation potential of a bibliometric article, we find that most articles have received no or very few citations. Indeed, many review articles are overviews that synthesise previous reviews (Lunny et al., 2022), so that only a few may be cited, reducing the likelihood of citation of each new article. Furthermore, as illustrated in Fig. 1, there is an inverse evolution between the evolution in citations received per bibliometric article (CPA) and the number of bibliometric articles published (N). From the above discussion, we proposed:

H_6: As the number of bibliometric articles increases, the scholarly impact of each decreases.

2.2.2. Effect of journal quality on the impact of bibliometric articles

Citation analysis is a widely accepted methodology to assess the development and contribution of scientific articles (Waltman, 2016). However, this approach has also been questioned, with the suggestion that the number of citations an article receives may be biased by many different variables, in particular, the journal of publication (Bornmann & Daniel, 2008). It is widely assumed that the higher the quality of the journal, the higher the attributed quality and value of its publications (Bordons et al., 2004). The quality of the journal in which an article is published offers an objective and generalizable measure of scientific impact and research value. Top journals usually bestow much more recognition and impact to articles than lower-ranked journals, generating increasing pressure on researchers to publish in top journals for higher impact, rewards, and professional status (Aguinis et al., 2020). Although many top papers have been published in non-top journals and many non-top papers have been published in top journals (Singh et al., 2007), there is a clear trend toward considering objective, simple, and standardised quality indicators (Mingers & Leydesdorff, 2015). Indeed, according to the theory (Mingers & Xu, 2010), the impact factor is a good measure of the quality of the journal. Furthermore, the validity of a reflective quality indicator such as the impact factor has been tested in the field of management (Wagner et al., 2021), although there is no evidence for bibliometric articles. Based on this discussion, we postulate the following hypothesis:

H_7: The scholarly impact is positively influenced by the quality of the journal.

2.2.3. Effects of including a synthesis of previous contributions

Bibliometric analysis plays an important role as a tool in conducting literature reviews (Kunisch et al., 2018), although its use depends on the field of research. In the management discipline, scholars have frequently advocated for theory review articles and the improvement

of conceptualisations as a driver of new research avenues (Ashkanasy, 2016). Indeed, Yadav (2010) or MacInnis (2011) advocacy for improved conceptualisations in related disciplines such as marketing (both conceptual and empirical articles) has stressed the interest in performing reviews to summarise existing contributions and explore new ideas. Previous research in the discipline of management reveals that whether a paper is a review or is theoretical does not alter its chances of being cited for being a review or being theoretical (Mingers & Xu, 2010).

Also, the scientometric literature shows that those articles that have a low level of challenge of commonly shared knowledge have a lower citation level compared to those that are more intense in proposing alternative explanations (Stremersch et al., 2007). Additionally, since the complexity of many contributions often results in a lack of understanding and interest in the article (Warren et al., 2021), scholars may find that bibliometric articles can play a role in facilitating the understanding and meaning of a work, promoting its use among the academic community as a means of synthesising existing knowledge. Thus, we can posit the following hypothesis:

> H_8: The review of research suggestions proposed in the previous literature has a positive effect on the scholarly impact.

2.2.4. Impact of the methodological sophistication of the bibliometric article

It is widely accepted among the scientific community that the level of analytical rigour of published articles has increased over the years (Cooke et al., 2021; Jaga & Guetterman, 2021). Methodological sophistication is a key criterion in the review process of scientific papers, and editors and reviewers may prioritise and/or overvalue the quality of research execution over the quality of the idea (Ellison, 2002). In this regard, in the contexts of business and management research, we find divergent arguments. On the one hand, Lehmann et al. (2011) point out a significant increase in the use of complex analysis in contrast to the emphasis on the importance of the research topics and the derived knowledge. Technically sophisticated works increase the

probability of 'success' for academics who therefore tend to use more recent and complex methods and standards. However, the growing influence of economics, psychology, and sociology in management and business research and increasingly fetishistic and formulaic approaches can lead to outdated contributions, hidden behind sophisticated and narrow methodologies, which can dampen intellectual vigour and, consequently, the impact of research (Birkinshaw et al., 2014). Bibliometric guidelines postulate that sophistication in analytical tools contributes to uncover insights that would otherwise not be possible (Lim et al., 2024).

On the other hand, some authors advocate simpler and more transparent research methods. This allows researchers to focus on the substantive questions and frees them from the need for methodological sophistication to obtain valid causal results (Sudhir, 2016). Indeed, Stewart and Ladik (2019) consider that methodological rigour, although not a substitute for creativity, is important and does have its place. These authors point out that articles with a high value of interest and methodological rigour have a higher probability of publication than those with less rigour. However, articles that do not involve direct data collection are subject to more rigorous review (Ashkanasy, 2016). In fact, Lehman et al. (2011) clarified that methodological sophistication does not mean complexity, and many of the most influential and cited works are, in their essence, simple and do not apply complex procedures. Thus, this review of the literature leads us to distinguish between methodological rigour and analytical complexity. The latter is well-received in academia and considered a prerequisite for a paper to contribute to scientific development. On the contrary, may alienate the potential reader because of its complexity and lack of transparency. Therefore, in this discussion, we propose the following.

H_9: The greater methodological sophistication of bibliometric articles positively affects their scholarly impact.

2.2.5. Development of the Theoretical Framework

Bibliometric papers facilitate the study of relationships between research elements and topics (Cobo et al., 2011), analysing through different indicators the structure and evolution of knowledge and content of a research field of study. It is a widely used method to explore the intellectual structure of a data set (e.g., Lim et al., 2022). In this sense, bibliometric articles represent an interesting technique for assessing the theoretical construction and the academic contribution of a research field.

The scientific contribution of bibliometrics may influence the degree to which they are cited. Theoretical articles can constitute breakthroughs and pioneer contributions (Yadav, 2010), providing a source of inspiration for future articles and connecting to knowledge communities (MacInnis, 2011). In this sense, the most original and innovative theoretical contributions can become key references within their field of study and be highly cited. Thus, we postulate the following hypothesis:

> H_{10}: The development of a conceptual framework in the bibliometric article increases its scholarly impact.

2.2.6. Author collaboration cosmopolitanism

Within the broad concept of cosmopolitanism, in the field of scientific research, collaboration cosmopolitanism is considered a prominent strategy of collaboration among scientists to increase their publishing productivity (Bozeman & Corley, 2004). Collaboration cosmopolitanism can be defined as 'the degree to which researchers work with people who are distant from them either institutionally or geographically' (Jung et al., 2017, p. 1863).

Previous literature has evidenced that internationally coauthored articles have a higher citation impact over purely domestic papers (e.g., Khor & Yu, 2016; Leydesdorff et al., 2016). Donthu et al. (2023) have suggested that a greater number of authors will bring a greater reputation to the article and that this fact could help to attract a greater readership and number of citations. If, in addition, there is a high degree of cosmopolitanism in the authorship of an

article, either because different authors belong to different scientific fields and/or to different universities and countries, their works will have diverse and unique content, which will encourage it to be cited more often (Lee & Bozeman, 2005). Accordingly, we suggest that:

H_{11}: Collaboration cosmopolitanism has a positive effect on the scholarly impact.

3. Methodology

3.1. Data collection

Several considerations were taken into account for the systematic review focused on articles with bibliometric methodology (Kraus et al., 2022). The bibliographic data for this study was retrieved from the *Web of Science* (WoS) database. WoS was chosen because it is the oldest, most widely used, and most reliable database of research publications and citations in the world (Birkle et al., 2020). Because this study focuses mainly on articles in the disciplines of the broad area of business, the search was restricted to the *Social Sciences Citation Index* (SSCI) of the *WoS Core Collection* and specifically to the WoS categories of business, business finance, management and economics (in this case, only business economics). Donthu et al. (2021) used a similar method to identify all articles on the area of business and economics in the Scopus database. To focus only on peer-reviewed documents published in journals, we restricted our search to documents categorised as articles and reviews, leaving aside the grey literature (e.g., editorials, notes, errata, conference proceedings, books, and book chapters). In addition, we limited our search to papers published in English and to those within a time limit, only to papers published up until December 31, 2022. After conducting a scoping study, the following formula was used in the topic field (including title, abstract and keywords) of WoS to search for articles that have used the bibliometric methodology: [‘bibliometric*’ OR ‘scientometric*’ OR ‘science mapping’ OR ‘citation analysis’ OR ‘co-citation analysis’ OR ‘bibliographic coupling’ OR ‘bibliographic coupling’ OR ‘co-author analysis’ OR ‘co-author analysis’ OR ‘co-occurrence analysis’ OR ‘co-author analysis’ OR ‘co-authorship analysis’ OR

'informetric*']. This initial search resulted in a total of 2,320 documents. Subsequently, a purification of the documents was performed, eliminating some 'strained' documents (ie, review early access review, early access review book chapter, retracted review paper, and documents finally assigned to a volume of 2023). This resulted in a sample of n = 2,043 documents (from m = 228 journals).

Being aware that the mere fact that a document contains any of the above search terms or has been published in a journal indexed in one of the four categories is not sufficient reason to consider an article as a bibliometric study in the business field and the management area, four researchers independently analysed each of the 2,043 documents. At this point, the rigorous standards previously established by the four investigators were followed before a work was considered unsuitable. The *Supplemental material: Search terms and article selection* includes the search procedure and a detailed list of reasons for selecting a document that was not suitable. After the corresponding analysis, the four authors pooled their opinions and decided to exclude a total of 1,208 documents. Thus, the final sample of documents for this study is 835 bibliometric articles published between 1981 and 2022.

3.2. Identification of the article data

Although some data/indicators could be extracted directly from the bibliographic data in the WoS database (e.g. total citations, year of publication, journal of publication), other data/indicators had to be extracted manually due to the impossibility of obtaining these data directly from WoS as they are not directly recorded. Therefore, a group of four researchers independently reviewed each of the 835 bibliometric articles, as well as other data related to the journals in which these articles are published. Due to the impossibility of fully identifying authorship data from WoS due to the frequent use of initials, we inspected and completed all authorship data by checking each article. With respect to the journals, data were extracted such as the quartile and impact factors. The manual coding of the articles allowed the following

indicators to be collected: whether the article has a synthesis of research gaps, whether it has a conceptual framework, and some aspects of its methodological rigour to analyse its methodological sophistication. Furthermore, the number of authors and their affiliations was manually reviewed to calculate various indicators (eg, cosmopolitanism).

3.3. Variable measurement

The scholarly impact was measured as the total citation counts received by an article *i* and collected in the variable citations (C_i), considered as an adequate measure of influence for bibliometric analysis (Abramo, 2018; Podsakoff et al., 2008). We obtained this variable from the WoS. Due to the limitations of the total citations, we also calculated a normalisation citation measure (NC_{it} = [i<0.5]/n*100) (Bornmann et al., 2013). The number of authors was also determined from the data recovered from WOS by applying an Excel formula.

Table 1 summarises data on the number of authors and single- or multiple-authored documents. These articles analysed represent the work of 2,014 different authors, 37 of them writing 59 single-authored articles. The collaboration index was 1.59, which means that each lead author associates with about one other author.

Table 1
Co-authorship and distribution of articles

Description	Metric
Number of contributing authors	2,651
Unique authors (excluding repetitions)	2,014
Authors of multi-authored documents	1,977
Multi-authored documents	776
Single-authored documents	59
Authors of single-authored documents	37
Collaboration index	1.59

The *Journal quality (JourQual$_i$)* is a proxy variable that reflects the quality or prestige of the journal. According to the theory (cf. Mingers & Xu, 2010), the direct impact factor (JIF) can be considered a good measure of journal quality, as it is highly correlated with many articles and journals attributes (Wagner et al., 2021) and makes comparisons between units of different sizes (Saha et al., 2003; Waltman, 2016).

Direct JIF was preferred to quartiles due to the limitations of a categorical variable for regression analysis. In any case, in the summary, Table 2 specifies the composition of each quantile.

Table 2
Distribution of articles per quantile

JCR quantile	Frequency	%
Q1	414	49.58
Q2	212	25.39
Q3	158	18.92
Q4	42	5.03
n/a	9	1.08
Total	*835*	*100.00*

Inclusion of a synthesis of research opportunities (Synthesis$_i$). Each article is checked for a collection of research suggestions identified in previous literature. *Synthesis$_i$* is measured as a dummy variable where articles containing a collection of research suggestions are assigned the value one; all others are assigned the value zero.

Methodological sophistication (*Sophistication$_i$*). To measure the methodological sophistication of an article, which represents the methodological and analytical rigour of the article, we built a formative summated scale based on the presence of different facilitating tools that the article presents for identifying contributions, as inspired by MacInnis (2011). Specifically, we verify the inclusion of the following tools for every paper:

i. Literature review
ii. Descriptive statistical analysis
iii. Inferential statistical analysis
iv. Using an existing framework to articulate the review
v. Development, proposal, or extension of a theory/framework
vi. Graphic devices
vii. Other analytical tools

Each item was measured as a dummy variable (one if the article included that analytical tool, zero otherwise). Then, $Sophistication_i$ is an index associated with the seven variables that range from 0 to 7.

Inclusion of a conceptual framework ($Framework_i$). Each article is checked for inclusion of a conceptual framework. Framework is measured as a dummy variable where articles containing a conceptual framework are assigned the value one; all others are assigned zero.

Degree of collaborative cosmopolitanism ($Cosmopolitanism_i$*).* We used a similar approach to comparable studies (Jung et al., 2017), where collaboration cosmopolitanism is a measure of how close or far apart the authors of an article are from each other. Each article is checked for the heterogeneity[1] and geographical affiliation[2] of its authors. The scale was calculated by analysing the scientific area and countries of affiliation of each of them (measured on a scale of 0 to 4). The scale ranges from 0 = 'Researchers who have worked alone' to 4 = 'Researchers who have worked with researchers in other nations and other research areas'. From both indicators, a summative index is obtained as a measure of collaboration cosmopolitanism.

4. Data analysis and results

4.1. Trend analysis of bibliometric article publication activity

For checking hypothesis H_1, we based our test on Benders and van Veen's approach (2001) of analysing fashion adaptation rather than popularity. Thus, the trend curve of publications of bibliometric articles was estimated based on the growth in the number of publications per year. The evolution in the number of bibliometric articles published each year was adjusted using a logistic model ($y= \ln(\beta_0 + (\ln^{\beta_1} \cdot t))$. For testing purposes, a linear regression ($y= \beta_0 + \beta_1 t$) and a power regression ($y= \beta_0 \cdot t^{\beta_1}$) have also been tested.

[1] The heterogeneity of authors is measured by whether they belong to the same or different scientific areas in a broad sense (e.g., Economics vs. Law vs. Mathematics vs. Computer Science) and calculated by the number of differences between the areas (e.g., if all authors are from economics = 0; Economics vs. Law = 1, etc.).

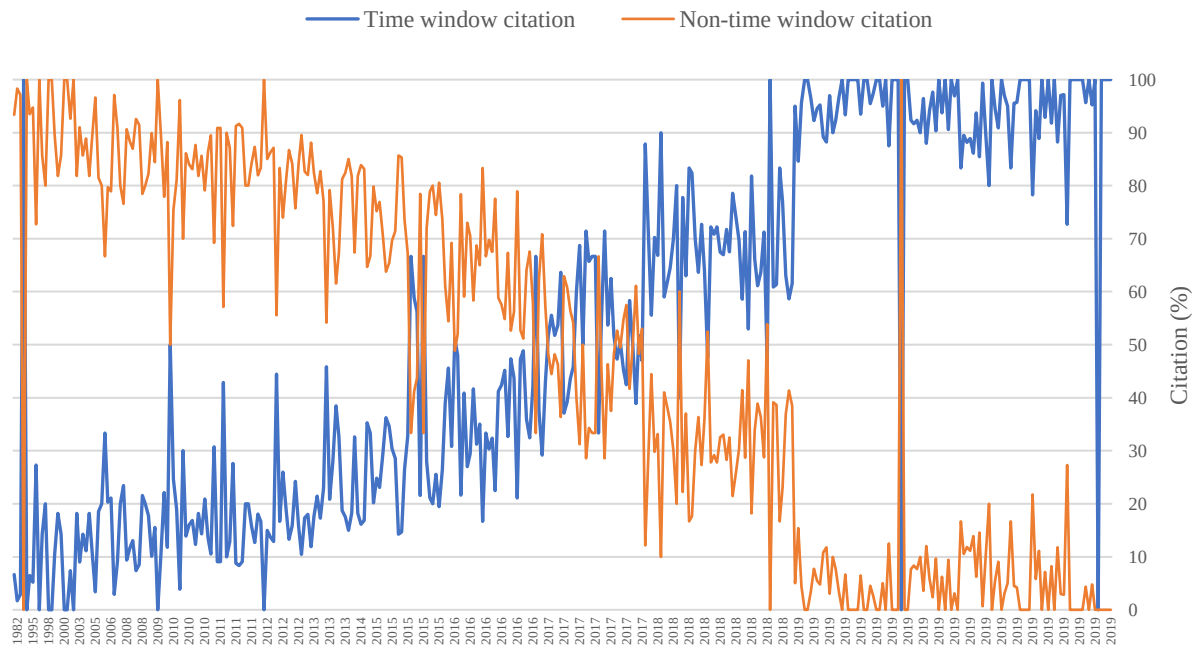
[2] The geographical location is measured by the number of countries other than the universities of the authors of the article (e.g., if all authors are from the same country = 0; if at least one of the authors belongs to a different country = 1, etc.).

Table 3
Estimates for different models of bibliometric article evolution

Curve	R^2	F	Sig.	β_1 (standardised)	Standard error	Sig.
Logistic model	0.863	182.765	0.000	0.395	0.011	p<0.001
Linear model	0.486	27.377	0.000	0.697	0.735	p<0.001
Power model	0.609	45.201	0.000	0.780	0.231	p<0.001

As can be seen in Table 3, all three models provide reasonable adjustments to changes in the number of publications, although the logistic model of asymptotic growth is the one that provides the best adjustment with a higher R^2 and also the best F test. These results support H_1 of a logistic trend as the pattern of evolution in the publication of bibliometric articles. Concerning H_2, we first analysed the evolution of citations in the initial period of publication compared to those received for the remaining years of the article (Wang, 2013). This shows an inverse pattern of evolution between the initial 3-year time window citations and those citations obtained during the remaining years of the article (see Fig. 2).

Fig. 2. Distribution of the first 3-year time citation versus non-time window citation



First, we performed a correlation analysis between the citations received by each article in the initial 3-year window and those received in the remaining years, showing a negative

relationship between the two series (r=-0.643, p<0.001). Similarly, the *t*-test of differences between the two series shows a clearly significant difference between the two citation series (*t*=21.808, p<0.001). These results support H_2.

4.2. Descriptive analysis of the concentration of bibliometric articles

We can observe an asymmetrical distribution of citations, remarkable for both the total citation counts and citation counts of each article normalised by year, with skewness coefficients of 4.360 and 2.920, respectively.

Table 4
Distribution of journals by bibliometric articles

Type/No.	Journal	N	Q (by citations)
	Core Journals		
1	Journal of Business Research	81	1
2	Technological Forecasting and Social Change	42	1
3	International Journal of Contemporary Hospitality Management	21	1
4	Journal of Business & Industrial Marketing	16	1
5	Journal of Knowledge Management	14	1
6	Industrial Marketing Management	14	1
7	Research in International Business and Finance	13	1
	Total number of publications in core journals	*201*	
8-9	2 Journals with 13 entries	39	2
10	1 Journal with 12 entries	12	2
11-13	3 Journals with 11 entries	33	2
14-16	3 Journals with 9 entries	27	2
17-21	5 Journals with 8 entries	40	2
22-29	8 Journals with 7 entries	49	2
30-39	10 Journals with 6 entries	60	2-3
40-46	7 Journals with 5 entries	35	3
47-64	18 Journals with 4 entries	72	3
65-95	31 Journals with 3 entries	93	3-4
96-142	47 Journals with 2 entries	94	4
143-228	86 Journals with 1 entry	86	4
	Total	*835*	

Concerning the distribution of journals, these have been grouped in quantiles according to the intensity (i.e. frequency) of published bibliometric articles (see Table 4). The main journals located in the first group are identified together with the total publications of the other groups. According to Brooks (1985), the number of publications in core journals is expected to be the same as the number of publications in closely related journals. Core journals are where most

articles of a research tool are published (Beske-Janssen et al., 2015). In total, 228 journals listed in the WoS had published bibliometric articles by the end of 2022, of which most journals (133) had only one or two papers on the topic, 80 journals range between 3 to 9 bibliometric articles, and only 10 outlets have published 12 or more papers. Specifically, the top seven journals (first quantile), *Journal of Business Research, Technological Forecasting and Social Change, International Journal of Contemporary Hospitality Management, Journal of Business & Industrial Marketing, Journal of Knowledge Management, Industrial Marketing Management, and Research in International Business and Finance*, can be considered the core journals publishing bibliometric works. They contributed 24.07 percent of all publications with 201 of the 835 papers. The next quantile (24 related journals, numbers 8 to 32) produced 212 of the 835 papers (25.39%). In the following 52 journals (number 33 to 84) 209 papers (25.03%) were published. The remaining quantile with 144 journals (numbers 85 to 228) contributed 213 papers (25.51%).

Concerning the distribution of the number of articles by author (Table 5), most of the authors analysed (94.14%) have between one and two bibliometric articles in management, and only 1.09% of the authors have six or more articles.

Table 5
Distribution of number of articles by authors

Number of articles by author	Number of authors	% of authors
Authors with 16 articles	2	0.10
Authors with 12 articles	1	0.05
Authors with 11 articles	1	0.05
Authors with 10 articles	3	0.15
Authors with 9 articles	4	0.20
Authors with 8 articles	3	0.15
Authors with 7 articles	5	0.25
Authors with 6 articles	3	0.15
Authors with 5 articles	14	0.70
Authors with 4 articles	19	0.94
Authors with 3 articles	63	3.13
Authors with 2 articles	222	11.02
Authors with 1 article	1674	83.12
Total	*2,014*	*100.00*

These data show that there are a few authors who have specialised in the application of bibliometric techniques in the analysed field, while most have only a presence. These results are not contradictory to those obtained by Beske-Janssen et al. (2015) who establish that the progress of scientific disciplines is usually strongly influenced by key authors.

Concerning variables related to authorship, most articles are co-authored by authors from the same discipline (83.11%), with a limited participation of cross-discipline authors (16.89%) (Table 6).

Table 6
Distribution of the number of articles by author's discipline

Heterogenity level	Number of articles (N = 835)	Articles (%)
Authors working alone	59	7.07
Authors in the same research disciplines	635	76.05
Authors from two research disciplines	132	15.81
Authors from three research disciplines	8	0.96
Authors from four research disciplines	1	0.12

Concerning the participation of authors from different countries, although most of the articles are written by authors from the same country (55.45%), there is a relevant proportion of papers with authors from different countries (44.55%) (Table 7).

Table 7
Distribution of articles based on the intensity of cosmopolitism

Cosmopolitism intensity	Number of articles (N = 835)	Articles (%)
Authors working alone	59	7.07
Authors from one country	404	48.38
Authors from two countries	257	30.78
Authors from three countries	83	9.94
Authors from four countries	26	3.11
Authors from five countries	6	0.72

4.3. Distribution of concentration of bibliometric articles: Lorenz curve and Gini coefficient analysis

A first analysis of the distribution of the total number of articles per year (N_t) reveals that it is asymmetrical and right-skewed, with a skewness coefficient of 3.010, and a high concentration, as revealed by a kurtosis coefficient of 8.809. 30% of the bibliometric articles account for 80% of the total citations.

Based on this fact, to assess the hypotheses relating to the concentration of published bibliometric articles, we used the Gini coefficient (G), derived from the Lorenz curve (L). The Lorenz curve is a traditional function used to describe income inequalities (Atkinson, 1970; Chotikapanich, 2008). It is an improvement over simple cumulative percentage statements, as no arbitrary cut-off percentages are to be chosen, being independent of the mean. However, it has also been used in other fields to analyse inequalities, being an excellent approach to measure the concentration of any phenomenon (e.g., Bernasco & Steenbeek, 2017; Teng et al., 2011).

Considering the experience of the Lorenz curve and the G coefficient as a yardstick to find the degree of (in)equality in a population, it could be an interesting tool with which to analyse bibliometric problems as it can account for the distribution of any type of article across outlets (or authors). In particular, the Lorenz curve can explain the inequality of citations by studying whether the relationship between the number of publications and the different numbers of citations is similar. That is, to what extent the citations are distributed similarly between the various articles, or, on the contrary, whether there is a concentration in a certain number of articles.

However, it has been scarcely used in bibliometrics or, fundamentally, with a descriptive or comparative object (e.g., Aysan et al., 2021; Bu et al., 2021; Huang et al., 2012). The only studies that use G for publication concentration analysis are Hart and Perlis (2021) who use G to describe the distribution of authorship in medical journals, Chien et al. (2018) to study the author research domains in Medicine, and Bu et al. (2021) to measure the equality between citations and publications.

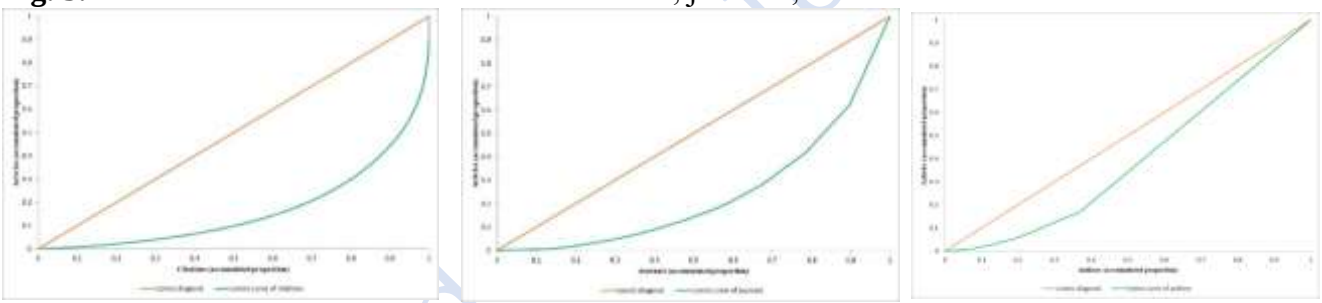
Formally defined by Gastwirth (1971), let π be the cumulative share of bibliometric articles published in the cumulative share x of the unit of units in the type of bibliometric concentration (that is, citations / journals / articles), where $L(\pi)$ is the density function of the variable in the measure to the type of bibliometric concentration, with mean μ. Then, the cumulative share of

articles published with a cumulative share of citations/journals/authors less than or equal to π, with f(x) the distribution function of the published articles, is:

$$L(\pi) = \mu^{-1} \int_0^{\pi} f(x)dx \quad [1]$$

Analytically, L is a decreasing cumulative distribution, defined in the interval [0, 1] and is an increasing, convex, continuous curve. An interesting property is its relative inequality, independent of the mean. It is interpreted by linking the cumulative percentages of articles on the vertical axis against the cumulative percentages of citations/journals/authors on the horizontal axis, ordering the units from high to low[3]. Fig. 3 shows the L curves for the three concentration levels.

Fig. 3. Lorenz curves for the distributions of articles, journals, and authors' concentration



The G coefficient is derived from the Lorenz curve and ranges between 0 and 1, where higher values express a higher level of inequality among values. The G-coefficient can be defined in many different forms for both discrete and continuous distributions (Yitzhaki & Schechtman, 2013). It is classically defined as being twice the area between the egalitarian line (45°) and the Lorenz curve:

$$G = 1 - 2 \int_0^1 L(\pi)d\pi \quad [2]$$

Consequently, the nearer the Lorenz curve is to the egalitarian line, the lower the concentration will be.

[3] This order is just for the curve can be directly read as "Y percent of articles correspond to X percent most targeted journals/authors".

Although the G coefficient has been widely used to describe concentration problems, its statistical significance is complex or unreliable, as it is associated with sampling distributions and the complexity of the calculation of its standard error (Langel & Tillé, 2013). Furthermore, this coefficient can be problematic if the *y variable* outnumbers the *x variable* (Bernasco & Steenbeek, 2017). Davidson (2009) proposed a procedure to compute a free-bias G coefficient and an asymptotically correct standard error. In summary, the resulting G coefficient is defined as:

$$\widehat{\mathrm{G}} = \frac{2}{\hat{\mu}} \int_0^{\infty} \pi \hat{\mathrm{L}}(\pi) \mathrm{d}\hat{\mathrm{L}}(\pi) \quad [3]$$

The bias-corrected estimator of G is computed as

$$\widetilde{\mathrm{G}} \equiv \frac{\mathrm{n}\widehat{\mathrm{G}}}{\mathrm{n}-1} \qquad [4]$$

Also, considering $\widetilde{Z}_{\iota} = -(\widetilde{\mathrm{G}} + 1)\pi_{\mathrm{i}} + \frac{2i-1}{n}\pi_i - \frac{2}{n} 2 \sum_{j=1}^{i} \pi_j$ [5], where i=1..n, are the order statistics. Then, the variance of G is computed as:

$$\widehat{\mathrm{Var}}(\widehat{\mathrm{G}}) = \frac{1}{(\mathrm{n}\hat{\mu})^2} \sum_{\mathrm{i}=1}^{\mathrm{n}} (\hat{\mathrm{Z}}_{\mathrm{i}} - \overline{\mathrm{Z}})^2 \quad [6]$$

Table 8 shows the estimations of the G coefficient, standard deviation, and confidence intervals for each concentration case.

Table 8
Estimates of the interpolations of Lorenz curve and the Gini index of bibliometrics articles per type

Type of concentration	$\widehat{\mathbf{G}}$	$\widetilde{\mathbf{G}}$	$\mathbf{SE}(\widetilde{\mathbf{G}})$	Confidence Intervals
Citation received	0.5603[4]	0.5609	0.03367	[0.5272, 0.5946]
Journals publishing	0.2869	0.2881	0.05879	[0.2293, 0.3469]
Authorship	0.0686	0.0687	0.01105	[0.0577, 0.0798]

[4] As suggested by a reviewer, the G index was also estimated disaggregated for each WoS category of the WoS, that is, management, business, economics, and business finance, producing values that indicate a high concentration in the first three, and relative concentration in the last one. We sincerely thank the reviewer for this suggestion.

For validation purposes, we estimate G performing both non-parametric computing ($\overline{G}$) and an estimation of a direct form of the Lorenz curve ($\widehat{G}'$) (Maasoumi, 2008; Sarabia, 2008) based on fitting bibliometric publication data (Table 9). Estimated by least squares, quadratic interpolation ($\widehat{G}'$) has been assessed to fit the data. Our estimations of L are detailed in Table 9 for the different types of concentrations performed. Furthermore, the Lorenz curves satisfy $L(\pi) \in [0, 1]$. In all three cases of concentration of bibliometric articles (i.e., in a subset of articles, in journals and in authors), approximations are similar, confirming the validity of the values obtained.

Table 9
Estimates of quadratic interpolations of the Lorenz curve and Gini index of the concentration of bibliometric articles per type

Type of concentration	Quadratic parameters estimation (a, b, c)	F change to linear model	$\widehat{G}'$	$\widetilde{G}$	$\overline{G}$
Citation received	a=0.319***	4030.045***	0.6247	0.5609	0.5603
	b=-1.708***				
	c=2.168***				
Journals publishing	a=0.252***	11530.77***	0.4747	0.2881	0.2869
	b=-1.290***				
	c=1.967***				
Authorship	a=-0.086**	268117.2***	0.2263	0.0687	0.0686
	b=0.607**				
	c=0.508**				

Although the results of the values obtained from the direct form of the Lorenz curve are slightly higher, the different estimates of the G coefficients support the values obtained. Once the confidence intervals for the $\widetilde{G}$ and $\overline{G}$ are validated, to interpret values, we base our interpretations at the standards generally adopted in bibliometric studies (e.g., Aysan et al., 2021), or by the United Nations. A Gini index < 0.2 represents perfect equality, 0.2-0.3 relative equality, 0.3-0.4 adequate equality, 0.4-0.5 large gap, and above 0.5 represents a severe gap. The threshold is set at 0.4 (Chien et al., 2018), or at an even more conservative value of 0.5 (Tao et al., 2014). G values of 0.5603 for the concentration of citations received support from H_3. For the case of journal concentration, a G index of 0.2869 provides just partial support for H_4. However, a low 0.0686 G value for the authorship concentration does not refute H_5.

4.4. Regression and negative binomial analyses

To test hypotheses H_6-H_{11}, related to the effects of quality-related citation drivers, we estimated several regression analyses on different indicators of citations. To ensure greater validity for the estimations, several alternative models were considered, namely, a regression model on the citation count (C_{it}), a regression on the normalised citation count (NC_i), a semi-logarithmic model (LnCit), and a negative binomial model (Donthu et al., 2023).

$$C_{it} \,/\, NC_{it}/LnC_{it} = \alpha + \beta_1 Bibliometric\_publish_t + \beta_2 JourQual_i + \beta_3 Synthesis_i + \beta_4 Sophistication_i + \beta_5 Framework_i + \beta_6 Cosmopolitism_i \quad [7]$$

Table 10
Regression estimations for bibliometric impact based on citations (standardised)

Independent variable (parameter)	*Total citation counts*	*Normalized citation*	*Semi-logarithmic model*	*Negative binomial model*
Intercept β_0	62.683***	0.705***	3.608***	4.241***
Volume of bibliometric articles published (β_1)	-0.652***	-0.988***	-0.991***	-0.024***
Journal quality (β_2)	0.158***	0.372***	0.374***	0.193***
Synthesis of research opportunities (β_3)	0.122***	0.041*	0.042*	0.133
Methodological sophistication (β_4)	0.063**	0.106***	0.105***	0.151***
Conceptual framework (β_5)	0.030	0.004	0.009	0.057
Cosmopolitism (β_6)	0.076**	0.106***	0.092***	0.179***

***p<0.01
**p<0.05
*p<0.1

Estimates obtained using models provided quite similar estimates (Table 10). The fits of the models are satisfactory. The R^2 coefficients for the OLS regression models yielded values of 0.280, 0.596, and 0.597, respectively, and the negative binomial model yielded a significant model contrast, with a χ^2-value of 978.013 ($p<0.001$). It is noteworthy that the results with normalised citations and the semi-logarithmic model are practically the same. The volume of bibliometric articles published each year has a negative effect on the number of citations ($\beta_1<0$, $p<0.001$), confirming H_6. H_7 is also confirmed because the quality of the journal exerts a positive effect on the citation ($\beta_2>0$, $p<0.001$). Regarding the inclusion of a synthesis of research opportunities and the methodological sophistication of the article, these positively

influence the citation in all models ($\beta_3>0$, $p<0.01$ with CT and $\beta_3>0$, $p<0.1$ with NC and LnCT), except for the negative binomial model supporting H_8. H_9 is also confirmed for all models ($\beta_4>0$). H_{11} is also confirmed, as cosmopolitanism significantly influences the citation ($\beta_6>0$). However, the citation of bibliometric articles is not significantly influenced by the inclusion of a conceptual framework in the article (H_{10}; $\beta_5=0$, p=n.s.). Table 11 summarises the results of the hypotheses testing related to the publication of bibliometric articles.

Table 11
Summary of results for hypotheses related to different facets of the publication of a bibliometric article

Hypothesis	*Result*
H_1. Accumulation of scientific knowledge → Bibliometric article volume	Supported
H_2. Evolution of the citation timeliness → Scholarly impact	Supported
H_3. Small proportion of article → High proportion of scholarly impact	Supported
H_4. Small proportion of journals → High proportion of scholarly impact	Partially supported
H_5. Proportion of authors → Proportion of articles	Supported
H_6. Bibliometric articles volume → Scholarly impact	Supported
H_7. Scholarly impact → Journal quality	Supported
H_8. Research suggestion → Scholarly impact	Supported
H_9. Methodological sophistication → Scholarly impact	Supported
H_{10}. Development of conceptual framework → Scholarly impact	Not supported
H_{11}. Collaboration cosmopolitanism → Scholarly impact	Supported

5. Conclusions, discussion and implications

Based on different views on theory building and research publishing, we examined all 835 bibliometric articles contained in the Social Sciences Citation Index of the WoS database from 1981 to 2022. Our examination aims to extend previous methodological contributions regarding bibliometric analysis (Mukherjee et al., 2022), from a pragmatic but also philosophical approach, providing conclusions about debates, production drivers and impact.

Business fields coexist with a wide diversity of paradigms, views, theories, concepts and methods that often generate conflicting discussions. Two main debates emerge on the role and value of bibliometric reviews in scholarly research. Adopting a dialectical perspective, the first debate raises the issue of incrementalism versus innovation in a manuscript, addressing a critical

reason of scholarly publication such as the contribution to theoretical development and novelty in a manuscript. Top-tier journals seek to publish imaginative and revolutionary contributions based on new theories and approaches -Straub (2009) labels it as "Blue Ocean Ideas" based on the well-known Kim & Maubourgne's concept (2007). Some authors argue that while bibliometric analyses offer comprehensive overviews of existing literature, their capacity to pioneer new theoretical ground is often questioned. The limiting arguments of the bibliometric review are articulated around the fact that the understanding of the field is from prior theory and already established research ideas (Tellis, 2017), abounding in (over-)description rather than exploration (Post et al., 2020), or the over-emphasis on "gap spotting" for theory building (Alvesson & Sandberg, 2011). It is worth noting that although there are sometimes revolutionary breakthroughs of great impact (e.g., a grand theory), they are not the norm in theory development. Rather, what often occurs is a systematic process of theory building that involves understanding existing knowledge and identifying overlooked issues (Makadok et al., 2018). Thus, it is widely accepted that the review of received literature can be applied to new phenomena and new questions – what Barney (2017) calls "normal science". This does not preclude there also being a need for "revolutionary science" that replaces existing assumptions. Both types of science can produce important and creative works, and uninteresting or unfeasible outputs. Thus, while these critiques hold merit, bibliometric analyses have a distinct place in the academic ecosystem.

A second key debate is on the role of theorising in bibliometric reviews, a prerequisite for publication in top business journals. It has been argued that bibliometric reviews based solely on quantitative measures or visualisations showing relationships between different scientific concepts do not meet the criteria for publication (Jones & Gatrell, 2014; Post et al., 2020). However, other scholars advocate the need to value the indicators provided as they can serve as the basis for new theoretical frameworks or hypotheses (Mukherjee et al., 2022). A lack of

understanding of the theorisation process may underlie these opposing positions. Thus, Breslin & Gatrell's (2020) miner-prospector continuum offers itself to a range of review strategies along the exploitation-exploration knowledge continuum for theory building. For example, the study developed by Bargoni et al., (2023) explore the interconnected areas of family business characteristics and consumer behaviour. After synthesizing the results of various bibliometric techniques (co-citation and content analysis), they developed an innovative conceptual framework to analyze the concept of familiarity from a dual perspective. Another example is Daniel et al. (2022), who carried out a bibliometric review of management-related mindfulness articles. After highlighting research streams, they traced how they had evolved, identified themes and revealed research trends. Relying on bibliometrics, they provide an integration of mindfulness dimensions, processes and development. These are fundamental underpinnings of a conceptual contribution.

The empirical analysis carried out and the tested hypotheses provide several conclusions of a methodological, scientometric and theoretical building nature. First, we have observed a logistic diffusion pattern with an asymptotic growth rate, boosted by methodological, technical, and also academic factors, supporting the view that practices are retained by a combination of performance and legitimacy gains (Mol et al., 2019). Although the distribution of citations received tends to be concentrated in a minority of articles, the citations received have nevertheless become a relevant moderator of their evolution. Our finding on the progressively increasing citation rate received by a bibliometric article during its initial time window is in line with Newman's (2009) evidence that first papers on a topic receive citations at a much higher rate than articles published later. The existence of a ‘first-mover’ advantage is confirmed in terms of early citations. However, the prospect suggested by Newman (2009) that this advantage will be preserved in the long term has to be discarded. In contrast, bibliometric articles exhibit a declining citation pattern over time. This short-term effect may be considered

a positive spillover of the expansion of bibliometric articles and could fuel the publication of more bibliometric-type works. Indeed, we have confirmed how the scholarly impact of bibliometric articles is unevenly distributed, being concentrated in a reduced number of articles and, to a lesser extent, journals.

The concentration of publications in certain journals is also relevant, which supports the existence of diverse editorial policies on the part of management journals concerning bibliometric articles, although with strong support for this type of article from certain journals. Although no significant concentrations of authorship are found, in addition to the geographical spreading of authors, a small minority are found to be heavily involved in the production of bibliometric works, along with a long list of authors with only one or two papers. The key authors in the publication of bibliometric articles have concentrated in recent years. Our concentration analysis supports the idea that scientific progress in the management field is driven by a long-tailed pattern, a combination of Newton and Ortega hypotheses. Regarding the size of the author, while the average number of authors in bibliometric articles on management was 2.82 in 2013, it had increased to 3.51 by 2022. This increased collaborative cosmopolitism behaviour is the result of the establishment of research groups and increasing interactions among a growing number of authors (Beske-Janssen et al., 2015). At the article level, we find support for methodological sophistication, in agreement with previous works showing that sophistication is a fundamental attribute of the review process and for scholarly impact (Ashkanasy, 2016; Ellison, 2002; Lehmann et al., 2011; Stewart & Ladik, 2019). However, the development of theoretical frameworks is not considered relevant for their scholarly impact. This may position bibliometric work on a different level in terms of its value for theory building.

This study allows us to draw several implications for different target audiences. Several considerations emerge on the orientation, design, and analysis of bibliographic research for *academics and authors*, and several methodological implications emerge. From the call by

Blümel & Schniedermann (2020), for a better understanding of who writes bibliometrics papers, we detect the positive impact of interdisciplinarity and collaboration with other researchers, as well as the opportunity for new papers. Bibliometric tools are invaluable for analysing research performance and objectively understanding the structure and dynamics of scholarly knowledge (Lim et al., 2024; Mukherjee et al., 2022) with their ability to dive into large databases being a notable asset or strength. However, they may require others to synthesize, interpret, and evaluate the accumulated state of knowledge (Jones & Gatrell, 2014; Post et al., 2020) that does not satisfy the condition of sufficiency. Expectations of further interpretation and understanding of the revised theory could underpin the reflection that the pursuit of research opportunities can be moving away from prevalence research ("boxed-in research") towards novel ideas (Alvesson & Sandberg, 2014). To this end, we foster the adoption of rigorous standards and guidelines (see e.g., Donthu et al., 2021; Mukherjee et al., 2022) and the combined use of bibliometric tools with others that go deeper into the interpretation and explanation of the findings (mixed-method approach), extending the type of reasoning used to other types of reasoning such as heuristic, causal reasoning, constitutive reasoning, or counterfactual (cf. Cornelissen & Durand, 2014). In the case of *industry professionals*, one of the most interesting aspects of bibliometric works is that they can be timely representations of their field, which can be an attractive update for non-academics.

With regard to implications for *editors and reviewers*, several appear on the horizon. Firstly, as is happening in other fields with a greater bibliometric tradition such as medicine (e.g., Lunny et al., 2022), the debate on the advisability of publishing articles that involve an accumulation of analyses on the same topic represents a potential challenge for management journals. Although review articles have the benefit of providing a more comprehensive overview of the topic and more definitive conclusions, they present the risk of overdirecting authors to this type of work to the detriment of original research articles (Miranda and Garcia-

Carpintero, 2018). Depending on the aims and topics of a journal and to maintain an adequate balance of articles, editors can evaluate the frequency and guidelines of bibliometric papers or establish priorities or an agenda of topics to be reviewed. Second, the contribution of the bibliometric paper can depend on the state of the field. As Mukherjee et al. (2022) advocate, bibliometric research presents specific aspects within the set of factors for the evaluation of a conceptual paper. Third, meeting the expectations of bibliometric work with more interpretative, qualitative, and sophisticated review methodologies (Cornelissen, 2017), which go beyond descriptive analysis (Alegre et al., 2023; Jones & Gatrell, 2014), is a challenge for editorial policies and the review and acceptance of manuscripts. The availability of detailed evaluation guidelines in line with the journal's editorial policy may help in this challenge. Finally, though the citation patterns of articles are very varied (cf. Zhou et al., 2020) - with articles even in top journals receiving few citations, the existence of a very high number of bibliometric publications with low impact is a potential threat to the ranking of the journal.

Eventually, two different implications can be detected. On the one hand, bibliometrics enables the detection of new research trends, setting priorities, and serving as recognition heuristics of the extant literature. The synthesis provided by bibliometric studies on accumulated knowledge allows it to play the role of a source to simplify the information search process. In other words, bibliometrics provide information to research bodies and funding agencies, in addition to monitoring research performance. Table 12 summarises the main findings, implications and recommendations of the analysis carried out.

Table 12
Summary of findings, implications and recommendations

Findings	Implications and recommendations
Asymptotic growth supported by bibliometric resource availability and continuous knowledge production. Globalisation of authorship of international publications.	Business theorists can assess whether it is a fashion or the natural diffusion of a methodology. Citing behaviour can influence the way of doing research. Widespread use of similar research methods (normal science) can foster Darwinian behaviour in publishing.

As the volume of published bibliometric articles increases, their impact becomes more concentrated in the time window immediately after publication, with impact decreasing thereafter. The short-term value of the bibliometric article (cutting-edge research) is reinforced at the expense of the long-term extended impact (full impact).	The performance of bibliometric articles has evolved from a more homogeneous and stable impact over time to a more short-term functionality to detect research fronts and emerging trends (first-mover advantage).
The heuristic recognition (i.e., quantile) favours highly cited articles. The scholarly impact is skewed. Citation is prone to concentrate in a minority of bibliometric articles, resembling a long-tail distribution.	Authors can implement recent improvements and advances in bibliometric methods (e.g., Calof et al., 2022; Lim et al., 2024) to improve their positioning for top journals. Journals can facilitate bibliometrics as recognition heuristics to facilitate the dissemination and impact of their articles, especially those that are less cited.
There are differences between journals in terms of the number of articles published. Bibliometric articles are relatively concentrated in certain journals.	Editorial policies in business lead to certain journals being more likely to publish bibliometric reviews than others. Editors may suggest directions to publish bibliometric manuscript (e.g., Alegre et al., 2023). The accumulated experience and methodological improvements allow editors to have a more definite position as to whether a bibliometric article fits the journal.
Despite the fact that some authors are particularly prolific in bibliometric production (elitist view), the publication is spread across a wide range of authors, supporting a non-elitist view.	The authors may consider bibliometric analysis techniques as a standard step in a literature review (see Alegre et al., 2023; Donthu et al., 2021).
The upward trend in bibliometric publications has been paralleled by a reduction in their individual impact.	Diversification of topics and concepts to investigate can help balance the impact of bibliometric papers.
There is a positive relationship between journal quality index and the article impact. Authors may be guided by the quality of the journal in their choice of an outlet for the article.	Editors can introduce guidelines for review and publication of a bibliometric paper.
The exhaustive nature of bibliometric work constitutes a heuristic for the recognition of the existing literature, facilitating the understanding of previous contributions can be a strength of bibliometric work. Incorporating research suggestions from previous reviews increases the likelihood of citation.	The authors appreciate the analysis of previous research proposals. It is a valuable facet of content. Research bodies and funding agencies can benefit from the identification of research priorities and funding programmes. Quality agencies can monitor research performance.
Bibliometrics can link to theoretical development by identifying gaps, tensions, syntheses and directions. The inclusion of a synthesis of the research opportunities has a positive effect on the impact of the article.	Identifying research gaps and directions can become a standard task of a bibliometric paper, thus connecting to theory development.
Uncovering unknown and non-obvious relationships between concepts and/or authors	The articles should contain advanced techniques and methodologies that combine bibliometric

may require the use of complex and sophisticated analytical techniques. This methodological sophistication is a potential source of citation.	techniques with other quantitative and interpretative tools (e.g., Structural Topic Modelling, Advanced Community Detection Algorithm).
Interdisciplinary and collaborative work between different disciplines and research centres are conducive to publication.	Bibliometric articles can be an example of interdisciplinary collaboration. Policymakers can detect implicit collaborative networks in bibliometric work and leverage them in their programmes.

As future research lines, management theorists may evaluate whether the popularisation of bibliometrics is a fashionable practice or rather the normal diffusion of a methodology. Determining the adoption behaviours of publishing behaviours may be relevant for assessing knowledge production. Another suggested line of research is to analyse the possible downturn in certain fields, such as economics, in which there has been a decline in the number of bibliometric studies in recent years. In addition, advances in machine learning and artificial intelligence open up new scenarios that are desirable to evaluate.

As a limitation, note that the paper does not provide evidence of the evolution of citations of the articles covered by the bibliometric article. Furthermore, the paper only shows the occurrence of a concentration of citations in a limited number of articles, but does not explicitly address the causes of this concentration. Thus, these questions are now being considered as future lines of research. Additionally, other perspectives and stakeholders on theory building, publishing, and citation drivers also deserve to be investigated to provide a broader picture in accordance with previous methodological and scientometric studies (Donthu et al., 2023; Mingers & Xu, 2010). Finally, impact is limited to citations when other levels of scientific impact also exist.

References

Abrahamson, E. (1991). Managerial Fads and Fashions: The Diffusion and Rejection of Innovations. *Academy of Management Review*, *16*(3), 586–612. https://doi.org/10.5465/AMR.1991.4279484

Abrahamson, E. (1996). Management Fashion. *Academy of Management Review*, *21*(1), 254–285. https://doi.org/10.5465/AMR.1996.9602161572

Abramo, G. (2018). Revisiting the scientometric conceptualization of impact and its measurement. *Journal of Informetrics*, *12*(3), 590–597. https://doi.org/10.1016/J.JOI.2018.05.001

Aguinis, H., Cummings, C., Ramani, R. S., & Cummings, T. G. (2020). "An A Is An A": The New Bottom Line For Valuing Academic Research. *Academy of Management Perspectives*, *34*(1), 135–154. https://doi.org/10.5465/amp.2017.0193

Alegre, J., Callahan, J., & Iszatt-White, M. (2023). Innovative conceptual contributions—Raising the game for theory-driven reviews. *International Journal of Management Reviews*, *25*(2), 233–239. https://doi.org/10.1111/IJMR.12333

Alvesson, M., & Sandberg, J. (2011). Generating Research Questions Through Problematization. *Academy of Management Review*, *36*(2), 247–271. https://doi.org/10.5465/AMR.2009.0188

Alvesson, M., & Sandberg, J. (2013). Has Management Studies Lost Its Way? Ideas for More Imaginative and Innovative Research. *Journal of Management Studies*, *50*(1), 128–152. https://doi.org/10.1111/J.1467-6486.2012.01070.X

Alvesson, M., & Sandberg, J. (2014). Habitat and Habitus: Boxed-in versus Box-Breaking Research. *Organization Studies*, *35*(7), 967–987. https://doi.org/10.1177/0170840614530916

Ashkanasy, N. M. (2016). Why we need theory in the organization sciences. *Journal of Organizational Behavior*, *37*(8), 1126–1131. https://doi.org/10.1002/JOB.2113

Atkinson, A. (1970). On the measurement of inequality. *Journal of Economic Theory*, *2*(3), 244–263. https://doi.org/10.1007/s10158-003-0022-4

Aysan, A. F., Bedir, H., Demirta¸s, D., & Saraç, M. (2021). The Ascent of Bitcoin: Bibliometric Analysis of Bitcoin Research. *Journal of Risk and Financial Management*, *14*(9), 427. https://doi.org/10.3390/JRFM14090427

Bargoni, A., Alon, I., & Ferraris, A. (2023). A systematic review of family business and consumer behaviour. *Journal of Business Research*, *158*, 113698. https://doi.org/10.1016/J.JBUSRES.2023.113698

Barney, J. (2017). Editor's Comments: Theory Contributions and the AMR Review Process. *Academy of Management Review*, *43*(1), 1–4. https://doi.org/10.5465/AMR.2017.0540

Baumgartner, H., & Pieters, R. (2003). The structural influence of marketing journals: A citation analysis of the discipline and its subareas over time. *Journal of Marketing*, *67*(2), 123–139. https://doi.org/10.1509/JMKG.67.2.123.18610

Benders, J., & Van Veen, K. (2001). What's in a Fashion? Interpretative Viability and Management Fashions. *Organization*, *8*(1), 33–53. https://doi.org/10.1177/135050840181003

Bernasco, W., & Steenbeek, W. (2017). More Places than Crimes: Implications for Evaluating the Law of Crime Concentration at Place. *Journal of Quantitative Criminology*, *33*(3), 451–467. https://doi.org/10.1007/S10940-016-9324-7/

Beske-Janssen, P., Johnson, M. P., & Schaltegger, S. (2015). 20 years of performance measurement in sustainable supply chain management – what has been achieved? *Supply Chain Management: An International Journal*, *20*(6), 664–680. https://doi.org/10.1108/SCM-06-2015-0216

Birkinshaw, J., Healey, M. P., Suddaby, R., & Weber, K. (2014). Debating the Future of Management Research. *Journal of Management Studies*, *51*(1), 38–55. https://doi.org/10.1111/JOMS.12061

Birkle, C., Pendlebury, D. A., Schnell, J., & Adams, J. (2020). Web of Science as a data source for research on scientific and scholarly activity. *Quantitative Science Studies*, *1*(1), 363–376. https://doi.org/10.1162/QSS_A_00018

Block, J. H., & Fisch, C. (2020). Eight tips and questions for your bibliographic study in business and management research. *Management Review Quarterly*, *70*(3), 307–312. https://doi.org/10.1007/S11301-020-00188-4

Blümel, C., & Schniedermann, A. (2020). Studying review articles in scientometrics and beyond: a research agenda. *Scientometrics*, *124*(1), 711–728. https://doi.org/10.1007/S11192-020-03431-7/METRICS

Bordons, M., Fernández, M. T., & Gómez, I. (2004). Advantages and limitations in the use of impact factor measures for the assessment of research performance. *Scientometrics*, *53*(2), 195–206. https://doi.org/10.1023/A:1014800407876

Bornmann, L., & Daniel, H. (2008). What do citation counts measure? A review of studies on citing behavior. *Journal of Documentation*, *64*(1), 45–80. https://doi.org/10.1108/00220410810844150

Bornmann, L., Leydesdorff, L., & Mutz, R. (2013). The use of percentiles and percentile rank classes in the analysis of bibliometric data: Opportunities and limits. *Journal of Informetrics*, *7*(1), 158–165. https://doi.org/10.1016/J.JOI.2012.10.001

Bornmann, L., & Mutz, R. (2015). Growth rates of modern science: A bibliometric analysis based on the number of publications and cited references. *Journal of the Association for Information Science and Technology*, *66*(11), 2215–2222. https://doi.org/10.1002/ASI.23329

Bort, S., & Kieser, A. (2011). Fashion in Organization Theory: An Empirical Analysis of the Diffusion of Theoretical Concepts. *Organization Studies*, *32*(5), 655–681. https://doi.org/10.1177/0170840611405427

Bozeman, B., & Corley, E. (2004). Scientists' collaboration strategies: implications for scientific and technical human capital. *Research Policy*, *33*(4), 599–616. https://doi.org/10.1016/J.RESPOL.2004.01.008

Breslin, D., & Bailey, K. (2020). Expanding the Conversation through 'Debate Essays' and 'Review Methodology' Papers. *International Journal of Management Reviews*, *22*(3), 219–221. https://doi.org/10.1111/IJMR.12234

Breslin, D., & Gatrell, C. (2023). Theorizing Through Literature Reviews: The Miner-Prospector Continuum. *Organizational Research Methods*, *26*(1), 139–167. https://doi.org/10.1177/1094428120943288

Brookes, B. C. (1985). “Sources of information on specific subjects” by S.C. Bradford. *Journal of Information Science*, *10*(4), 173–175. https://doi.org/10.1177/016555158501000406/

Bu, Y., Lu, W., Wu, Y., Chen, H., & Huang, Y. (2021). How wide is the citation impact of scientific publications? A cross-discipline and large-scale analysis. *Information Processing & Management*, *58*(1), 102429. https://doi.org/10.1016/J.IPM.2020.102429

Calof, J., Søilen, K. S., Klavans, R., Abdulkader, B., & Moudni, I. El. (2022). Understanding the structure, characteristics, and future of collective intelligence using local and global bibliometric analyses. *Technological Forecasting and Social Change*, *178*, 121561. https://doi.org/10.1016/J.TECHFORE.2022.121561

Chi, P. S. (2016). Differing disciplinary citation concentration patterns of book and journal literature? *Journal of Informetrics*, *10*(3), 814–829. https://doi.org/10.1016/J.JOI.2016.05.005

Chien, T. W., Chow, J. C., Chang, Y., & Chou, W. (2018). Applying Gini coefficient to evaluate the author research domains associated with the ordering of author names: A bibliometric study. *Medicine*, *97*(39). https://doi.org/10.1097/MD.0000000000012418

Chotikapanich, D. (2008). Modeling Income Distributions and Lorenz Curves. In *Modeling Income Distributions and Lorenz Curves*. Springer New York. https://doi.org/10.1007/978-0-387-72796-7

Cobo, M. J., López-Herrera, A. G., Herrera-Viedma, E., & Herrera, F. (2011). An approach for detecting, quantifying, and visualizing the evolution of a research field: A practical application to the Fuzzy Sets Theory field. *Journal of Informetrics*, *5*(1), 146–166. https://doi.org/10.1016/j.joi.2010.10.002

Cole, J. R., & Cole, S. (1972). The Ortega Hypothesis. *Science*, *178*(4059), 368–375. https://doi.org/10.1126/SCIENCE.178.4059.368

Cooke, F. L., Xiao, M., & Chen, Y. (2021). Still in search of strategic human resource management? A review and suggestions for future research with China as an example. *Human Resource Management*, *60*(1), 89–118. https://doi.org/10.1002/HRM.22029

Corley, K., & Gioia, D. (2011). Building Theory about Theory Building: What Constitutes a Theoretical Contribution? *Academy of Management Review*, *36*(1), 12–32. https://doi.org/10.5465/AMR.2009.0486

Cornelissen, J. P. (2017). Preserving Theoretical Divergence in Management Research: Why the Explanatory Potential of Qualitative Research Should Be Harnessed Rather than Suppressed. *Journal of Management Studies*, *54*(3), 368–383. https://doi.org/10.1111/JOMS.12210

Cornelissen, J. P., & Durand, R. (2014). Moving Forward: Developing Theoretical Contributions in Management Studies. *Journal of Management Studies*, *51*(6), 995–1022. https://doi.org/10.1111/JOMS.12078

Cozzens, S. E. (1985). Comparing the Sciences: Citation Context Analysis of Papers from Neuropharmacology and the Sociology of Science. *Social Studies of Science*, *15*(1), 127–153. https://doi.org/10.1177/030631285015001005

Cronin, M. A., & George, E. (2020). The Why and How of the Integrative Review. *Organizational Research Methods*, 109442812093550. https://doi.org/10.1177/1094428120935507

Daniel, C., Walsh, I., & Mesmer-Magnus, J. (2022). Mindfulness: Unpacking its three shades and illuminating integrative ways to understand the construct. *International Journal of Management Reviews*, *24*(4), 654–683. https://doi.org/10.1111/IJMR.12296

Davidson, R. (2009). Reliable inference for the Gini index. *Journal of Econometrics*, *150*(1), 30–40. https://doi.org/10.1016/J.JECONOM.2008.11.004

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*, 285–296. https://doi.org/10.1016/J.JBUSRES.2021.04.070

Donthu, N., Kumar, S., Sureka, R., Lim, W. M., & Pereira, V. (2023). Foundations of knowledge management: intellectual structure and citation drivers of the Journal of Knowledge Management. *Journal of Knowledge Management*, *27*(4), 953–974. https://doi.org/10.1108/JKM-02-2022-0094

Dougherty, M. R., Nguyen, R., & Illingworth, D. (2021). A memory-theoretic account of citation counts. *PsyArXiv*. https://doi.org/10.31234/OSF.IO/ZST69

Ellison, G. (2002). Evolving Standards for Academic Publishing: A q-r Theory. *Journal of Political Economy*, *110*(5), 994–1034. https://doi.org/10.1086/341871

Gastwirth, J. L. (1971). A General Definition of the Lorenz Curve. *Econometrica*, *39*(6), 1037. https://doi.org/10.2307/1909675

Goldstein, D. G., & Gigerenzer, G. (2002). Models of ecological rationality: The recognition heuristic. *Psychological Review*, *109*(1), 75–90. https://doi.org/10.1037/0033-295X.109.1.75

González-Alcaide, G. (2021). Bibliometric studies outside the information science and library science field: uncontainable or uncontrollable? *Scientometrics*, *126*(8), 6837–6870. https://doi.org/10.1007/s11192-021-04061-3

Hart, K. L., & Perlis, R. H. (2021). Authorship inequality: a bibliometric study of the concentration of authorship among a diminishing number of individuals in high-impact medical journals, 2008–2019. *BMJ Open*, *11*(1), e046002. https://doi.org/10.1136/BMJOPEN-2020-046002

Homer, S. T., & Lim, W. M. (2024). Theory development in a globalized world: Bridging "Doing as the Romans Do" with "Understanding Why the Romans Do It." *Global Business and Organizational Excellence*, *43*(3), 127–138. https://doi.org/10.1002/JOE.22234

Hoon, C., & Baluch, A. M. (2020). The Role of Dialectical Interrogation in Review Studies: Theorizing from What We See Rather Than What We Have Already Seen. *Journal of Management Studies*, *57*(6), 1246–1271. https://doi.org/10.1111/JOMS.12543

Huang, M. H., Chang, H. W., & Chen, D. Z. (2012). The trend of concentration in scientific research and technological innovation: A reduction of the predominant role of the U.S. in world research & technology. *Journal of Informetrics*, *6*(4), 457–468. https://doi.org/10.1016/J.JOI.2012.03.003

Hulland, J. (2020). Conceptual review papers: revisiting existing research to develop and refine theory. *AMS Review*, *10*(1–2), 27–35. https://doi.org/10.1007/s13162-020-00168-7

Hunter, P. (2013). The science of progress and the progress of science. *EMBO Reports*, *14*(7), 601–604. https://doi.org/10.1038/EMBOR.2013.83

Jaga, A., & Guetterman, T. C. (2021). The value of mixed methods work-family research for human resource management: a review and agenda. *The International Journal of Human Resource Management* . https://doi.org/10.1080/09585192.2021.1964092

Jones, O., & Gatrell, C. (2014). Editorial: The Future of Writing and Reviewing for IJMR. *International Journal of Management Reviews*, *16*(3), 249–264. https://doi.org/10.1111/IJMR.12038

Jung, J., Bozeman, B., & Gaughan, M. (2017). Impact of research collaboration cosmopolitanism on job satisfaction. *Research Policy*, *46*(10), 1863–1872. https://doi.org/10.1016/J.RESPOL.2017.09.003

Khor, K. A., & Yu, L.-G. (2016). Influence of international co-authorship on the research citation impact of young universities. *Scientometrics*, *107*(3), 1095–1110. https://doi.org/10.1007/s11192-016-1905-6

Kim, W. C., & Maubourgne, R. (2007). *Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant*. MA: Harvard Business School Press.

Köhler, T., & Cortina, J. M. (2021). Play It Again, Sam! An Analysis of Constructive Replication in the Organizational Sciences. *Journal of Management*, *47*(2), 488–518. https://doi.org/10.1177/0149206319843985

Kraus, S., Breier, M., Lim, W. M., Dabić, M., Kumar, S., Kanbach, D., Mukherjee, D., Corvello, V., Piñeiro-Chousa, J., Liguori, E., Palacios-Marqués, D., Schiavone, F., Ferraris, A., Fernandes, C., & Ferreira, J. J. (2022). Literature reviews as independent studies: guidelines for academic practice. *Review of Managerial Science*, *16*(8), 2577–2595. https://doi.org/10.1007/S11846-022-00588-8/

Kunisch, S., Menz, M., Bartunek, J. M., Cardinal, L. B., & Denyer, D. (2018). Feature Topic at Organizational Research Methods. *Organizational Research Methods*, *21*(3), 519–523. https://doi.org/10.1177/1094428118770750

Langel, M., & Tillé, Y. (2013). Variance estimation of the Gini index: revisiting a result several times published. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, *176*(2), 521–540. https://doi.org/10.1111/J.1467-985X.2012.01048.X

Lee, S., & Bozeman, B. (2005). The Impact of Research Collaboration on Scientific Productivity. *Social Studies of Science*, *35*(5), 673–702. https://doi.org/10.1177/0306312705052359

Lehmann, D. R., McAlister, L., & Staelin, R. (2011). Sophistication in Research in Marketing. *Journal of Marketing*, *75*(4), 155–165. https://doi.org/10.1509/jmkg.75.4.155

Leydesdorff, L., Wouters, P., & Bornmann, L. (2016). Professional and citizen bibliometrics: complementarities and ambivalences in the development and use of indicators—a state-of-the-art report. *Scientometrics*, *109*(3), 2129–2150. https://doi.org/10.1007/s11192-016-2150-8

Lim, W. M., & Kumar, S. (2024). Guidelines for interpreting the results of bibliometric analysis: A sensemaking approach. *Global Business and Organizational Excellence*, *43*(2), 17–26. https://doi.org/10.1002/JOE.22229

Lim, W. M., Kumar, S., & Ali, F. (2022). Advancing knowledge through literature reviews: 'what', 'why', and 'how to contribute.' *The Service Industries Journal*, *42*(7–8), 481–513. https://doi.org/10.1080/02642069.2022.2047941

Lim, W. M., Kumar, S., & Donthu, N. (2024). How to combine and clean bibliometric data and use bibliometric tools synergistically: Guidelines using metaverse research. *Journal of Business Research*, *182*, 114760. https://doi.org/10.1016/J.JBUSRES.2024.114760

Liu, W., Wang, Z., & Zhao, H. (2020). Comparative study of customer relationship management research from East Asia, North America and Europe: A bibliometric overview. *Electronic Markets*, 30, 735-757. https://doi.org/10.1007/s12525-020-00395-7

Lunny, C., Reid, E. K., Neelakant, T., Chen, A., Zhang, J. H., Shinger, G., Stevens, A., Tasnim, S., Sadeghipouya, S., Adams, S., Zheng, Y. W., Lin, L., Yang, P. H., Dosanjh, M., Ngsee, P., Ellis, U., Shea, B. J., & Wright, J. M. (2022). A new taxonomy was developed for overlap across "overviews of systematic reviews": A meta-research study of research waste. *Research Synthesis Methods*, *13*(3), 315–329. https://doi.org/10.1002/JRSM.1542

Maasoumi, E. (2008). Empirical Analyses of Inequality and Welfare. In *Handbook of Applied Econometrics* (Vol. 2, pp. 187–226). John Wiley & Sons, Ltd. https://doi.org/10.1111/B.9780631216339.1999.00006.X

MacInnis, D. J. (2011). A Framework for Conceptual Contributions in Marketing. *Journal of Marketing*, *75*(4), 136–154. https://doi.org/10.1509/jmkg.75.4.136

Makadok, R., Burton, R., & Barney, J. (2018). A practical guide for making theory contributions in strategic management. *Strategic Management Journal*, *39*(6), 1530–1545. https://doi.org/10.1002/SMJ.2789

Mela, C. F., Roos, J., & Deng, Y. (2013). A Keyword History of Marketing Science. *Marketing Science*, *32*(1), 8–18. https://doi.org/10.1287/MKSC.1120.0764

Merigó, J. M., & Yang, J. B. (2017). A bibliometric analysis of operations research and management science. *Omega*, *73*, 37–48. https://doi.org/10.1016/J.OMEGA.2016.12.004

Mingers, J., & Burrell, Q. L. (2006). Modeling citation behavior in Management Science journals. *Information Processing & Management*, *42*(6), 1451–1464. https://doi.org/10.1016/J.IPM.2006.03.012

Mingers, J., & Leydesdorff, L. (2015). A review of theory and practice in scientometrics. *European Journal of Operational Research*, *246*(1), 1–19. https://doi.org/10.1016/J.EJOR.2015.04.002

Mingers, J., & Xu, F. (2010). The drivers of citations in management science journals. *European Journal of Operational Research*, *205*(2), 422–430. https://doi.org/10.1016/J.EJOR.2009.12.008

Miranda, R., & Garcia-Carpintero, E. (2018). Overcitation and overrepresentation of review papers in the most cited papers. *Journal of Informetrics*, *12*(4), 1015–1030. https://doi.org/10.1016/J.JOI.2018.08.006

Mol, M., Birkinshaw, J., & Foss, N. J. (2019). The System of Management Ideas: origins, micro-foundations, and dynamics. In A. Sturdy, S. Heusinkveld, T. Reay, & D. Strang (Eds.), *The Oxford Handbook of Management Ideas* (pp. 24–41). Oxford University Press.

Moral-Muñoz, J. A., Herrera-Viedma, E., Santisteban-Espejo, A., & Cobo, M. J. (2020). Software tools for conducting bibliometric analysis in science: An up-to-date review. In *El Profesional de la Informacion* (Vol. 29, Issue 1, pp. 1699–2407). El Profesional de la Informacion. https://doi.org/10.3145/epi.2020.ene.03

Mukherjee, D., Lim, W. M., Kumar, S., & Donthu, N. (2022). Guidelines for advancing theory and practice through bibliometric research. *Journal of Business Research*, *148*, 101–115. https://doi.org/10.1016/J.JBUSRES.2022.04.042

Nederhof, A. J. (2006). Bibliometric monitoring of research performance in the Social Sciences and the Humanities: A Review. *Scientometrics*, *66*(1), 81–100. https://doi.org/10.1007/S11192-006-0007-2

Nerur, S. P., Rasheed, A. A., & Natarajan, V. (2008). The intellectual structure of the strategic management field: an author co-citation analysis. *Strategic Management Journal*, *29*(3), 319–336. https://doi.org/10.1002/SMJ.659

Newman, M. E. (2009). The first-mover advantage in scientific publication. *Europhysics Letters*, 86(6), 68001. https://doi.org/10.1209/0295-5075/86/68001

Nishikawa-Pacher, A. (2023). A typology of research discovery tools. *Journal of Information Science*, *49*(4), 1086–1095. https://doi.org/10.1177/01655515211040654

Parolo, P. D. B., Pan, R. K., Ghosh, R., Huberman, B. A., Kaski, K., & Fortunato, S. (2015). Attention decay in science. *Journal of Informetrics*, *9*(4), 734–745. https://doi.org/10.1016/J.JOI.2015.07.006

Piazza, A., & Abrahamson, E. (2020). Fads and Fashions in Management Practices: Taking Stock and Looking Forward. *International Journal of Management Reviews*, *22*(3), 264–286. https://doi.org/10.1111/IJMR.12225

Podsakoff, P. M., MacKenzie, S. B., Podsakoff, N. P., & Bachrach, D. G. (2008). Scholarly Influence in the Field of Management: A Bibliometric Analysis of the Determinants of University and Author Impact in the Management Literature in the Past Quarter Century. *Journal of Management*, *34*(4), 641–720. https://doi.org/10.1177/0149206308319533

Post, C., Sarala, R., Gatrell, C., & Prescott, J. E. (2020). Advancing Theory with Review Articles. *Journal of Management Studies*, *57*(2), 351–376. https://doi.org/10.1111/JOMS.12549

Ramos-Rodríguez, A.-R., & Ruiz-Navarro, J. (2004). Changes in the intellectual structure of strategic management research: a bibliometric study of the Strategic Management Journal, 1980–2000. *Strategic Management Journal*, *25*(10), 981–1004. https://doi.org/10.1002/SMJ.397

Rogers, E. M. (1983). *Diffusion of innovations* (2nd ed.). Free Press.

Rowley, J., Sbaffi, L., Sugden, M., & Gilbert, A. (2020). Factors influencing researchers' journal selection decisions. *Journal of Information Science*, *48*(3), 321–335. https://doi.org/10.1177/0165551520958591

Ruiz-Castillo, J., & Costas, R. (2018). Individual and field citation distributions in 29 broad scientific fields. *Journal of Informetrics*, *12*(3), 868–892. https://doi.org/10.1016/J.JOI.2018.07.002

Saha, B., Saint, S., & Christakis, D. A. (2003). Impact factor: a valid measure of journal quality? *Journal of the Medical Library Association*, *91*(1), 42. /pmc/articles/PMC141186/

Sánchez-Pérez, M., Terán-Yépez, E., Marín-Carrillo, M. B., & Rueda-López, N. (2021). 40 years of sharing economy research: An intellectual and cognitive structures analysis. *International Journal of Hospitality Management*, *94*, 102856. https://doi.org/10.1016/J.IJHM.2020.102856

Sarabia, J. M. (2008). Parametric Lorenz Curves: Models and Applications. In *Modeling Income Distributions and Lorenz Curves* (pp. 167–190). Springer, New York, NY. https://doi.org/10.1007/978-0-387-72796-7_9

Singh, Gangaram., Haddad, K. M., & Chow, C. W. (2007). Are Articles in "Top" Management Journals Necessarily of Higher Quality? *Journal of Management Inquiry*, *16*(4), 319–331. https://doi.org/10.1177/1056492607305894

Starbuck, W. H. (2009). The constant causes of never-ending faddishness in the behavioral and social sciences. *Scandinavian Journal of Management*, *25*(1), 108–116. https://doi.org/10.1016/J.SCAMAN.2008.11.005

Stewart, D., & Ladik, D. (2019). How to Get Published in the Best Marketing Journals. In *How to Get Published in the Best Marketing Journals*. Edward Elgar Publishing. https://doi.org/10.4337/9781788113700

Straub, D. (2009). Editor's Comments: Why Top Journals Accept Your Paper. *MIS Quarterly: Management Information Systems*, *33*(3). https://doi.org/10.2307/20650302

Stremersch, S., Verniers, I., & Verhoef, P. C. (2007). The Quest for Citations: Drivers of Article Impact. *Journal of Marketing*, *71*(3), 171–193. https://doi.org/10.1509/jmkg.71.3.171

Stremersch, S., Winer, R. S., & Camacho, N. (2021). Faculty Research Incentives and Business School Health: A New Perspective from and for Marketing. *Journal of Marketing*, *85*(5), 1–21. https://doi.org/10.1177/00222429211001050

Sudhir, K. (2016). The Exploration-Exploitation Tradeoff and Efficiency in Knowledge Production. *Marketing Science*, *35*(1), 1–9. https://doi.org/10.1287/MKSC.2015.0974

Symon, G., Cassell, C., & Johnson, P. (2018). Evaluative Practices in Qualitative Management Research: A Critical Review. *International Journal of Management Reviews*, *20*(1), 134–154. https://doi.org/10.1111/IJMR.12120

Tao, Y., Wu, X., & Li, C. (2014). Rawls' Fairness, Income Distribution and Alarming Level of Gini Coefficient. *ArXiv Preprint*. https://doi.org/10.48550/arxiv.1409.3979

Tellis, G. J. (2017). Interesting and impactful research: on phenomena, theory, and writing. *Journal of the Academy of Marketing Science*, *45*(1), 1–6. https://doi.org/10.1007/S11747-016-0499-0/

Teng, F., He, J., Pan, X., & Zhang, C. (2011). Metric of Carbon Equity: Carbon Gini Index Based on Historical Cumulative Emission per Capita. *Advances in Climate Change Research*, *2*(3), 134–140. https://doi.org/10.3724/SP.J.1248.2011.00134

Van Raan, A. F. (2004). Measuring science. In H. Moed, W. Glänzel, & U. Schmoch (Eds.), *Handbook of quantitative science and technology research: The use of publication and patent statistics in studies of S&T systems* (pp. 19–50). Kluwer Academic Publishers.

Wagner, G., Prester, J., Roche, M. P., Schryen, G., Benlian, A., Paré, G., & Templier, M. (2021). Which factors affect the scientific impact of review papers in IS research? A scientometric study. *Information & Management*, *58*(3), 103427. https://doi.org/10.1016/J.IM.2021.103427

Waltman, L. (2016). A review of the literature on citation impact indicators. *Journal of Informetrics*, *10*(2), 365–391. https://doi.org/10.1016/J.JOI.2016.02.007

Wang, J. (2013). Citation time window choice for research impact evaluation. *Scientometrics*, *94*(3), 851–872. https://doi.org/10.1007/s11192-012-0775-9

Warren, N. L., Farmer, M., Gu, T., & Warren, C. (2021). Marketing Ideas: How to Write Research Articles that Readers Understand and Cite. *Journal of Marketing*, *85*(5), 42–57. https://doi.org/10.1177/00222429211003560

Wijewickrema, M., & Petras, V. (2017). Journal selection criteria in an open access environment: A comparison between the medicine and social sciences. *Learned Publishing*, *30*(4), 289–300. https://doi.org/10.1002/LEAP.1113

Yadav, M. S. (2010). The Decline of Conceptual Articles and Implications for Knowledge Development. *Journal of Marketing*, *74*(1), 1–19. https://doi.org/10.1509/jmkg.74.1.1

Yitzhaki, S., & Schechtman, E. (2013). More Than a Dozen Alternative Ways of Spelling Gini. In *The Gini Methodology* (pp. 11–31). Springer, New York, NY. https://doi.org/10.1007/978-1-4614-4720-7_2

Zhou, Y., Cheng, H., Li, Q., & Wang, W. (2020). Diversity of temporal influence in popularity prediction of scientific publications. *Scientometrics*, *123*(1), 383–392. https://doi.org/10.1007/S11192-020-03354-3/

Zupic, I., & Čater, T. (2015). Bibliometric Methods in Management and Organization. *Organizational Research Methods*, *18*(3), 429–472. https://doi.org/10.1177/1094428114562629

The dataset generated for this study is published on a public Repository [https://data.mendeley.com/datasets/fmyrpphg5t/1]

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Supplementary Material: Search terms and article selection

Table 1

Terms of search

Search terms	# articles
"bibliometric*"	1570
"bibliometric*" + "scientometric*"	1923
"bibliometric*" + "scientometric*" + "science mapping"	1938
"bibliometric*" + "scientometric*" + "science mapping" + "citation analysis"	2270
"bibliometric*" + "scientometric*" + "science mapping" + "citation analysis" + "co-citation analysis"	2270
"bibliometric*" + "scientometric*" + "science mapping" + "citation analysis" + "co-citation analysis" + "bibliographic coupling"	2283
"bibliometric*" + "scientometric*" + "science mapping" + "citation analysis" + "co-citation analysis" + "bibliographic coupling" + "co-author analysis" + "co-authorship analysis"	2288
"bibliometric*" + "scientometric*" + "science mapping" + "citation analysis" + "co-citation analysis" + "bibliographic coupling" + "co-author analysis" + "co-authorship analysis" + "co-word analysis"	2304
"bibliometric*" + "scientometric*" + "science mapping" + "citation analysis" + "co-citation analysis" + "bibliographic coupling" + "co-author analysis" + "co-authorship analysis" + "co-word analysis" + "co-occurrence analysis"	2316
"bibliometric*" + "scientometric*" + "science mapping" + "citation analysis" + "co-citation analysis" + "bibliographic coupling" + "co-author analysis" + "co-authorship analysis" + "co-word analysis" + "co-occurrence analysis" + "informetric*"	2320
Data purification: Deleted items after manual checking (i.e., review early access, article early access, review book chapter, review retracted paper)	2043

Reasons for selecting an item as NOT suitable:

- Articles that do not apply at least one of the five bibliometric techniques (citation, co-citation, bibliographic, co-authorship or co-words). That is, they characterize a scientific field but do not actually apply bibliometric techniques.
- Articles that use bibliometric/bibliographic data for a purpose other than bibliometric analysis.
- Articles that call citation analysis something that is not really a citation analysis (especially frequent in keywords plus).
- Articles that base their work on patent bibliometrics. Unlike bibliometric articles on a subject, which seek to examine scientific development, patent bibliometric articles are used to analyse technological development.

- Articles that focus on explaining what it is, how to apply it, etc. a bibliometric analysis.
- Methodological articles, i.e. articles that introduce a new software, technique, or bibliometric indicator.
- Bibliometric articles that focus solely on the scientific output/repercussion of a university, country, or author.
- Bibliometric articles that focus only on the scientific output/repercussion of one journal (i.e., characterize the past and current trends of one journal).
- Bibliometric articles that focus on the scientific output/repercussion of companies (e.g., publications of pharmaceutical companies).
- Bibliometric articles that focus solely on identifying the best journals in a field.
- Articles that use the words bibliometrics or scientometrics to refer to something else (e.g., to refer to data mining, technology mining, text mining).
- Bibliometric articles that use proceedings or doctoral theses as a sample.
- Articles containing macroeconomics topics or topics well outside the area of Economics and Business (e.g., nanotechnology, nanoscience, pharmacology, renewable energy, molecular biology).
- Applied Business Economics papers are taken into account. Other applied economics are not (e.g., ecological economics, environmental economics).

Table 2
Distribution of bibliometric articles published and citations (1981-2022).

Year	N	AN (%)	C	AC (%)	CP	CPY
1981	1	0.12%	15	0.05%	15.00	0.36
1982	1	0.24%	59	0.26%	59.00	1.44
1985	1	0.36%	139	0.74%	139.00	3.66
1989	1	0.48%	1	0.75%	1.00	0.03
1993	2	0.72%	81	1.03%	40.50	1.35
1995	2	0.96%	156	1.57%	78.00	2.79
1996	1	1.08%	34	1.69%	34.00	1.26
1997	1	1.20%	7	1.72%	7.00	0.27
1998	2	1.44%	109	2.10%	54.50	2.18
1999	2	1.68%	119	2.51%	59.50	2.48
2000	4	2.16%	74	2.77%	18.50	0.80
2002	1	2.28%	149	3.29%	149.00	7.10
2003	4	2.75%	343	4.49%	85.75	4.29
2004	3	3.11%	75	4.75%	25.00	1.32
2005	1	3.23%	148	5.26%	148.00	8.22
2006	9	4.31%	751	7.88%	83.44	4.91
2008	7	5.15%	1076	11.63%	153.71	10.25
2009	5	5.75%	437	13.16%	87.40	6.24
2010	16	7.66%	1949	19.96%	121.81	9.37
2011	13	9.22%	573	21.95%	44.08	3.67
2012	17	11.26%	1424	26.92%	83.76	7.61
2013	17	13.29%	1647	32.66%	96.88	9.69
2014	5	13.89%	709	35.14%	141.80	15.76
2015	22	16.53%	1994	42.09%	90.64	11.33
2016	31	20.24%	2247	49.93%	72.48	10.35
2017	33	24.19%	1754	56.05%	53.15	8.86
2018	48	29.94%	2591	65.08%	53.98	10.80
2019	102	42.16%	3638	77.77%	35.67	8.92
2020	114	55.81%	3222	89.01%	28.26	9.42
2021	168	75.93%	2578	98.00%	15.35	7.67
2022	201	100.00%	574	100.00%	2.86	2.86
Total	*835*		*28673*		*34.34*	

N= number of publications AN= accumulated publications; C=Total citations; AC= accumulated citations; CP= average citation per article; CPY=average citations per articles and year

Proposal for calculating the collaboration cosmopolitanism scale

The cosmopolitanism scale is a measure of how close or far away an author's collaborators are (that is, an author with more collaborators in foreign countries or collaborators that belong to other scientific fields would rank higher on the cosmopolitan scale than a participant with collaborators only in their university). The scale was calculated by analysing the scientific area and countries of affiliation of each of the authors of the bibliometric article (measured on a 0 to 4 scale). 'Researchers that have worked alone' is given a value of 0 on the cosmopolitanism scale. Similarly, 'Researchers that have worked with members of the same research area and with affiliation at a university in the same country' is assigned a 1 and 'Researchers that have worked with members of other research areas, but with affiliation at a university in the same country' is assigned a value of 2. 'Researchers that have worked with researchers with affiliation at a university in other nations of the same research area' counts as a 3 on the cosmopolitanism scale and, lastly, 'Researchers that have worked with researchers in other nations and of other research areas' are assigned a value of 4. Thus, the scale varies according to whether the author does not collaborate with anyone, passing through whether he/she collaborates with those in his/her immediate work environment to whether he/she collaborates with those outside the immediate work environment.