

## **The current role of management accounting: Paradigm shift and future challenges**

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This is a pre-copyedited version of an article published in the Journal of Accounting & Organizational Change. The final version of this article is available online at

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Citation: Pedroso, E. and Gomes, C.F. (2023), "The current role of management accounting: paradigm shift and future challenges", Journal of Accounting & Organizational Change, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JAOC-05-2022-0086>

This work has been funded by national funds through FCT – Fundação para a Ciência e a Tecnologia, I.P., Project UIDB/05037/2020

## **The current role of management accounting: Paradigm shift and future challenges**

### **Structured abstract**

**Purpose** – This paper aims to map the research on management accounting (MA), clarifying its current role and identifying gaps and opportunities for future research.

**Design/methodology/approach** – In this article, 784 papers were reviewed for the 1958-2019 period, published in 220 scientific journals indexed on *Clarivate Analytics' Web of Science (SCI-EXPANDED and SSCI)*. In the process, content analysis, regression analysis, and bibliometric analysis were used.

**Findings** – The most relevant journals, authors, and topics in management accounting, along with trends and patterns in the literature, were identified. Seven clusters that represent the overall thematic research structure of the management accounting field were also identified. This study shows that management accounting is becoming a multidimensional management decision-support instrument covering all organizational dimensions. As such, the research on MA is following the recent concerns with the sustainable development and digitalization of business processes.

**Research limitations/implications** – Based on the findings of this research study, theoretical and practical implications for management accounting researchers were provided. These findings could also be useful to industry practitioners to improve their knowledge of emerging trends in management accounting practices, strategies, and concepts.

**Originality/value** – Based on bibliometric and content analysis, a framework that shows an organizational, market, and social context for the evolution of management accounting over the last 60 years was provided. It highlights the dynamics of MA alignment with organizational and external environment changes. Future research opportunities and implications for researchers and practitioners were also identified.

**Paper type** – Research paper

**Keywords** – Management accounting, bibliometric analysis, review, emerging trends, cluster analysis, future research.

## **The current role of management accounting: Paradigm shift and future challenges**

### **1. Introduction**

Over the last decades, we have witnessed significant changes in the business markets. Many businesses had to make substantial organizational changes to expand from domestic to global markets. The effectiveness of these changes relied on information from the internal and external dimensions of business organizations to support the decisions taken by their managers (Bromwich, 1990; Garcia Osma *et al.*, 2018; Sharma, 2002). In this context, management accounting (MA) became an essential competitiveness instrument for all business organizations (Turner *et al.*, 2017).

When analyzing the most relevant literature reviews of the last ten years, we can find suggestions to investigate the role of management accounting in the interrelationships between business organizations (Dekker, 2016), along with differences and similarities in practices between countries (Endenich *et al.*, 2011; Hoque, 2014). These literature reviews also point to the need for new and innovative methods to align management accounting with the challenges of business intelligence and environmental issues (Hartmann *et al.*, 2013; Malmi, 2016; Rikhardsson and Yigitbasioglu, 2018), and more recently, the link between Covid-19 and sustainability, the clean energy transition, and contributions to building more sustainable and resilient economies (Linnenluecke *et al.*, 2020). Perhaps resulting from the growing diversification of topics, there seems to be a need to clarify the conceptualization of management control systems (Otley, 2016), assess their effectiveness (Malmi, 2016), clarify the relationship between theory and practice (Jansen, 2018), and assess the contribution of management accounting to institutional change (Hiebl, 2018).

As such, we are witnessing a paradigm shift in which management accounting has moved away from its traditional approach that eliminates deviations and encourages command and control mechanisms, raising barriers to innovation, as Davila *et al.* (2009) anticipated. It has become a management instrument to assist business managers in the continuous organizational change process (Aaltola, 2019), with different approaches for small, medium, and large enterprises (Pelz, 2019), which are now facing the growing challenges of having to digitize their processes, while moving towards increasing sustainability (Denicolai *et al.*, 2021).

Although management accounting is a mature research subject, its more extensive and diversified knowledge base, which resulted from the evolutionary process and apparent

paradigm shift, justifies an integrative literature review. It is expected that this review captures the dynamics and development of new knowledge (Torraco, 2016), making it an essential instrument for consolidating evidence and generating new ideas to drive a field of study and contribute to theory (Elsbach and van Knippenberg, 2020; Post *et al.*, 2020). In the context of changing markets and organizations, this study aims to map extant research on management accounting, clarifying their current role and identifying gaps and opportunities for future research. For this purpose, this research intends to find the answers to the following research questions:

- 1- What are the most relevant publication outlets and authors?
- 2- How has the interest in MA topics evolved over the last 60 years?
- 3- What are the thematic research structure and related trends of the MA field?

A comprehensive literature analysis of all articles that include the exact phrase *management accounting* was conducted to answer these questions and achieve the study objective. The data source was the *Science Citation Index Expanded*<sup>1</sup> and the *Social Sciences Citation Index*<sup>2</sup> of the *Clarivate Analytics' Web of Science (WoS)*, which provide information from the most impactful scholarly journals across more than 200 scientific disciplines. Content analysis, regression analysis, and bibliometric analysis of the selected articles enabled the identification of the most relevant journals, authors, and topics in management accounting, along with trends and patterns in the literature.

Based on the findings of this research, theoretical and practical implications are provided to management accounting researchers who intend to publish in the highest-impact journals. These findings could also be useful to industry practitioners to improve their knowledge of emerging trends in management accounting practices, strategies, and concepts.

This article differs from other bibliometric studies in the management accounting field (e.g., Balstad and Berg, 2020; Luft and Shields, 2003; Van der Stede, 2011, 2015), because it includes

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<sup>1</sup> "Science Citation Index Expanded™ now indexes over 9,200 of the world's most impactful journals across 178 scientific disciplines. More than 53 million records and 1.18 billion cited references date back from 1900 to present." Obtained from <https://clarivate.com/webofsciencegroup/solutions/webofscience-scie/> [accessed 17/12/2021].

<sup>2</sup> "Social Sciences Citation Index™ contains over 3,400 journals across 58 social sciences disciplines, as well as selected items from 3,500 of the world's leading scientific and technical journals. More than 9.37 million records and 122 million cited references date back from 1900 to present." Obtained from <https://clarivate.com/webofsciencegroup/solutions/webofscience-ssci/> [accessed 17/12/2021].

in its sample all articles published in *WoS*, regardless the journal's main category. This broad scope is important because of the comprehensiveness of the management accounting field, which includes several topics related to different research disciplines, such as business, economics, public administration, engineering, computer science, and environmental sciences.

The next section describes the research methodology, including the database used, search keywords, time limits, and methods for article analysis. Section three presents and discusses the results, answering the research questions. Section four offers future research opportunities, and section six lays out the contributions, implications, and limitations.

## **2. Methodology**

### *2.1 Criteria for article selection*

The research's quality depends on its authors and the entire verification process that unfolds into the publication. It derives from the subject's importance and implications for theory and practice, but above all, from the reviewing process. In this context, the quality control mechanisms of research journals and the organizations that monitor these journals are essential. These organizations usually use the number of citations to define the relevance indicator. In the case of research journals, the most widely used index is the impact factor, which *Clarivate* uses to rank the publications. Although it is the most widely used, it is not consensual. Other organizations also use the number of citations in conjunction with other parameters (e.g., ABS<sup>3</sup>, ABDC<sup>4</sup>, and Scimago Journal Rank).

The articles for this study were obtained through the *Web of Science (WoS)* from *Clarivate*. The *Science Citation Index Expanded (SCI-EXPANDED)* and the *Social Sciences Citation Index (SSCI)* were selected from this research information platform, as these indexes include only impact factor journals. Therefore, they represent the top journals measured by this indicator. These citation indexes are the most frequently used databases for bibliometric studies in management (Debackere *et al.*, 2002; Zupic and Čater, 2015).

Based on the premise that all research on the multiple topics of management accounting should have this term, at least in one of the *WoS* database fields, all articles that contain the

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<sup>3</sup> Academic Journal Guide by Chartered Association of Business Schools

<sup>4</sup> ABDC Journal Quality List by Australian Business Deans Council

exact phrase *management accounting* in the title, abstract, author keywords, or keywords plus<sup>5</sup> were selected. The search was not restricted to a specific period and was performed on 2/10/2019. The first article that meets the search criteria was published in 1958. The sample includes 784 articles published in 220 refereed scientific journals (the list of these journals is available in complementary online material).

## 2.2 Methods for article analysis

The literature analysis process took place in three stages. First, titles, abstracts, and keywords were analyzed using Microsoft Excel to check if all articles contained the exact phrase *management accounting* and in which section of the article it was located. These results were validated by both authors, and no articles were excluded. Then, a descriptive analysis of the authors and journals that published articles on this research subject over the past 62 years was conducted.

Second, a content analysis of the abstracts and keywords was performed to identify variations in subject and year, and linear regression was used to identify research trends in the number of publications per year.

Third, a bibliometric analysis using the VOSviewer science-mapping framework was performed (van Eck and Waltman, 2010). This bibliometric analysis can only be carried out for articles published since 1990, when abstracts became available on *WoS*. Thus, during this stage, only the 705 articles published over the past 30 years were used. The co-occurrence of topics in the abstract was the most appropriate method for the study (Zupic and Čater, 2015). Although the default threshold in VOSviewer is the occurrence in 10 articles, it was decided to reduce it to 5 to identify the most recent and least researched topics. This threshold allows us to identify topics with the highest potential for future research.

VOSviewer (V 1.6.11) presents the results in three dynamic maps. The maps of this study resulted from several iterations in which the two authors discard irrelevant topics to the

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<sup>5</sup> "The data in KeyWords Plus are words or phrases that frequently appear in the titles of an article's references, but do not appear in the title of the article itself. Based upon a special algorithm that is unique to Clarivate Analytics databases, KeyWords Plus enhances the power of cited-reference searching by searching across disciplines for all the articles that have cited references in common." Obtained in [https://support.clarivate.com/ScientificandAcademicResearch/s/article/KeyWords-Plus-generation-creation-and-changes?language=en\\_US](https://support.clarivate.com/ScientificandAcademicResearch/s/article/KeyWords-Plus-generation-creation-and-changes?language=en_US) [accessed 17/12/2021].

ongoing research based on a classification scheme used by Markoulli *et al.* (2017), inspired by Whetten (1989). In these maps, the circle size of a topic represents the number of articles on that topic (Network visualization map). The distance between the topics indicates the degree of co-occurrence of the articles in the sample. This means that topics that tend to co-occur in the abstract are closer to each other. The maps also provide the average publication year (Overlay visualization map) and the research intensity of each topic (Density visualization map). We also have access to this information through text output files.

To identify topics with potential for future research, the abduction research process, initially introduced by Peirce (1932), was used to develop theoretically informed explanations for new and often surprising empirical observations (Lukka and Modell, 2010). As such, using the abduction process on the bibliometric maps, topics that are phenomenologically linked but surprisingly very distant, along with their average year of publication and size of circles, may mean that their investigation is underdeveloped, which configures future research opportunities (Markoulli *et al.*, 2017).

### **3. Results and discussion**

#### *3.1 Most relevant publication outlets and authors*

The first stage of the literature analysis began with identifying the journals that actively publish the MA articles included in our sample to answer research question one. For this purpose, journals that published at least ten articles on management accounting over the past ten years were identified (Table 1).

#### **<Insert Table 1>**

No articles on management accounting were found before 1980, as none of those journals were available in the *WoS* during that period. It was noted the presence of two groups of journal categories: Business-Finance, the *WoS* category where accounting journals are included, and other categories, such as Management, Environmental Sciences, Green Sustainable Science Technology, or Operations Research Management Science.

According to the results, the most relevant accounting journal during the period under review was *Accounting, Organizations and Society (AOS)*. This journal was the main publication outlet for MA articles over the past twenty years of the last century and the first ten of this one. Therefore, the results confirm its prestige in the most renowned indexes (ABS 4\*, ABDC A\*,

JIF 1st Quartile) and as one of the main sources for other literature reviews (Balstad and Berg, 2020; Bonner *et al.*, 2006; Chenhall and Smith, 2011; Hesford *et al.*, 2006). Besides confirming the relevance of *AOS*, the results enable the identification of other accounting journals that have gained relevance in the publication of management accounting articles, such as *Management Accounting Research (MAR)* (ABS 3, ABDC A\*, JIF 1st Quartile) and *Accounting Auditing & Accountability Journal (AAAJ)* (ABS 3, ABDC A\*, JIF 1st Quartile). These journals appeared in the late twentieth century and have increased their relevance concerning MA articles in the last ten years.

As for non-accounting journals that publish MA articles, *Journal of Cleaner Production (JCP)* and *Sustainability (SUS)* were the most prolific. The predominance of MA articles in these journals can be due to several factors: the relevance of these journals' scope, the growing importance attributed to MA topics, and the number of annual issues.

In the first data analysis stage, the most active authors in management accounting research were also analyzed, identifying the journals where they published their articles. For this purpose, eleven authors who published in the most relevant journals (Table 1), at least three articles on MA topics in the last ten years, or a minimum of five articles in the last 20 years, were identified (Table 2). These authors published 10.6% of the articles included in the sample in the last 40 years, and their articles obtained 23.8% citations in management accounting.

**<Insert Table 2>**

The most influential articles of the authors presented in table 2 were also analyzed based on the number of citations in the *WoS*. Table 3 presents the articles with at least one hundred citations during the forty years or more than fifty citations in the last ten years.

**<Insert Table 3>**

This table shows that seven of the top ten cited articles were published in *AOS*. At the top, we find "Management control systems as a package - Opportunities, challenges and research directions" (Malmi and Brown, 2008), which is the editorial of the special issue "Management Control Systems as a Package" published in *MAR*.

The most influential MA articles by authors not included in table 2 were also analyzed. For this purpose, the remaining articles in the sample, with at least one hundred citations during the period under analysis, were selected (Table 4).



**<Insert Table 4>**

This table shows that seven of the top ten cited articles were also published in *AOS*. In the first place, there is the article entitled “Performance-Measure Congruity and Diversity in Multi-task Principal/Agent Relations” (Feltham and Xie, 1994), published in *The Accounting Review*. Almost half of the articles in tables 3 and 4 investigated the relationship between management accounting and strategy. The three most recently published articles focus on the relationship between management accounting and environmental and sustainability issues. Only nineteen of the thirty-four articles analyzed (Tables 3 and 4) are empirical studies. It is interesting to note that only seven of these studies presented a support theory.

By analyzing the MA literature published in the last 20 years, Kari Lukka published the largest number of articles, mainly on theories and methods applied to management accounting. However, the study results revealed that Robert H. Chenhall, Margaret A. Abernethy, and Teemu Malmi are the most relevant authors. These authors meet two essential relevance criteria: (i) they have the highest number of citations, and (ii) they published in the most relevant journals (Tables 1 and 2).

Interestingly, all authors identified as having published most MA articles are in European countries or Australia, and none are in the United States of America (USA). The lack of US authors in our study is due to the different emphasis that Europe and the USA put on management accounting. While in Europe the idea of multi-paradigm accounting research is valued, management accounting research is growing, in the US management accounting is losing relevance in academia, shifting it to a secondary position in research and teaching (Lukka, 2010; Merchant, 2010).

### *3.2 Evolution of MA topics over the last 60 years*

In the second stage of this study, the abstracts and keywords of all articles were analyzed to identify variations in topics and the number of articles published by year, answering research question two. Based on the results, three periods corresponding to different levels of variation were identified (Figure 1). Therefore, a more detailed analysis of the management accounting literature published during the period under review was performed.

**<Insert Figure 1>**

In the first period, from the first published article in management accounting (1958) until 1989, the number of articles seems to change randomly, and the coefficient slope of the regression line (0.067) does not outline a significant growth trend. During this period, WoS did not provide information on abstracts and keywords, and some of these articles' full text could not be obtained. As such, only their titles and the journals' names were analyzed. In brief, 57.7% of the articles were published in 6 accounting journals. The remaining 42.3% were published in 22 journals of other disciplines, such as management, economics, and engineering. It also should be noted that 41 articles (52.7%) were published in only three journals: *The Accounting Review* (15), *Cost and Management* (14), and *Accounting Organizations and Society* (12). Regarding the title, only one article includes the exact phrase *management accounting*.

In the second period (1990-2007), linear regression outlined a small positive trend with a slope of 0.354. This period coincides with the beginning of the availability of abstracts, keywords, and full texts in the WoS, which enabled a more detailed content analysis of the topics. Three peaks influenced an increase in the growth of articles published concerning the previous period. The first peak (1993-94) stemmed from the emergence of topics that relate management accounting to performance measurement and management. The first performance measurement systems, like the Balanced Scorecard and the mixed financial and non-financial performance measurement orientation, are some of the topics that motivated this peak. It compares with a growth trend observed during the same period in the general performance measurement literature (Gomes *et al.*, 2004).

The second peak (1996-99) is influenced by articles that studied the relationship between MA and management philosophies and practices, such as Total Quality Management (e.g., Wruck and Jensen, 1994), Kaizen (e.g., Szklo *et al.*, 1997), Lean (e.g., Åhlström and Karlsson, 1996), Just in Time (e.g., Tayles and Walley, 1997), and Advanced Manufacturing Technology (e.g., Tayles and Drury, 1994). This trend can be justified by the more intense use of these practices at the beginning of the 1990s.

Regarding the third peak (2004-07), twenty-one articles related to environmental and sustainability issues were randomly observed during this period. The article "Improving the Role of Government in the Promotion of Environmental Management Accounting", set up by the United Nations Division for Sustainable Development (Jasch, 2003), which presents the Expert Working Group results, may have triggered the increase in MA research on these

issues. It should also be noted that it was during this period that the first articles studying the relationship between MA and environmental/sustainability issues, in general, were published. The first study linking MA with carbon management only appeared two years later (Burritt *et al.*, 2009).

Finally, in the third period (2008-2019), an extraordinary increase in the number of articles published on management accounting was found. From 16 articles in 2007, it increased to 38 in 2008 (Figure 1). Similarly, the slope of the trend line increased from 0.354 to 1.27. It was also found that articles related to MA green topics increased significantly over the years. Therefore, a search in the selected sample was made using the following topics: *sustainabil\**, *sustainable*, *carbon*, *environmental*, or *cleaner*, which resulted in 171 articles. By analyzing the abstract contents, the articles that do not deal with green MA issues, namely those that, although including the word *environmental*, referred to “perceived environmental uncertainty” concerning the competitive environment, were removed. Based on this analysis, 126 articles related to MA green topics were identified and compared with the remaining ones in Figure 2.

**<Insert Figure 2>**

Seventy percent of the articles on this topic were published in non-accounting journals, while only thirty percent were published in accounting journals (Table 5).

**<Insert Table 5>**

*JCP* led the number of MA papers on green issues and *AAAJ* seems to be the leading accounting journal on the same topics.

According to the results, four reasons were found for the increase in the number of articles. The first reason is the availability in the *WoS* of journals more focused on MA. For example, *MAR* was available in 2008, and *AAAJ* in 2010.

The second reason is the stimulus of several literature reviews published during this period. Some of them were integrative of mature topics, such as Balanced Scorecard (Hoque, 2014) and comparative management accounting (Endenich *et al.*, 2011), addressing the potential reconceptualization of the expanding knowledge and providing new pathways for further developments. Others were integrative of new or emergent topics, at that time, such as sustainability accounting and reporting (Burritt and Schaltegger, 2010) and carbon accounting

(Hartmann *et al.*, 2013), leading to the initial or preliminary conceptualization of the topics and offering future research opportunities. These literature reviews were essential drivers for fostering the research on management accounting (Elsbach and van Knippenberg, 2020).

The third reason is the following special issues covering several management accounting-related topics that may have provided an additional stimulus:

- Strong structuration theory in accounting research (Coad *et al.*, 2016);
- The Integration of Corporate Sustainability Assessment, Management Accounting, Control, and Reporting (Maas *et al.*, 2016);
- The societal relevance of management accounting: An introduction to the special issue (Modell, 2014);
- The marketing-accounting interface – problems and opportunities (Kraus *et al.*, 2015);
- Carbon accounting for sustainability and management. Status quo and challenges (Schaltegger and Csutora, 2012);
- A New Future for Business? Rethinking Management Theory and Business Strategy (Hahn *et al.*, 2010);
- Management control systems as a package—Opportunities, challenges and research directions (Malmi and Brown, 2008).

The fourth reason was an extraordinary increase in articles related to MA green topics, probably arising from the United Nation's emphasis on sustainable development. Although most of the articles on MA green topics are from this period, some were found in previous periods, as mentioned before. In addition, most articles on these topics were published in non-accounting journals, for which the outlet availability increased during this period. The *JCP* and *SUS* published almost half of all MA articles on green topics. The scope of these non-accounting journals covers several green topics, including MA, and publishes 60 issues yearly, while *AAAJ* and *MAR* only publish 12.

### *3.3 Thematic research structure and related trends of the MA field*

In the third stage of this study, bibliometric analysis was used to identify the thematic structure of the MA field and answer research question three. In the density map results (Figure 3), yellow represents higher research intensity, while green means comparatively less research.

**<Insert Figure 3>**

In the screenshot of the overlay map results (Figure 4), the circles illustrate the number of occurrences of the topics, and the colors represent the average number of papers published per year.

**<Insert Figure 4>**

According to these two maps, the topics that appear in the density map as the most researched also appear in the overlay map with an older average publication year (blue). However, the topics with lower research intensity appear in the overlay map with different configurations. Some of these topics appear with an older average publication year (blue), which could be topics asleep in management accounting research (e.g., financial reporting). Other topics with a more recent average publication year (yellow) could mean that each one is an emerging research subject and, consequently, an opportunity for future research.

Finally, the screenshot of the network visualization map results (Figure 5) identifies groups of closely related topics.

**<Insert Figure 5>**

Based on the information collected from these maps, their support data files, and abstract content analysis, the following seven clusters, representing research streams, show the thematic research structure of the MA field.

**Strategy**

The articles included in this cluster studied the link between strategy and management accounting, focusing mainly on manufacturing companies. Quantitative analysis is predominant. The information analyzed does not show prevailing theories to support these studies. The most researched topics have been strategic management accounting and management accounting information. Knowledge management, strategy formulation, maturity, and outsourcing are the least researched topics.

Aligning processes and activities with corporate strategy is an ambition of all managers. In the case of management accounting, research related to strategy began in the early 1990s, focusing on accountants' involvement (Dixon and Smith, 1993) and new methods of providing information related to strategic management (Bromwich, 1990). It increased significantly and became multidisciplinary a few years later, including research about the importance of

strategic management accounting (SMA) in musical theatre (Lapsley and Rekers, 2017) or the importance of non-accounting professionals in providing strategic costing information (McLean and McGovern, 2017).

This research stream has developed the study of techniques that provide more SMA information to support new structures and new ways of working (Ma and Tayles, 2009), the possibility of combining different SMA techniques (Woods *et al.*, 2012), and the indirect benefits arising from close interactions with other organizations (Carlsson-Wall *et al.*, 2015).

### **Practices and techniques**

The articles included in this cluster focused on management accounting practices and techniques. Qualitative analysis, actor-network theory, and institutional theory are predominant. The most researched topics are related to practices and accountants. Compatibility, institutional change, and institutional work are the least researched topics.

The study of management accounting practices and techniques began in the early 1990s. The results of our analysis show evolving practices and techniques, which have been updated over the years. As expected, the oldest articles are about traditional practices and techniques (e.g., Firth, 1996; Geiger and Ittner, 1996). A few years later, research on SMA practices arose (e.g., Carlsson-Wall *et al.*, 2015; Cuganesan *et al.*, 2012), and more recently, research has been focused on practices related to environmental management accounting (e.g., Solovida and Latan, 2017; Tashakor *et al.*, 2019). It also focuses on studying the role of accountants, whether in promoting changes in practices (Emsley and Chung, 2010), interacting with external stakeholders (Janin, 2017), or resisting organizational sustainability initiatives (Egan and Tweedie, 2018)

This research stream can be characterized by diversity concerning industries, including hospitals (Chapman *et al.*, 2014), universities (Modell, 2006), family businesses (Prencipe *et al.*, 2014), and public agencies (Cuganesan *et al.*, 2012), as well as countries, including Romania (Albu and Albu, 2012), Australia (Tashakor *et al.*, 2019), China (Firth, 1996) and Sweden (Modell, 2006).

### **Green issues and concerns**

This cluster included management accounting studies in environment, sustainability, and energy topics. The information analyzed does not refer to supporting theories, and no

predominant methodologies were found. The most researched topics are related to cost and environmental management accounting. The least researched topics are carbon management accounting, corporate sustainability, cost calculation, economic value, and environmental impact.

Articles on green issues were first published in non-accounting journals at the beginning of the millennium while appearing in accounting journals only about ten years later (e.g., Burritt and Schaltegger, 2010; Ferreira *et al.*, 2010; Henri and Journeault, 2010). The first articles analyzed the Environmental Management Accounting (EMA) methodology set by the United Nations Division for Sustainable Development (Gale, 2006; Jasch, 2003) and the challenges that companies would face in using this methodology (Scavone, 2006). There was also a concern in analyzing the relationship between EMA and the innovation of products and services (Ferreira *et al.*, 2010).

More recently, this research stream has focused on the determinants of EMA adoption (Ferdous *et al.*, 2019), and the role of management accounting and control systems in providing organizational changes that help achieve environmental and social sustainability (Narayanan and Boyce, 2019).

### **Healthcare management**

This cluster included studies on management accounting in healthcare. The information analysis suggests a predominance of studies that used surveys and experiments as research methodologies. No predominant theories were found. The most searched topics are the control system, task, and behavior. The topics related to new technology and rating are among the least studied.

Studies on healthcare management issues began in the mid-1990s, but their publication has been more regular since the last decade. In the beginning, the concerns of this research stream were focused on hospitals, namely in the allocation of costs (Noreen and Soderstrom, 1994), the influence of information provided by control systems on physicians' decisions relating to patient treatments (Eldenbug, 1994), and in the effect of the budget style in the process of strategic change (Abernethy and Brownell, 1999).

More recently, studies have focused on innovation and technology in healthcare institutions. Researchers are concerned about using existing databases to improve cost management (Kawamata *et al.*, 2017), using technology to promote transparency and sustainability in

hospitals (Palozzi *et al.*, 2018), and improving performance measurement systems (Leotta and Ruggeri, 2017).

### **Finance**

The articles included in this cluster addressed the link between finance topics and management accounting. There are no predominant research methodologies, and the information analyzed does not refer to supporting theories. Competition, cost accounting, and accounting standards are the most researched topics. Compliance, financial report, infrastructure, management accounting instrument, and sustainability reporting are among the least researched.

The publications on finance topics began in the middle of the 1990s for accounting and non-accounting journals. However, in non-accounting journals, the publication has been more regular since the beginning of the millennium, while in accounting journals, it only happened almost ten years later.

In this research stream, articles focused on financial accounting and management accounting issues were found. Despite differences in the scope of these two subjects, the relationships between them, namely the positive effect of the integration of financial accounting and management accounting on control effectiveness, can be mediated by the consistency of financial language (Weißenberger and Angelkort, 2011). It is also noted that information technology can facilitate the convergence between financial accounting and management accounting (Taipaleenmäki and Ikäheimo, 2013).

### **Performance**

The articles in this cluster studied the link between management accounting and performance. The information analyzed suggests the predominance of contingency theory and surveys as the most used research methodology. The most researched topics are accounting systems, measurement, performance measures, and performance measurement systems. The external factors of business organizations are the least studied.

The study of performance topics began in the early 1990s. The results of our analysis show a variety of topics, such as the Balanced Scorecard (Chen *et al.*, 2016; Hoque, 2014; Oliveira *et al.*, 2019), the influence of management accounting systems information on managerial performance (Chong, 1996; Gul and Chia, 1994; Mia and Chenhall, 1994), performance



evaluation (Bol *et al.*, 2016; Dai *et al.*, 2018; Voußem *et al.*, 2016), and the link between performance measurement and sustainability (Dutta *et al.*, 2013; Lee and Wu, 2014; Silva and Guenther, 2018).

Initially, the literature focused on the limitations of accounting performance measures and the importance of using non-financial measures (Feltham and Xie, 1994; Harrison, 1993). More recently, this research stream has faced new challenges, such as the adaptation of organizations to performance management system innovations (Chiwamit *et al.*, 2017) or the usefulness of business intelligence in performance measurement systems (Peters *et al.*, 2018). These new challenges are due to the increasing need for timely, helpful, and accurate information for companies to face the existing high competitiveness and the availability of technologies that make it easier and faster to meet this need.

### **Economic environment**

This cluster focuses on studying the relationship between the economic environment and management accounting. The predominant research methodologies are qualitative, namely interpretive research. There is no predominance of support theories. Topics related to incentives, stakeholders, and training are the most common. The least researched topics address environment issues, institutional pressure, and economic performance.

The literature on economic environment issues was scarce until 2009, but since then, they have increased in number and regularity. In this research stream, were found concerns with the effect of environmental uncertainty perceived in the adoption and utilization of Activity-Based Innovations (Al-Sayed and Dugdale, 2016), the use of comprehensive performance measures to face uncertainty in the competitive environment (Schulz *et al.*, 2010), the impact of debt pressure on the use of interactive management accounting and control systems (Garcia Osma *et al.*, 2018), and management accounting practices to better respond to changes during periods of economic transition (Fleischman *et al.*, 2011; O'Connor *et al.*, 2004).

### **5. Future research opportunities**

Management accounting is now represented by the transversality of other non-accounting disciplines that bring new angles of vision to its research, particularly to changes in its practices. These new angles influence the formulation of further research questions and the

use of new research methods, which seems to represent a paradigm shift in management accounting.

After characterizing the seven research streams, an overall approach was adopted to analyze and discuss the information provided by bibliometric results and content analysis. Based on this approach, two groups of management accounting topics that suggest opportunities for future research were found: i) topics that have been heavily researched but remain active and ii) topics that have been taken up only recently.

In the first group, four topics were identified: cost, accounting systems, accounting practice, and measurement. These topics were analyzed over the last 30 years to determine their potential for future research opportunities.

The first studies on cost topic were published on the role of management accounting in the efficiency of organizations through cost control, particularly in manufacturing organizations (Ehteshami *et al.*, 1992; Tse and Robb, 1994) and hospitals (Eldenbug, 1994; Noreen and Soderstrom, 1994). More recently, the focus has been on environmental and intangible costs (Epure, 2016; Oosthuizen *et al.*, 2019). Although cost is one of the oldest and most researched topics in management accounting, it remains active because of the major changes that have taken place in markets and business organizations. These changes include pressure from the market, governments, and society for business organizations to adopt green practices that promote the planet's sustainable development. For these reasons, cost research related to environmental performance and regulation should be included in future research.

The first studies on management accounting systems were intended to contribute to the design of these systems (Abernethy and Lillis, 1995; Gul and Chia, 1994). More recently, the literature has been concerned with integrating information from diverse management approaches into management accounting systems, including continuous improvement and environmental management systems (Skouloudis *et al.*, 2019; Wnuk-Pel, 2018). In the current context, the future of management accounting should be seen from a perspective of continuous adjustment to the organizational changes resulting from response to societal and market pressure. As such, future research on management accounting systems should be strengthened from the structural dimension. They should also be strengthened from the relational dimension, where the relationship with the people who use, develop, and manage these systems should also be addressed. The dynamic characteristics and the ability to

aggregate and provide multidimensional information to internal and external stakeholders should be researched.

The first studies on management accounting practices present the different approaches used in other organizational realities and countries (Eldenburger, 1994; Morgan, 1994). More recently, the literature has focused on the outcomes. However, it remains concerned about the effectiveness of practices in different organizational environments, particularly in small and medium enterprises, and the differences between cultural realities (Tashakor *et al.*, 2019; Zyznarska-Dworczak, 2018). As such, more empirical studies on management accounting practices are needed. The dynamic characteristics of MA and its role in promoting effective relationships with customers and suppliers should also be researched.

The first studies on measurement highlight concerns about the lack of effectiveness of traditional performance measures in assessing technological developments and implementing new strategies (Dixon and Smith, 1993; Feltham and Xie, 1994; Tayles and Drury, 1994). More recently, management accounting literature has focused on measurement systems and on measuring green dimensions of business organizations (Luong *et al.*, 2019; Qian *et al.*, 2018). As such, measurement is a topic that is still active in many research areas, perhaps because of the ever-changing context and the difficulty in measuring processes to align with strategic changes. Competitiveness and environmental performance measurement constitute future management accounting research opportunities. Further research should also be conducted on performance measures that could make regulation fairer and more effective in some performance dimensions, namely the environment.

In the second group, topics that have been addressed in the last ten years and are still active today, such as creativity, transparency, intellectual capital, and business intelligence, were found. The articles on creativity analyze the apparent contradiction between the rigidity of management control mechanisms and the organizational characteristics of globally competitive companies, providing open and flexible environments that foster creativity (Maier, 2017; Pfister and Lukka, 2019). Creativity is widely studied in various research areas, particularly in marketing. However, its relationship with management accounting has only recently begun to be explored. For this reason, further studies should be carried out in the future, namely on their relationship with the effectiveness of management accounting processes, in the context of the paradigm shift mentioned before.

Transparency is a topic that has emerged most intensely in the aftermath of the business scandals that led to the latest economic crisis. The articles on transparency show that management accounting systems should include performance-related information and make that information available to key internal and external stakeholders. This transparency has become more critical in some industries, including health organizations and other organizations with substantial environmental impacts on society (Palozzi *et al.*, 2018). It is also often associated with green issues and their impacts on society. For this reason, the accuracy and dissemination of information related to management accounting and its practices in business organizations should be explored in future research. These topics should also be explored in the academic context, where transparency practices should be promoted among future managers.

Articles investigating the interplay between intellectual capital (IC) and management accounting were also identified. This means examining the effect of MA practices on IC creation and retention and the role of IC in the effectiveness of management accounting systems (Asiaei and Jusoh, 2017; Coyte, 2019). Intellectual capital is an intangible resource that generates the most competitiveness for business organizations. Although it has been investigated in other research areas, it has only recently been addressed regarding management accounting. For this reason, issues concerning human capital, knowledge management, and control systems should be investigated.

Business intelligence will drive the development of new management accounting practices and techniques, visualizing and analyzing related information and contributing to substantial improvements in decision processes. Although business intelligence is studied in various research disciplines, particularly in marketing, its relationship with management accounting has only recently begun to be explored. As such, future research on this topic is expected.

Finally, country-comparative studies on management accounting approaches, designs, and practices are needed. These studies should include the environmental and digital-related variables that can influence the competitiveness of business organizations in different developing regions.

Based on the results of this study and their discussion, the framework in Figure 6 attempts to provide an organizational, market, and social context for the evolution of management accounting over the last 60 years and future research paths. It highlights the evolution of MA and reflects its dynamic alignment with organizational and external environment changes.

## <Insert Figure 6>

The use of MA has evolved over the years from only providing formal control and feedback systems to embracing flexibility and supporting the effectiveness of organizational changes. Traditional topics, such as cost, design, and implementation of MA systems, have been extended to new issues, including strategic management accounting, inter-organizational control, risk management, and, more recently, environmental management and carbon accounting (Borghei, 2021; Johnstone, 2020). Management accounting systems are now using financial and non-financial information, both internal and external, incorporating new instruments for analyzing large amounts of data resulting from the digitalization of business processes (Spraakman *et al.*, 2020), which require the analysis of management accounting utilization from different perspectives (Knudsen, 2020; Korhonen *et al.*, 2020). This evolution mainly resulted from the increase in the competitive pressure that the market exerted on business organizations, forcing them to be attentive to all dimensions of performance and causing an increase in the information they must analyze. In addition, the exponential evolution of IT and its availability at low cost has allowed all organizations to automatically analyze large amounts of information, enabling accountants and managers to perform more creative tasks and innovation processes (Rikhardsson and Yigitbasioglu, 2018).

## 5. Conclusion

The main objective of this article is to map extant research on management accounting, clarify their current role, and identify research gaps and opportunities for future research. As such, it will encourage scientific research and help academics and managers develop a deeper understanding of management accounting and how it can be used in decision support to improve organizational performance.

The findings of this article provide the following three significant contributions to the management accounting literature. First, it synthesizes the research published in accounting and non-accounting journals, consolidating evidence from the MA research field. This multidisciplinary approach provides interaction dynamics of new variables with management accounting and creates a cross-understanding that enables researchers of diverse disciplines to learn from each other.

Second, although there have been numerous prior reviews, this study offers a framework that maps management accounting research in dynamic relationships with the organization and its

external environment. This framework is essential for generating new ideas to boost this field of study and contribute to theory. Third, it lies in the literature-based identification of future research opportunities. Several opportunities are highlighted, each one inspiring research projects in management accounting.

As a practical contribution to researchers in management accounting, particularly doctoral students, this article helps them make their research more efficient and reliable through a list of the best quality journals and the most relevant authors in management accounting multidisciplinary subjects.

The findings of this research study may also be helpful to industry professionals. From a decision support perspective, they offer insights into the evolution of management accounting and the variables with which they interact. Therefore, they help companies better understand the role of all these variables in effectively using management accounting in decision support. They also help managers to identify the status of their management accounting systems and how they can evolve in alignment with the market and society's challenges. In this way, managers should use the most advanced technologies available but must pay special attention to people, privileging creativity and transparency.

From an education and training perspective, the findings of this study offer a map that can help organizations to change from traditional practices to more innovative approaches that encourage accountants and managers to use management accounting in line with current sustainable development trends.

Like any other study, this one has some limitations. Since management accounting is a rather broad subject, it would be challenging to analyze all published articles. Therefore, the trade-off between the number of articles analyzed and their quality was managed. It was decided to favor articles published in impact factor journals of the *Clarivate Analytics' Web of Science*, with no restrictions on the publication period. However, professional journals and other publications (e.g., books, conference papers, and working papers) can also provide valuable insights into management accounting.

This study analyzed the co-occurrence of topics in the abstract title and keywords using Vosviewer software. However, other software could be used, and further analysis could be performed. Future research could use citation and co-citation analysis to provide

complementary insights. Despite these limitations, this article provides significant theoretical and practical insights for researchers who intend to publish in high-quality journals.

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