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From little seeds to a big tree: a far-reaching assessment of the Integrated Reporting stream

ABSTRACT

Purpose: The purpose of this paper is to provide the first assessment of the Integrated Reporting stream using a broad sample of publications separated into research scopes (accounting and non-core accounting journals), and using a longitudinal perspective. This study proposes to identify its main contributors, evidencing both individual and collaborative work.

Design/methodology/approach: Bibliometric tools supported by a milestone approach to IR history were used to address the first two research questions on the growth of this stream per scope. Density maps on keyword co-occurrence provided insights into the third question aimed at assessing differences in the scopes' research topics. Number of publications, citation-based metrics, and network analysis based on co-authorship allowed us to answer the last question regarding the top contributors.

Findings: The results endorse the acknowledged interest in this stream, exposing its incredible growth, which already amounts to over 1000 different scholars, 200 distinguished journals, and 7600 citations across 540 peer-reviewed publications. With the accounting scope leading on citation frequency, and the non-core accounting having more publications, an almost picture-perfect circle in a pooled density map supports the field's advocated interdisciplinarity with its distinctive contributions. Lastly, the cluster analysis revealed that 140 publications belong exclusively to 10 research clusters that contribute to more than half of the total citation count.

Originality: This rich analysis combines visualizing techniques with in-depth bibliometrics to provide the first far-reaching collation of publications on IR to offer a complementary view on this dynamic interdisciplinary stream.

Keywords: Bibliometric review; Corporate reporting; IIRC; Integrated Reporting (IR); Non-Financial reporting; Social network analysis.

Paper type: Research Paper

1. Introduction

As a farmer well knows, for a seed to become a tree, it has to be planted, watered and given time. Just as it takes longer than one day to grow a tree and reap the rewards, so it is with researchers and their work, too. In the last decade, a new stream of research has been growing in the accounting field, and in complementary areas. As a result of constant critiques of traditional financial reporting, the integrated reporting (IR) initiative of the International Integrated Reporting Council (IIRC) is being addressed as a potential, advanced reporting framework that integrates not only the financial, but also the non-financial information that investors, markets, organizations, institutions are requesting and require to be disclosed (Dumay *et al.*, 2017; La Torre *et al.*, 2020; Zhou *et al.*, 2017).

Despite the academic literature in the field of IR being as yet embryonic (Perego *et al.*, 2016), several literature reviews and research agendas have been published on the topic. Most of the conducted reviews usually address (1) specific topics such as factors contributing to IR quality and market reaction (e.g. Velte and Stawinoga (2017)), CSR reporting credibility (e.g. Abernathy *et al.* (2017)), determinants of sustainability or integrated reporting (e.g. Hahn and Kühnen (2013), Kannenberg and Schreck (2019), and Vitolla *et al.* (2019)), value relevance of integrated reporting (e.g. Veltri and Silvestri (2020)), and (2) overviews, critiques, insights and agendas for future research (e.g. Dumay *et al.* (2016), Perego *et al.* (2016), De Villiers *et al.* (2014, 2017), and Oll and Rommerskirchen (2018)).

While these studies have largely contributed to the literature debate on IR, just a few have touched upon bibliometric and network approaches, and then only slightly. For example, Dumay *et al.* (2016) developed a structured literature review that provided an insightful critique of IR, but mainly supported in the identified top articles, citation counts and year publications for 56 articles. At the same time, Rinaldi *et al.* (2018) developed a theoretically informed analysis of published IR research articles using the idea journey theoretical framework. This identified important gaps in the literature and sketched an agenda, but was based only on the 65 IR-related articles published in journals indexed in Scopus from 2012–2017. More recently, Di Vaio *et al.* (2020) performed a bibliometric analysis on achieving sustainable business models that revealed the thematic maps and dynamic growth of keywords, limited to 60 articles published between 1990 and 2019. However, at the current stage of IR research, no in-depth bibliometric approach has been taken, and no network mapping of key scholars to discover patterns for collaborative work has been conducted. As bibliometrics contribute to the progress of science by identifying the most reliable sources of scientific publications and the major scientific actors (Martínez *et al.*, 2015; Pizzi *et al.* (2020)), using tools that permit the creation of network maps and the identification of clusters based on scientific research, publication sources, authors, or the most influential keywords (van Eck and Waltman, 2017), as well as through social network analysis (Scott, 1998; Zhuang *et al.*, 2013; Leppink and Pérez-Fuster, 2019), there is a legitimate interest in sprouting bibliometric studies in the field of IR.

Three gaps in what could be a broader and more in-depth bibliometric study in this emergent stream of research stand out: (1) the lack of quantitative longitudinal analysis to explore milestones in the evolution of IR research in both accounting and non-core accounting related fields. Rinaldi *et al.* (2018) uses the idea journey phases to conceptualize the development of the overarching logic of

the field of IR with regard to creating a new understanding of the IR literature, but it is limited to accounting-oriented journals indexed in Scopus; (2) the lack of quantitative evidence to support accounting as a significant field in IR research, and to recognize integrated reporting as an interdisciplinary ground for research. Highly cited publications such as, e.g., De Villiers *et al.* (2014) and Hahn and Kühnen (2013), are spread throughout a wide range of different publication sources, accounting and non-core accounting. Since IR research is quite novel, there has yet to be a paper highlighting that the scientific area of *Accounting* is one of the most important in supporting IR research; (3) the lack of bibliometric analysis conducted on a broader scale to identify main contributors, such as leading journals, key scholars, and research clusters, and to provide a basis for cooperation among academics. Giving greater visibility to the connections between such actors as individual authors and teams of authors in a field (Leppink and Pérez-Fuster, 2019) can enrich collaborative work and improve knowledge-sharing and knowledge-transfer (Kumar *et al.*, 2019). Frequently used in other fields of research, visualisation graphs were also used by Di Vaio *et al.* (2020) to develop research clusters based on keywords (thematic maps) on a specific topic in the IR stream, but not on co-authorship analysis.

By offering the largest bibliometric literature review in this field, with a dataset of 540 peer-reviewed publications gathered from recognized databases (e.g., Web of Science and SCOPUS), and without biased limitations (such as pre-determined journals or pre-selected research topics), the present paper highlights this growing stream. Its findings support the interdisciplinarity of the field, and draw attention to two distinctive, but equally important research scopes (Accounting Journals (AJ) and non-core Accounting Journals (NCAJ)), which together visually create a co-occurrence keyword map with an almost picture-perfect circle. With one being a leader in citation frequency (AJ), and the other with a relatively high number of publications (NCAJ), both attract quite a large number of researchers. In total, more than 1000 different scholars, 200 different journals, and innumerable research clusters all contribute to the increasing number of citations in IR publications, which has already topped 7600 citations. The fact that this topic can link different and complementary perspectives on a dynamic interdisciplinary stream is motivating collaborative work, which is borne out by the largest research network, based on co-authorship, with nearly 100 scholars. The 10 highlighted research clusters also display this interdisciplinarity and teamwork, contributing massively to the field (140 publications and more than 3700 accumulated citations).

To present the study, the paper is divided into five sections, one of which is this introduction. This is followed by the development of the research questions (Section 2), and the description of methods and techniques (Section 3). The results are presented with an in-depth discussion on the longitudinal analysis of the IR stream, the differences in research topics between AJ and NCAJ, and the main contributors to IR, in response to the aforementioned research gaps (Section 4). To end with, an integrative section with concluding remarks, limitations and prospective IR research is presented (Section 5).

2. Development of the research questions

Different triggers can spark the growth of a research stream. While interest in the Integrated Reporting stream has been growing, as evidenced by its appearance in top-cited publications in highly

ranked journals (Dumay *et al.*, 2016), thus rewarding the work of the scholars who built it up, it has nevertheless been criticized not only for the scarcity of results to support its claim, but mainly because it is spread across different fields and is somewhat disjointed (Zhou *et al.*, 2017).

Surprisingly, and in contrast to a great number of publications embracing IR topics, a far-reaching quantitative longitudinal assessment on that growth seems to be lacking. While there are several systematic reviews that provide a balance between comprehensively identifying a larger pool of publications, systematically identifying a smaller set of studies that fit criteria, and informing research agendas (Linnenluecke *et al.*, 2020), the selection methods use filters, and the number of publications is only a low percentage of the total available. In other words, studies have yet to explore whether and how research on IR is gaining prominence in a wide range of scientific journals (covering extensive financial, business, management, and ethical scopes). A brief glance at the reputable unifying research tools (e.g., Web of Science or SCOPUS) can give the user some idea of the great number of journals that contribute to the dissemination of IR research, yet the integration between databases is scarce, and the tools to do that lack consistency, and are not error information free (e.g., software *Harzing's Publish or Perish*).

According to diverse authors, the importance of a research stream is not only borne out by the number of publications it appears in, but also by the citations showing its impact on research (Dumay *et al.*, 2016, and Massaro *et al.*, 2016). However, there is much debate regarding the relevance of total citations to measure impact (Dumay *et al.*, 2016). Nevertheless, jointly with the number of publications, the total citation is a complementary criterion that could be analyzed to measure the growth and impact of a research stream.

Thus, the scarcity of reviews in the literature on IR using a broad overview, the lack of longitudinal analysis of the matter, and the need to evaluate the relevance of a research stream using multiple measures, all lead to the first question:

RQ1: How is IR research growing in number of publications and in number of citations?

Despite scholars having no control over the development of research on the IR stream, it cannot be detached from the history of the development of IR itself regarding the milestones that have been reached, specifically in the last decade. Hence, in order to address RQ1, this study takes a milestone approach to the history of IR in order to introduce the quantitative longitudinal analysis.

The second and third questions are prompted by the lack of evidence to support the significance of the accounting field to IR research. Although different authors have identified the interest of accounting scholars in this area e.g., De Villiers *et al.* (2017), no comparative analysis has been provided to assess the significance of this field to IR research. Given its fundamental basis, the IR field is inclined to cover multiple focuses from sources where articles are published. For instance, while the bibliometric analysis research on business ethics published by Uysal (2010) considered journals with an emphasis on accounting, it also includes non-accounting journals in the study, thereby justifying its inclusion by citing the intersection of fields. Although integrated reports rely on financial statements as important sources of financial information, the very best definition of IR is supported in integrated thinking, which requires a much broader process than just financial information, together with business models and value creation over time. Despite it being the aim of IR to overcome the drawbacks in the format and usefulness of financial reporting practices at the time of their release (Baboukardos and Rimmel, 2016; Eccles *et al.*, 2015; Perego *et al.*, 2016), the debate may be complicated, as discussed

by Melloni *et al.* (2017) with regard to the extant lack of convergence in the accounting literature, on how to define and empirically disentangle disclosure of quantity and quality. While it is true that organizations, regulators and standard setters may be leading the process of promoting debates, setting guidelines and creating standards, the academy (researchers) and reputable academic outlets (scientific journals) play an important role regarding advances in knowledge and science, and in the dissemination of those advances. It could, therefore, be relevant to first analyze to what extent the most important academic journals in *Business and Management* welcome research on the IR stream, and whether it is important to highlight the scientific area of *Accounting* as one of the most important in supporting the IR research. While quantitative evidence may support the significance of accounting to the IR research stream, the identification of integrated reporting as an interdisciplinary ground for research also prompts the question as to whether there are differences between the research topics in accounting and non-core accounting related fields. To accompany this thinking, and framed by the existence of Journals with different research scopes, the second and third questions arise:

RQ2: Is IR research more significant with regard to quantitative metrics in accounting journals than in non-core accounting journals?

RQ3: Do differences exist between IR research topics published in accounting journals versus non-core accounting journals?

The fourth question was prompted by the lack of graphical visualizations and numerical indicators that could help to qualify and quantify the collaboration and impact (Leppink and Pérez-Fuster, 2019) in IR research. Although Dumay *et al.* (2016) has identified the top articles in this stream in the early stages, and Rinaldi *et al.* (2018) provided a list of journals publishing IR research applied to accounting research over the period 2012-2017, a more bibliometric and network approach has only recently been taken for this stream¹, e.g., Di Vaio *et al.* (2020). Still, it provided an analysis of a specific topic of interest - value relevance - within the IR research. In general, the scarcity of bibliometric analysis can be seen as a limitation to being able to assess the quantity and quality of the research conducted, which hinders the adoption of measures in developing research activities (Moya and Prior, 2008). Furthermore, this paucity is largely responsible for the fact that a great number of researchers and studies within a stream are overlooked, which is an obstacle to the development and promotion of all those who are contributing to the diffusion of knowledge, as well as to their being acknowledged for it. Thus, the need for a bibliometric analysis is reinforced since that would allow the research carried out so far to be assessed, and the main authors, sources of publication, and areas of study for a given subject to be acknowledged. (Bruns *et al.*, 2020).

In addition, with the support of bibliometric tools, network maps and the identification of clusters based on scientific research can be constructed based on authorship and on the number of publications that they create together (Ikeziri *et al.*, 2019; Perianes-Rodriguez *et al.*, 2016), thus promoting the visualization of groups of research in the IR domain. Motivated by some of the aforementioned points, using a wide-ranging collection of articles to identify the work of journals and scholars as a whole, (i.e. not fragmented), sets the stage for the fourth and final question:

¹ Excluding thesis/dissertations, working papers or manuscripts published in journals out of WoS or SCOPUS indexation.

RQ4: Who are the main contributors in the development of IR research in terms of journals, scholars and research clusters, in both accounting and non-core accounting journals?

As outlined, this paper aims to fill the three identified gaps, by answering four straightforward research questions and using specific and wide-spread approaches to tackling research. Figure 1 summarizes the research design behind this study and will help the reader to follow the upcoming sections.

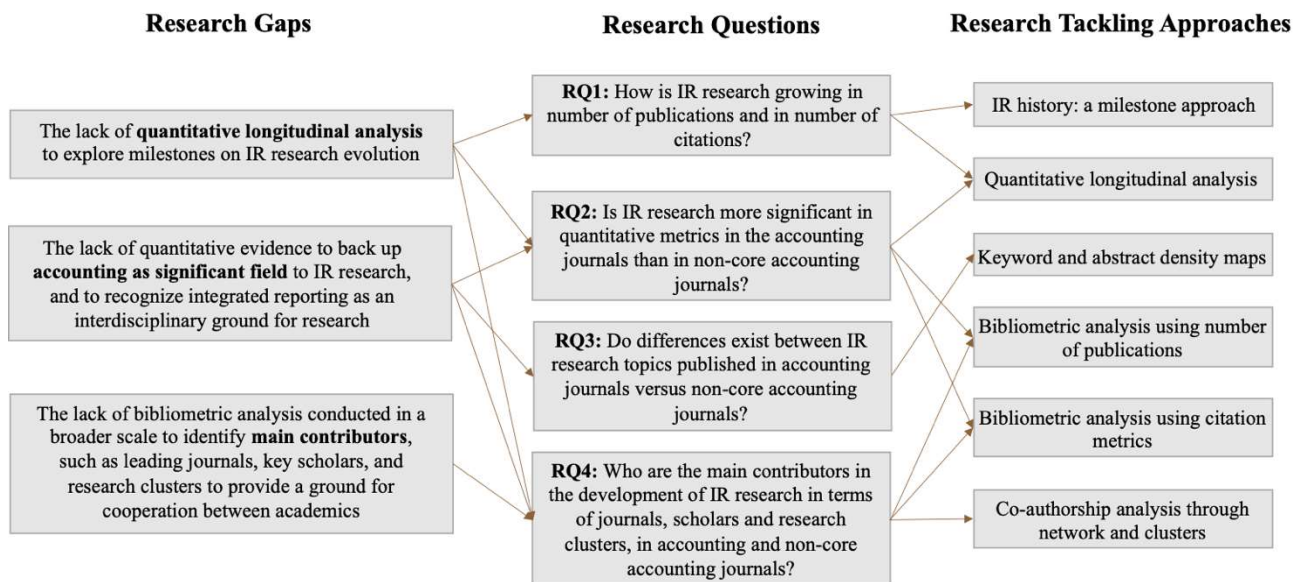


Figure 1 – Research Design

3. Methods and techniques

The methods applied in this research paper are based on previous studies that have conducted similar analyses, mainly using bibliometric techniques, e.g., Ikeziri *et al.* (2019), Zhong *et al.* (2016), Uysal (2010), and Moya & Prior (2008). By applying a structural and longitudinal perspective, conducting a bibliometric analysis may facilitate the assessment (Bruns *et al.*, 2020) of the IR research stream. Besides, bibliometric analysis makes recognition of the main authors, sources of publication, and areas of study for a given subject possible, and the use of bibliometric tools allows the creation of network maps and the identification of clusters based on scientific research, publication sources, or the most influential keywords (Ikeziri *et al.*, 2019). In the following sub-sections, the different procedures conducted in the present study will be detailed.

3.1. Data collection and management

The first step towards the development of the dataset was the choice of databases. A combination of data from Web of Science (WoS) and SCOPUS was preferred, as both databases are recognized for their bibliometric high-quality data (Bruns *et al.*, 2020). The interdisciplinary character of the IR stream led to publications from diverse research fields being considered. **This being so, there**

was no pre-selection of specific journals, publications, and dates in this research and nor was there any limitation of time span set on the databases.

Once the databases were selected, the first challenge was to decide on the keywords to use as search terms. In the first round, a search in both databases was conducted of the peer-reviewed articles that included in the topic field (category that broadly filters the titles, abstracts, and keywords of the source articles) terms previously identified with IR research, such as “integrated reporting”, “integrated report”, “IIRC”, “<IR>”, and “International Integrated Reporting Council”. However, after analyzing the results, only a Boolean search for “integrated report*” was carried out. This search led to a compilation of keywords with “integrated” and diverse other terms such as report, reports, reporting, and reporter. The inclusion of the other related terms did not add value to the search itself. At this point, there were 814 manuscripts in WoS and 811 in SCOPUS.

The second step was to proceed with data cleaning since terms such “integrated reporter” and “integrated reporters” are also significantly used in other fields, e.g., cell biology and genetics heredity. In addition, there are also the so-called “False positives”, articles that mention the keywords selected but concern different or unrelated topics (Linnenluecke *et al.*, 2020.) Accordingly, the output was validated by removing those articles from the scope because they do not refer to IR as a corporate reporting subject. That left 406 manuscripts to be considered in WoS and 480 in SCOPUS. However, no exclusion of articles was carried out as result of researchers’ opinions on the lack of quality of the study itself, as that would create bias (Linnenluecke *et al.*, 2020). Articles published in a language other than English were considered for the bibliometrics analysis only if the abstract or full text were also available in English so that the tool could be read, otherwise they were excluded.

Finally, the use of two different databases led to duplicated entries, as these databases comprise different journals, but also repeated ones. Hence, once the results had been compiled, only a total of 540 peer-reviewed papers were validated and considered for this literature review. The time span ended up being from 2006 (first publication) to July 8th, 2020 (early access documents). A PRISMA flow diagram is presented in Figure 2 to give a better understanding of the most relevant concepts and key elements about scoping procedure.

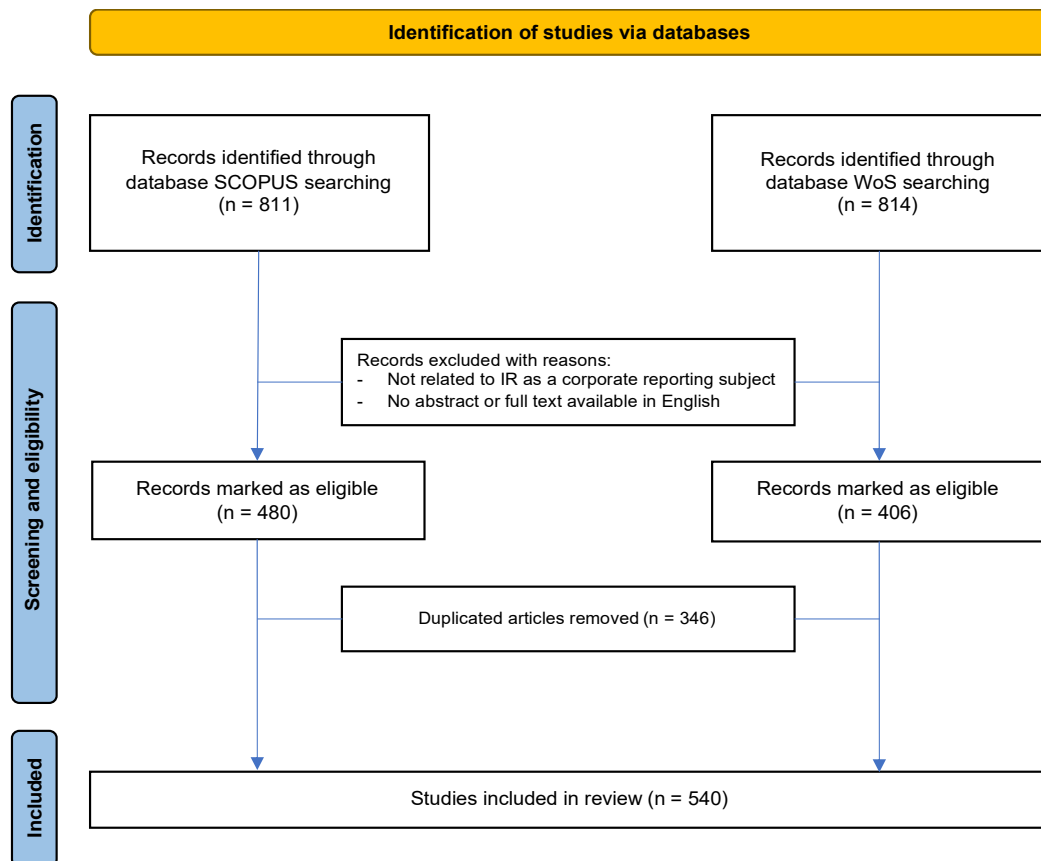


Figure 2 – PRISMA flow diagram

Once a range of suitable publications had been identified, and before further analysis, additional data correction was performed. Due to various errors and discrepancies in the reference information, namely authors' names, source titles, and publication years, the details on each entry were harmonized. This procedure is crucial in bibliometric analysis, as an incorrect account for an author or journal could lead to incorrect results.

In addition to the reference data, citation counts were also compiled from both databases², as these are commonly used to assess quality and impact (Bartolacci *et al.*, 2020; Dumay *et al.*, 2016; Massaro *et al.*, 2016; Meyer *et al.*, 2018). In order to guarantee data quality, this methodology was carried out by each author independently and then crosschecked to assure the feasibility of the sample.

As the research questions aim to compare two research scopes: publications in accounting journals, and in non-core accounting journals, each reference was coded based on the source title. Although such codification is not new in the area as a whole (Dumay *et al.*, 2018), it had not hitherto been done in IR research and, as such, involved several different steps. First, the SCOPUS category (*Accounting*) and the Academic Journal Guide (AJG) field (*Accounting*) were used to classify a source title as a core Accounting Journal (AJ). Following that, some fine tuning was required to include three other source titles from the Web of Science database that had not been included using the previous criteria. In total, 47 journals were classified as AJ. All the others (162) were classified as non-core accounting journals (NCAJ) and comprised different source titles from a wide variety of research fields, such as business, finance, and ethics. This codification is not intended to evaluate the quality of

² Google scholar citations were not considered, as they may duplicate analysis, and conflict with a methodology based on data solely from peer-reviewed publications in WoS and SCOPUS databases.

the peer review system, and/or the relative position of the publication, but to classify journals per category for the purposes of this research.

3.2. Data analysis techniques

The compiled dataset from WoS and Scopus was saved in a spreadsheet and used to conduct most of the data analysis (RQ1, RQ2 and RQ4). However, the *VOSviewer* software was also crucial in creating some of the visual maps that have led to the present paper. This software is quite popular in the construction of bibliometric analysis (Balstad and Berg, 2020; van Eck and Waltman, 2017; Ikeziri *et al.*, 2019) as it allows for co-authorship analysis through networks and clustering techniques, and for co-occurrence assessments and density map development (van Eck and Waltman, 2017; Ikeziri *et al.*, 2019). Hence, this tool was used to develop the keyword and abstract density maps, and network analysis with cluster development.

The density maps, constructed based on text mining, allow the researcher to extract topics within a body of literature. This technique is commonly used to identify conceptual developments, emerging trends, or even fruitful opportunities for future agenda (Lee and Kang, 2018). This ability to analyze and synthesize information in order to gain insights regarding a body of literature was chosen to address RQ3. By separating the publications into two groups (AJ and NCAJ), and creating separated and pooled maps with the abstract and keyword information of each publication, it was possible to provide density maps of the concepts used in such publications.

With regard to the network analysis and cluster identification (RQ4), diverse approaches could be taken, namely co-authorship, co-citation, and bibliographic coupling networks (Perianes-Rodriguez *et al.*, 2016; Zhong *et al.*, 2016). For the purposes of this study, such bibliometric networks were developed based on co-authorship, as the work connections among researchers allow us to acknowledge the dynamics in this scientific field and to recognize the academic collaborative relationships (Kumar *et al.*, 2019), leading to the identification of research groups (hereafter referred to as research clusters (RC)).

4. Results and Discussion

4.1. Longitudinal analysis on the IR stream

With RQ1 in mind, a milestone approach to the history of IR was taken. The objective was not to re-write the history, or replicate other authors, or even criticize prior works. In fact, diverse authors have already provided in-depth reviews of IR history e.g., Nicolò *et al.* (2020), Veltri and Silvestri (2020), Shoaf *et al.* (2018), Guthrie *et al.* (2017), Roslender and Nielsen (2017), De Villiers *et al.* (2017), and Dumay *et al.* (2016). Rather, the aim is to shed light on some facts and events that could have triggered the IR stream, and that may help to trace from an academic and longitudinal perspective, the engagement of scholars and publishers in the dissemination of IR studies. The five identified milestones are presented in the top part of Figure 3.

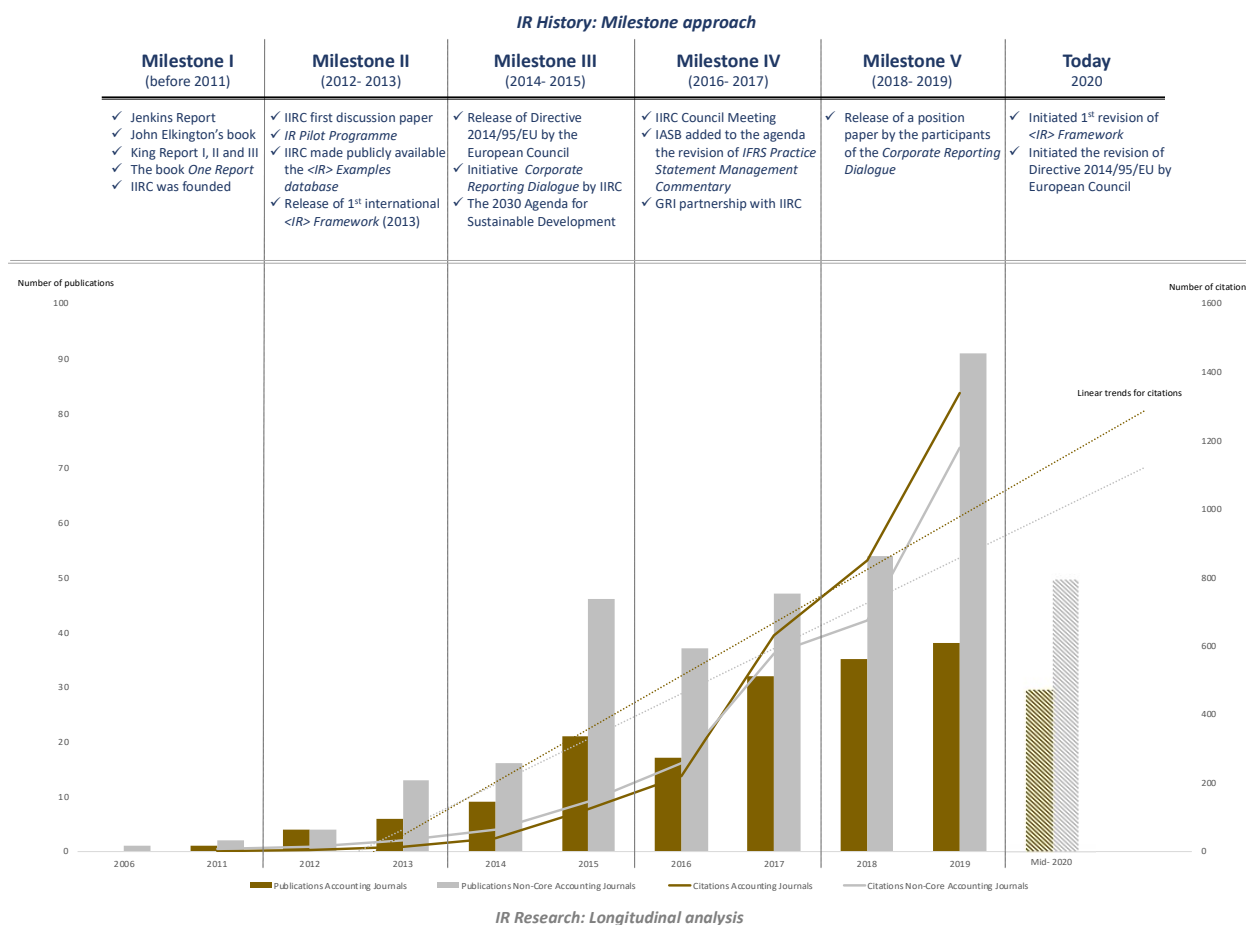


Figure 3 – Longitudinal analysis and milestone approach to IR

Following the milestone analysis, and in order to answer both RQ1 and RQ2, the sample of 540 peer-reviewed papers was separated into the two research scopes (AJ and NCAJ), according to the source title (see Methods and techniques section). The bottom part of Figure 2 displays the longitudinal distribution of IR research (based on the collected sample) in terms of number of publications and citations for both scopes. There is an undeniably increasing trend in IR research in the two areas and in the two variables analyzed (number of publications and citations). However, comparing both areas, even though the total number of publications in AJ and NCAJ is increasing overtime, it is lower per year in AJ than NCAJ. This may be justified by the relatively small number of publications classified as “accounting” compared to the number of other categories in the Scopus and ABS. Another plausible motive could be in the aim and scope of each outlet. As IR was, at the beginning, more entrenched in sustainability issues (Melloni *et al.*, 2017), than with financial reporting, one could mistrust the interest of AJ in this stream of research. But journals welcome diversity and interdisciplinarity as long as a paper complies with their level of stringency. For instance, a highly reputable journal in the AJ research scope has highlighted that its focus comprises “social issues, including non-financial corporate reporting/disclosure, public sector accounting, corporate governance and alternative forms of accounting, auditing and accountability” (Dumay *et al.*, 2018, p.1511). Similar clarifications may encourage authors to better address their studies.

Despite the number of publications, from 2016 onwards, the AJ scope stands out with regard to the number of citations. In fact, this increasingly higher trend has been observed since 2014 (dotted lines in Figure 3). This interesting finding may need further analysis, as there could be different motives behind this difference that directly pertain to research topics, renowned journals, publications or key authors, and/or higher quality/impact of publications themselves (Bartolacci *et al.*, 2020; Dumay *et al.*, 2016; Massaro *et al.*, 2016; Meyer *et al.*, 2018).

The longitudinal analysis of IR research cannot be detached from the history of IR. Earlier publications in the embryonic debate around IR discussed the definitions, former guidance, normative approaches, and corporate reporting, mainly supported in books and published documents (**Milestone I**). The Jenkins Report of 1994, and the book of John Elkington, *Cannibals With Forks: The Triple Bottom Line of 21st Century Business* are some of the most mentioned documents (Dumay *et al.*, 2016; Melloni *et al.*, 2017; Rivera-Arrubla *et al.*, 2016). King Report III on Governance is also quite often mentioned due to the proposed concepts on integrated reporting to be mandatorily followed by listed companies on the Johannesburg stock exchange (JSE), previously introduced by its predecessors (King Reports I and II). Yet, the number of publications in peer-reviewed journals was relatively small at that time. Figure 3 shows that the first publication identified in this database dates back to 2006. The publication is entitled *An extended performance reporting framework for social and environmental accounting*, and was published on *Business, Strategy and the Environment*. Naturally, this means that several other contributions were also important, but the literature at the time may be distributed among journals somehow not included in Scopus and Web of Science, and main keywords in such publications may not include the latter on the developed concept of “integrated reporting”.

The 2010 book *One Report: Integrated Reporting for a Sustainable Strategy* calling for “connectivity of information” – the relationship between financial performance and environmental, social, and governance performance (Eccles and Krzus, 2010), and the establishment of the International Integrated Reporting Council (IIRC) in the same year, were two landmarks pointed out by authors to justify the development of IR (Del Baldo, 2017; Beattie and Smith, 2013; Dumay *et al.*, 2017; Rinaldi *et al.*, 2018). Thus, as denoted by Vitolla *et al.* (2019), studies on the topic were primarily concerned with the appreciations or criticisms of integrated reporting or, alternatively, normative advice regarding the implementation of this practice.

Not surprisingly, as time went by, the academy’s interest in the topic tended to increase and, in 2015, a first peak can be seen (see Figure 3). Velte and Stawinoga (2017) also recognized 2015 as a peak year. Yet, their sample ended in February 2016. The events that occurred in the years prior to that, such as the ones mentioned in **Milestone II**, may be at the root of this peak. This growth in interest may have been spurred on by: the creation of the <IR> *Pilot Program*, offering firms the opportunity to undertake this innovative disclosure practice (De Villiers *et al.*, 2014); and the launch of the <IR> *Examples database*, aimed to “illustrate how organizations are currently reporting concise information about how their strategy, governance, performance and prospects, in the context of their external environment, can lead to the creation of value over the short, medium and long term” (IIRC, 2012), with the icing on the cake being the release of the first international version of the <IR> *Framework* (IIRC, 2013), which induced its voluntary application. Nevertheless, the time lag between events and academic publications must not be neglected.

At that point in time (2015), a new ground for development in IR research was settled upon, which potentially could have prompted some of the subsequent empirical research in this field e.g. Adams *et al.* (2016), Lopes and Coelho (2018), Stone and Lodhia (2019), Richard and Odendaal

(2020). It used the database and took advantage of the aforementioned pilot program to offer significant contributions to IR research. This idea is in line with De Villiers *et al.* (2014), who advanced that a new body of literature was emerging and attracting the attention of academics. That manuscript is part of a group of documents published in a special issue on IR research in a highly reputable accounting journal (Dumay *et al.*, 2016). Since then, several academic journals have launched other special issues and called for research on IR, thus contributing to this growth in publications over the following years.

A couple of months after the introduction of the <IR> *Framework*, the 2014/95/EU directive was released by the European Council. Also known as the non-financial reporting directive, it lays down the rules on the disclosure of non-financial and diversity information for certain large undertakings and groups in their annual reports. Although companies were only required to apply the rules after 2017, it nevertheless meant that awareness had been raised. And while the Directive does not exactly mandate the preparation of integrated reports, “it is one of the most important developments in this regard, as it had to be translated into national legislation by the end of 2016” (Kannenberg and Schreck, 2019, p.520). Also, in 2014, the *Corporate Reporting Dialogue* was launched to strengthen cooperation, coordination and alignment between IIRC and other key organizations (e.g., IASB) (Barth *et al.*, 2017) – **Milestone III**. This milestone may support the increased interest in the topic among accounting scholars, and the increased number of publications and citations in the AJ research scope from 2014 onwards, as key standard accounting setters were taking a vis-à-vis position with the IIRC. 2015 became the first year in which the definitive version of the <IR> *Framework* of 2013 (mainly voluntarily applied), went hand-in-hand with the Directive mandatorily requiring the presentation of a non-financial statement for several firms in the European Union. On top of that, 2015 was also the year that all United Nations Member States adopted the 2030 Agenda for Sustainable Development, which according to the IIRC Chief Executive Officer Richard Howit, can provide “the context to accelerate global progress towards the integration of financial and non-financial reporting” (IIRC, 2018). *These events may explain the increase in IR research in the following years, as the discussion about the impacts on business surrounding the Sustainable Development Goals (SDGs) has grown exponentially over recent years (Pizzi et al., 2020).*

The aforementioned landmarks, together with **Milestone IV**, highlighted events such as the increased relationship between IIRC and IASB, reflected by its participation in the IIRC Council Meeting in 2017 (IASB, 2017a), and the IASB announcement of the IFRS Practice Statement. The revision of the *Management Commentary*, which aimed to focus more on broader reporting of financial information needed for investors (IASB, 2017b), might be boosting the publications of IR in the AJ scope. On the other hand, the partnership developed between IIRC and GRI to discuss how GRI standards could be incorporated into the IR process (Veltri and Silvestri, 2020), might be behind some of the growth in the NCAJ scope, but only further analysis could provide more insights.

In a special nod to the year 2020, by mid-2020 (based on data collection), the number of publications was already 66% of all publications in AJ throughout the whole of 2019, and 46% in NCAJ. This would suggest that both in the accounting field and in other interdisciplinary areas, interest in IR research is growing. At the same time, quantitative evidence is also provided to back up accounting as a significant field for this stream. **Milestone V** highlights the release of a position paper, in July 2019, by Corporate Reporting Dialogue participants - setting out seven principles of transparency and accountability believed to be fundamental to corporate reporting and to achieving effective and holistic reporting (IASB, 2019), reinforcing the interest of different organizations in this field.

Finally, some up-to-date information was also added to Figure 3, to mark the recent announcement by the IIRC that the <IR> *Framework* will have its first revision, with “academia” included for the first time in the list of global coalition for the IIRC (IIRC, 2020a), as well as the public consultation of the review of the non-financial reporting Directive launched by the European Commission as part of the commitment to strengthen sustainable investment (European Commission, 2020). While the time span between the development of a research study and its publication must be borne in mind, the above-mentioned events may currently be entrenching interest in the area, meaning that diverse research studies could be taking off or even coming to a conclusion.

4.2. Differences in research topics between AJ and NCAJ

This section aims to provide evidence to answer RQ3. A keyword and abstract analysis were conducted to verify whether differences exist between the research topics in the two sampled scopes. Figure 4 presents the density maps for publications in AJ (on the left), NCAJ (on the right) and pooled information (on the bottom).

From a first observation, it is possible to detect solid evidence of differences in the two top maps. Visually, there are more concepts and greater detail in the density map of NCAJ than AJ, and in the latter, the concepts seem more dispersed into groups. Namely, in the AJ density map the words are gathered in roughly 4 independent groups, whereas in the NCAJ the integration seems much higher, highlighting one single group of somewhat interconnected concepts. This may imply different levels of literature development between the two analyzed research scopes. However, if one observes the pooled sample density map (bottom of Figure 4), with all the abstracts and keywords from both AJ and NCAJ publications, visually it seems that an almost picture-perfect circle arises, suggesting that IR research constitutes a research stream with interconnected areas, but distinct perspectives that should be looked into separately.

By taking a closer look into the concepts included in the maps, the words *disclosure*, *firm*, *accounting*, *IIRC* have a higher density (red) in the AJ map, whereas the concepts *development*, *system*, *quality*, *guideline*, *intellectual capital* are the ones highlighted for NCAJ. With regard to the pooled map the words *accounting*, *IIRC*, *quality*, and *firm* from the AJ map, seem to combine with words from the NCAJ, such as *organization* or *CSR* (corporate social responsibility), which reinforces the idea of a research field with interdisciplinary characteristics. Such findings support that integrated reporting is a representation of a complex and interconnected approach towards combining financial and non-financial information to assess the underlying performance of an organization (McNally and Maroun, 2018; Stone and Lodhia, 2019).

Still with regard to comparing the individual maps, some interesting findings also need special discussion. The concept *value relevance* features in the NCAJ map, but not in that of the AJ. The same occurs with the *sustainability report* concept, which is referred to as the forerunner of integrated reporting (Zhou *et al.*, 2017). It could be expected, therefore, that both would also appear in most of the publications in AJ. However, those concepts do not appear in high density in the abstracts and keywords of the aforementioned publications, which differs from evidence in a recent literature review on value relevance in IR research by Veltri and Silvestri (2020). This would indicate that care should be taken since this finding could only mean that the keyword *value relevance* is not largely applied in

the abstracts of AJ, where greater emphasis is given to concepts such as *firm value* or *financial performance*, which are illustrated in the AJ density map and can indicate a value relevance research purpose. Indeed, the pooled density map also reinforces this idea, revealing *value relevance* as a high-density topic within the IR research stream as a whole. Accordingly, researchers should be alert to limiting searches to specific terms, since that could negatively influence research progress and even citation counts.

Finally, with regard to the concept *sustainability report*, the lack of density in this concept on the AJ map may suggest that IR research goes beyond the connection with the sustainability report concept to a more in-depth review of IR as a form of corporate reporting. Nevertheless, in the pooled map, this concept still appears, reinforcing that differences exist between the research topics in each of the research scopes, but also promoting interdisciplinarity.

Overall, the density maps reveal that differences in co-occurrences do exist between AJ and NCAJ, giving the authors of this present paper the confidence to answer RQ3 in the affirmative and the assurance that the existence of two different scopes (whether more focused on accounting or more focused on other related fields) are sufficiently well-designed to welcome different perspectives of IR research. The visualization of these density maps may also be of interest for future systematic literature reviews that adopt a theme-centric approach, in which the researcher guides the reader through prior publications that have contributed towards developing the understanding of themes, concepts or phenomena of interest (Linnenluecke *et al.*, 2020).

4.3. Main contributors: leading journals, key scholars and research clusters

The last research question, RQ4, aims to identify the main contributors to the IR research stream. This type of analysis is gaining more and more relevance within different scientific environments, as the information acquired can help scholars to evolve in a specific body of knowledge by increasing opportunities for exchange and teamwork (Perianes-Rodriguez *et al.*, 2016). The answer to RQ4 also complements the answers to RQ1 and RQ2.

Leading journals

The first analysis intends to show the source titles that are contributing the most to the diffusion of IR research, and also to show the issue from a longitudinal perspective. Figure 5 provides an overview for both research scopes: AJ (Panel A) and NCAJ (Panel B).

Due to the great number of journals that have been publishing IR theoretical, critical or empirical studies, there were two cumulative criteria to be included in any of the panels, specifically: i) each journal must have 3 or more publications included in the sampled database; or ii) each journal must have 1 or 2 publications with at least 20 accumulated citations since the publication date.

Both panels reveal critical information that gives an idea of which journals are more prominent in disseminating reflections and research results about the IR debate. Each journal is presented in descending order of total publications, and the number of publications per year is presented inside each colored bar. Additionally, the information on the early access publications and the total accumulated citations for that journal are also included on the right-hand side of the figure. The early access publications were kept separately, because the print publication data could refer to 2020, 2021 or further, which could create misrepresentations for future research.

On a first observation, there is a large difference with respect to the number of different journals in AJ and NCAJ, versus the number of published studies. However, in terms of citation count, both scopes are neck and neck. These findings are in line with the longitudinal analysis presented in Figure 3, in which a higher trend in citation count for the AJ research scope was observed.

A more detailed analysis of each panel can show additional information. Panel A reveals the *Accounting, Auditing & Accountability Journal* (AAAJ) as the leader in IR research in the AJ research scope with regard to both publications and citations, with 26 publications up to the mid-2020s, and an impressive total of 986 citations (almost double the number of the second-highest journal in publications). AAAJ is followed by *Meditari Accountancy Research* (MAR) with 25 publications and 557 citations. Notably, AAAJ and MAR have been the greatest contributors to the diffusion of academic scholars' work on IR topics within the scope of AJ. This finding is not completely new, as Rinaldi *et al.* (2018) have already pointed out these two journals. At the time, MAR was leading with regard to the number of publications, but no citation analysis was provided. Several special issues and calls for research on IR topics triggered by both AAAJ and MAR (Dumay *et al.*, 2016; Guthrie *et al.*, 2017) may have contributed to their being in these leading roles. Additionally, the way the journal is described can likewise explain its position in the academic community (Hylan d and Tse, 2009) and may be playing a role in the case of MAR which clearly promotes its research focus on the social impacts of accounting, sustainability accounting, and integrated reporting.

Sustainability Accounting, Management and Policy Journal, *Critical Perspectives of Accounting* and *British Accounting Review* follow the first two with 18, 9 and 8 publications, and with 317, 412 e 260 citations, respectively. In addition to all of the aforementioned, Panel A shows another 21 different AJs, with between 2 and 7 publications, albeit with substantially fewer citations. Nonetheless, within this range, other high impact journals throughout the academic community are included, e.g. *Australian Accounting Review* (7 pub.; 165 cit.), *Accounting Forum* (4 pub.; 170 cit.), *Journal of International Financial Management and Accounting* (3 pub; 113 cit.), or *Accounting, Organization and Society* (2 pub; 68 cit.). Finally, despite having only a single publication each (in the sampled period), some other AJ journals deserve to be highlighted due to the high number of citations, e.g. *Abacus*, *Accounting Horizons* and *Review of Quantitative Finance and Accounting* with 78, 69 and 57 citations, respectively. This finding supports an answer in the affirmative to RQ2, which is that accounting journals are contributing significantly to the IR stream, with more than half of total citations (3922 out of 7668), and 35% of the total papers in this stream. This backs up the contention of De Villiers *et al.* (2017) that IR is an area of interest for the accounting profession.

It should not be forgotten that in the NCAJ research stream, a vast group of areas is included, from management and finance, to ethics and sustainability. In fact, Panel B covers the information for 161 journals, which is more than 3 times the set of Panel A for the same selection criteria. In this Panel, *Journal of Intellectual Capital* (JIC) is ranked first by total number of publications (26), having a total of 521 accumulated citations, revealing that despite the same number of publications as AAAJ (Panel A), the number of citations is significantly lower.

The peak of 2019, observed in Figure 3, can be better analyzed as in 2019 alone, JIC had 13 publications, and *Journal of Management and Governance* (JMG) had 8 publications, to which their special Issues: *Extending intellectual capital through integrated reporting*, and *The Role of Intellectual Capital and Integrated Reporting in Management and Governance: A Performative Perspective*, respectively, may have largely contributed. The *Sustainability* and *Business Strategy and Environment journals* (BSE) also lead in terms of number of papers, with 23 and 20, respectively. However, despite the high number of different journals, there are 130 journals that have only 1 or 2 publications on the topic, reinforcing not only the assertion that the accounting stream is a heavy contributor to the IR research stream, but also that the literature is somehow quite disjointed (Zhou *et al.*, 2017).

Finally, both Panel A and B (Figure 5) call attention to the year 2015, as the turning point in research intensity. Panel A shows only 20 in the four years from 2011, and yet in 2015 alone there were 21. The period between 2016 and mid-2020 is impressive, with 141 publications and revealing a growing trend year on year. The same pattern is also found for NCAJ, with 36, 46 and 268 being the number of publications distributed in the period up to early 2015, throughout 2015, and after the end of 2015, respectively. Specifically, 77% of the total research done in IR was published from 2016 onwards. This finding was only possible to obtain because a broad sample of IR was collected, which thus avoided creating bias by pre-selecting journals by scope, authors, or specific literature topics. Although previous systematic reviews in the accounting field have identified 2015 as the peak year for IR research (Velte and Stawinoga, 2017; Di Vaio *et al.*, 2020), the present study complements previous studies by providing a perspective in which both scopes, AJ and NCAJ, are included. Added to that, according to the longitudinal analysis provided in Figure 3, the detailed Milestones may justify this increase, in that from 2015 onwards, the definitive version of the <IR> Framework of 2013 started to be applied, providing more data with which to conduct research.

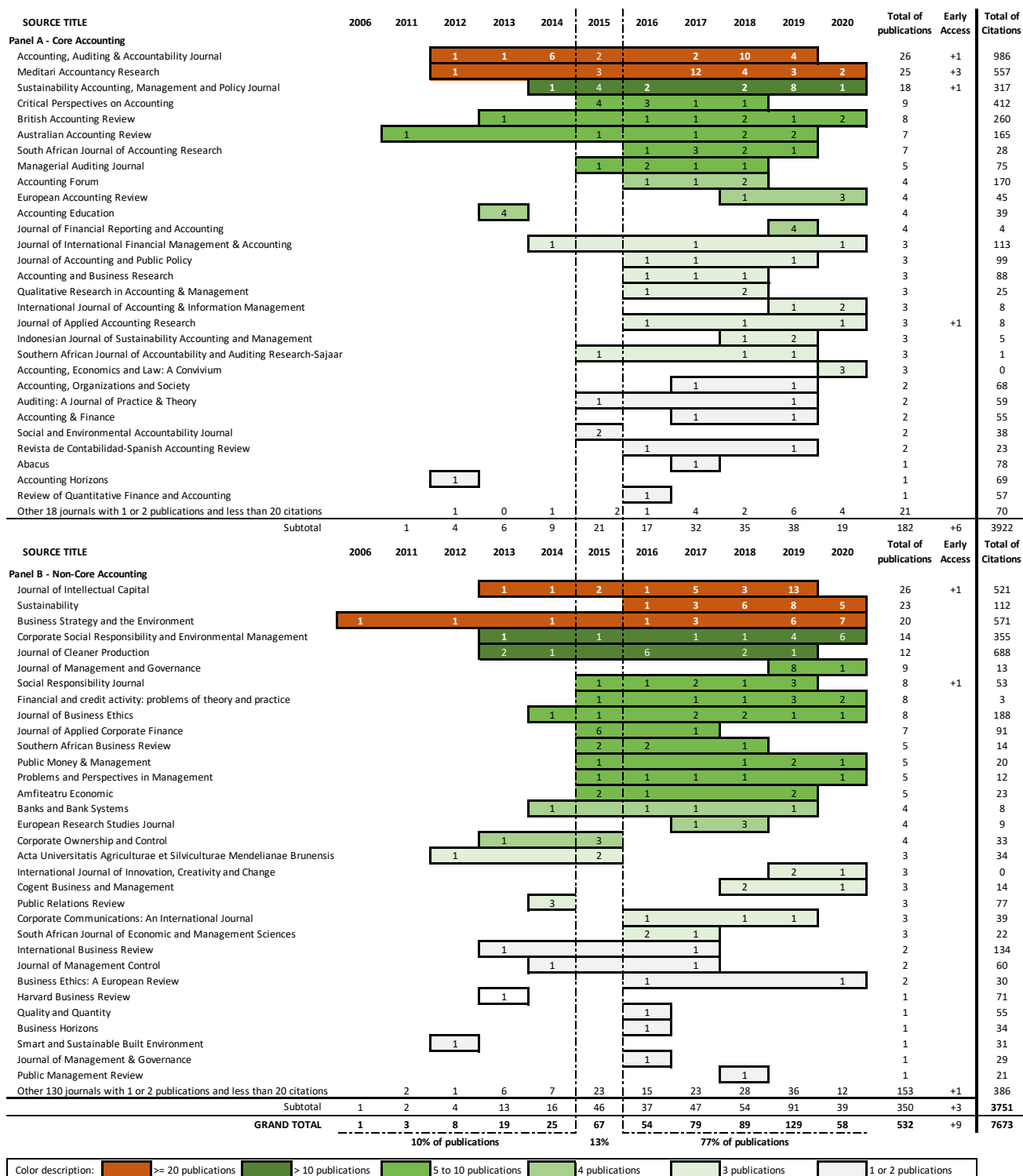


Figure 5 – Longitudinal distribution of publications per AJ and NCAJ

Key Scholars

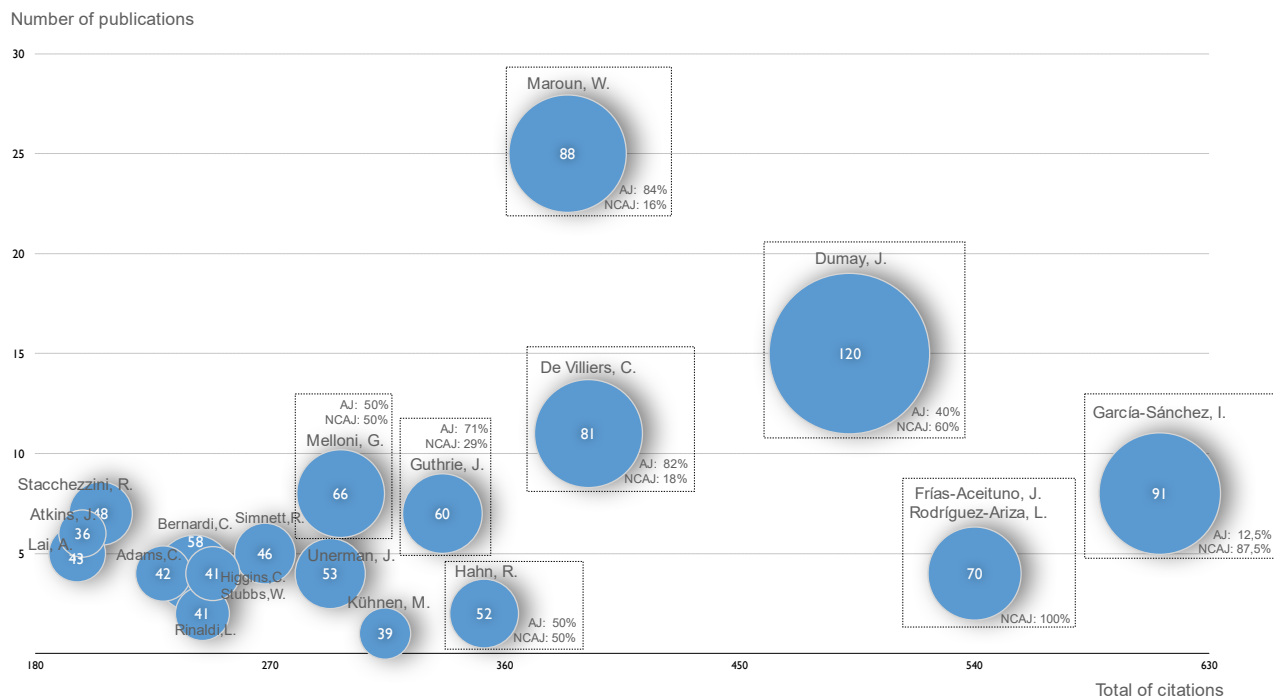


Figure 6 – Key scholars comparison matrix

Note: scholars are mapped in this matrix per number of publications (y axis), per number of citations (x axis), and per average year citation (bubble size). Within the dotted line square, there is information on the percentage of publications in each of the research scopes analyzed, and within the bubble the average year citation (AYC) ratio for all publications of that scholar.

Following the identification of journals as key contributors with regard to IR research, an assessment of the top key scholars³ in this field will be also provided. Whereas in the most commonly performed analysis the aim is to identify the top cited articles (Dumay *et al.*, 2016), in this present study, the goal is to pinpoint the scholars who are contributing to this literature and to the progress of this stream. The different measures applied to analyze the significance of each scholar will include, among others, the number of total publications or total number of citations.

In all, more than 1000 different scholars were identified as contributors to this field based on the sampled publications. However, some stand out from the group. Figure 6 is a tridimensional comparison matrix that illustrates the number of publications (y-axis) for the top 20 scholars in the highest 2-percentile of both total accumulated citation (y-axis) and average year citation (AYC)⁴ (bubble size); complementary information on the percentage of publications in each of the research scopes provided is in the dotted square.

This methodology ensures that all scholars only qualify for inclusion in Figure 6 if they have at least one publication that benefits not just from a high number of accumulated citations, but also

³ Key scholars, for the purpose of the present paper, refer to academic or non-academic authors of publications

⁴ Average year citation (AYC), for the purposes of the present paper, was computed by dividing the total accumulated citations per number of years since date of publication (2021- Publication Year), based on Dumay *et al.* (2016).

from a high AYC ratio, measuring the constant use of that work as an important reference. It must be noted, however, that this figure is a dynamic matrix that should be constantly updated, as this growing trend of IR research is drawing the attention of new scholars to the field who need time to build up their position.

By analyzing Figure 6, it is possible to verify that *Warren Maroun* is the top scholar in terms of number of publications (25), *Isabel María García-Sánchez* is the foremost scholar in terms of total accumulated citations (611), and John Dumay is the most cited scholar in terms of yearly average of citations (120 average citations/year). In the center of the map, *Charl De Villiers* is also highlighted with 11 publications, 392 accumulated citations and an AYC of 81. Finally, the bottom right, both *José Valeriano Frías-Aceituno* and *Lázaro Rodríguez-Ariza* stand out with 540 accumulated citations and 70 AYC, yet with only 4 publications. In fact, the majority of the accumulated citations belong to publications from 2013/2014, previously pointed out as top cited publications in IR (Dumay *et al.*, 2016), and yet were only quite cited (239 citations between 2019 and mid-2020). In terms of active scholars, *De Villiers, C.*; *Dumay, J.*; *Guthrie, J.*; *Maroun, W.*; *Melloni, G.* had at least one publication on IR already published in 2020, and if looking from 2018, all scholars in the matrix - except for *Frías-Aceituno, J.*, *Rodríguez-Ariza, L.*, and *Kühnen, M.* - have at least one publication.

As complementary information, some of the scholars represented in the figure have a percentage of publications in AJ and NCAJ (inside the dotted line square), showing interesting results. While *Maroun, W.*, *De Villiers, C.* and *Guthrie, J.* display a majority in AJ, the bulk of the publications of *García-Sánchez, I.* (87,5%), *Frías-Aceituno, J.* and *Rodríguez-Ariza, L.* (100%) are in NCAJ. Some other scholars have a balanced or almost balanced number of publications in both research scopes, *Melloni, G.* and *Hahn, R.* with a 50%-50% and *Dumay, J.* 40% (AJ) and 60% (NCAJ). This finding highlights the interdisciplinarity of IR research and provides information on the work and contribution of each scholar for IR research as a whole, something that is hard to accomplish when focusing on top-cited articles or literature reviews with pre-defined scopes or research topics.

Research clusters

Academic research is generally boosted by partnerships between different scholars with mutual interests, pursuing the same topics of research and driven to contribute to scientific knowledge. Thus, it is important to mention not only the single key scholars, but also to highlight research partnerships in the same field and that, all together, share the same research cluster.

With this approach in mind and for the purposes of this study, research clusters, RC, were drawn based on a co-authorship analysis on *VOSviewer*, as previously explained. *VOSviewer* is used as a clustering tool that provides solutions at an aggregate level. This tool allows results from co-authorships and co-occurrences to emanate from the presence, frequency, and proximity of similar pairs of references, avoiding possible researchers' bias (van Eck and Waltman, 2017; Bartolacci *et al.*, 2020). Both Figure 7 and Figure 8 are outputs of this computerized tool that requires no manual handling from the researcher, and can display, respectively, the largest network of key scholars, and the largest detached research clusters with at least 7 different authors. To better understand the feasibility of this evidence, it is important to draw attention to how the network and research clusters were obtained. A double computerizing methodology was conducted: (1) using the tool to achieve the largest possible network with researchers involved in the sampled publications, and (2) running the

tool again to obtain all the clusters involved in this sample (including the ones comprising the largest network).

Taking a deeper look at Figure 7, it is possible to verify the existence of 3 different, undeniable research clusters, with links between them, that involve around 100 authors contributing with 81 publications that have already accumulated 1751 citations. Individually, each research cluster presents quite high AYC ratios: RC1 (178), RC2 (112) and RC3 (95), and as a network they represent 25% of all AYC on IR research. Regarding the distribution in their research scopes, RC1 is more balanced between the two (AJ: 41%, NCAJ: 59%), while RC2 and RC3 present a higher number of publications in AJ. Interestingly, the highlighted scholars in each research cluster match some of the key scholars identified in the previous analysis (see Figure 6). In fact, some of the scholars in RC1 contributed to the first IR publication identified in this dataset, namely that of Yongvanich and Guthrie (2006). This interesting finding stresses the commitment of scholars to this field, which is now being rewarded with this increasing growth.

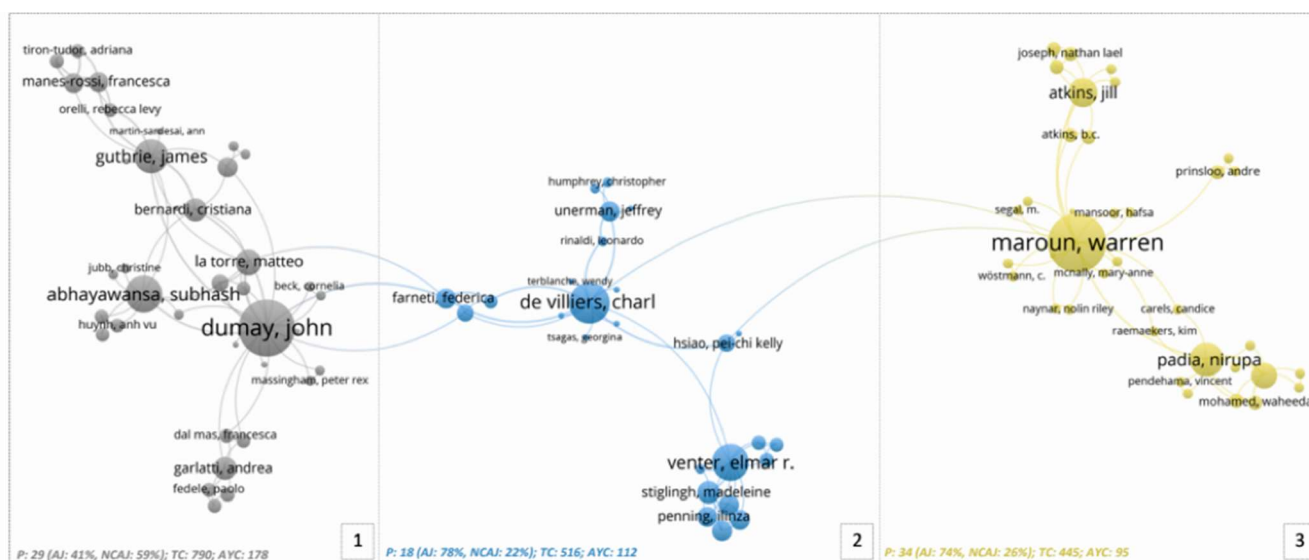


Figure 7 - The largest network of research clusters

Note: each color represents one cluster. Within each dotted square cluster, there is information on the number of publications (P) and their distribution in terms of percentage in each research scope (AJ and NCAJ); information on the total number of citations for the cluster (TC) and the AYC ratio also for the cluster.

Moreover, Figure 8 presents the detached RCs for authors not included in Figure 7. The figure pinpoints seven clusters (numbered from 4 to 10) revealed by the tool output. In contrast to the prior analysis, Figure 8 shows the existence of different independent RCs with no links between them, yet with high relevance for this stream. In total, these 7 clusters have 59 publications and 1993 total citations, and a total AYC of 389, representing another 25%. Accordingly, one can say that even representing only 25% of total publications (140 out of 540), the 10 RCs have nearly 50% of the total citations (3744 out of 7668), and a total AYC of 774 out of 1552 in this sample. Furthermore, in terms of research scopes, four clusters exhibit mostly or exclusively publications in AJ (RC6, RC7, RC9, and RC10) and another three (RC4, RC5, and RC8) in NCAJ. This evidence lends greater support to the answer to RQ2, establishing the strength of the accounting research scope for this field.

This analysis highlights the importance of developing network analysis in a research field, not only with regard to recognizing the academic collaborative relationships and rewarding scholars (Zhong *et al.*, 2016), but also to leverage a research field even more by providing an identification of research groups and their work line in order to give the new scholars in this stream a better idea of who to contact, and for what, thus facilitating *knowledge-sharing* and *knowledge-transfer* (Kumar *et al.*, 2019).

While this analysis does not intend to exclude the work done by any single scholar or research cluster, certain criteria needed to be followed due to limitations of space. However, there are high-level working parties that nevertheless deserve mention: to name but one, special reference should go to the contribution of *Rüdiger Hahn*. This scholar belongs to a small cluster (fewer than 7 authors), yet has 394 accumulated citations at around 39 per year.

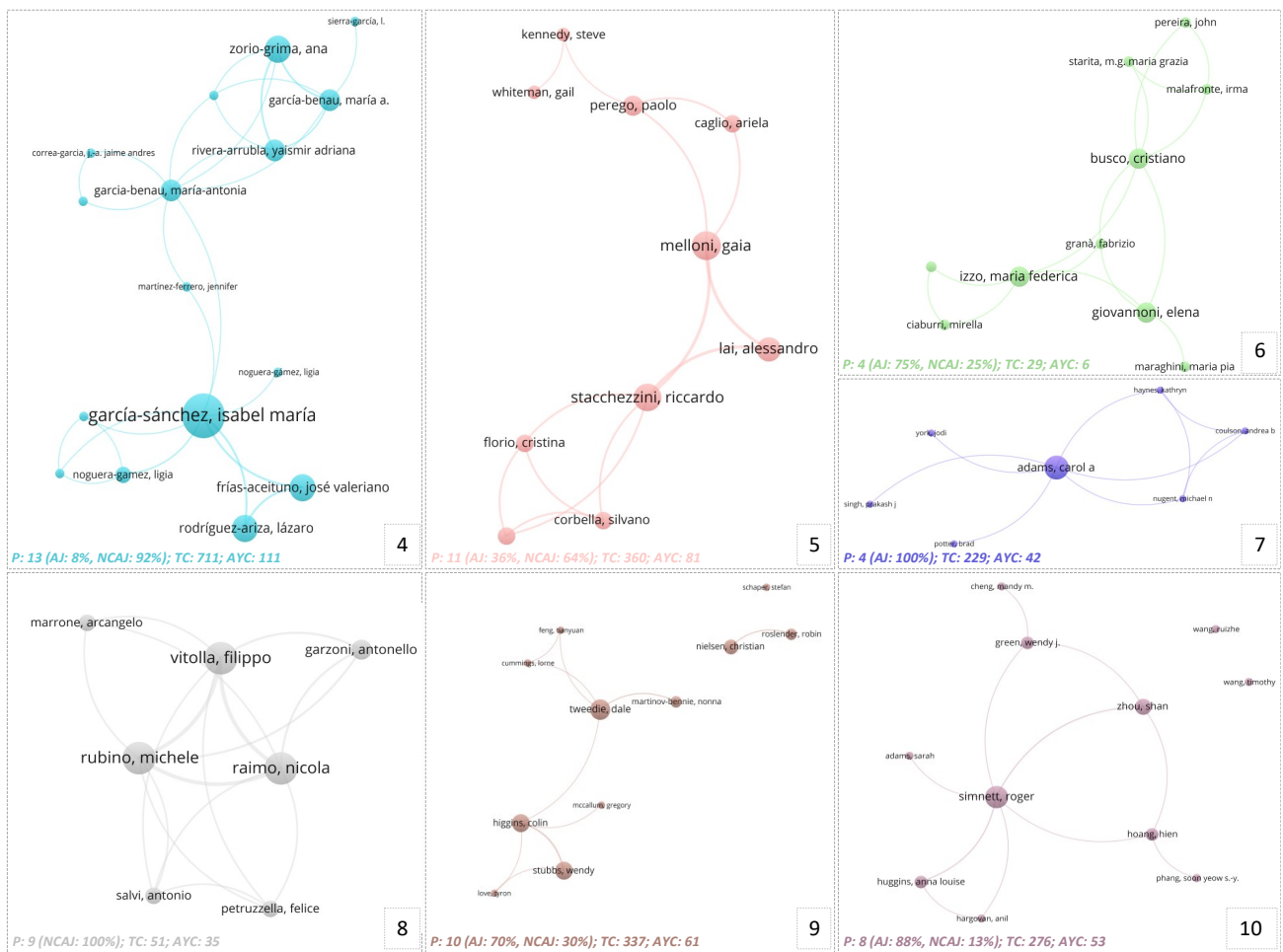


Figure 8 - The largest detached research clusters

Note: each color represents one cluster. Within each dotted square cluster, there is information on the number of publications (P) and their distribution in terms of percentage in each research scope (AJ and NCAJ); information on the total number of citations (TC) for the cluster and the average year citation (AYC) ratio also for the cluster.

Lastly, aiming to provide further information on the line of work of each contributor, yet not aiming to comment further on the top articles, the Appendix presents a list of publications that are contributing to this stream. These are the most cited for the top 10 journals (of Panels A and B in Figure 5), or for the top 20 key scholars (of Figure 6), and/or for the 10 research clusters (of Figures 7 and 8).

Concluding remarks, limitations and prospective IR research

Just as a seed that is sown even in the right season needs time to grow before the farmer can reap his reward, so the seed of knowledge needs time to spread, especially when it concerns an emergent topic such as Integrated Reporting. Every scholar desires to be acknowledged for their work, and knows that for that to happen, they need to produce cutting-edge research, subject to stringent peer reviewed processes before it can be published in a high-quality Journal. This paper provides a first assessment of the IR stream, by providing a far-reaching bibliometric assessment of the topic from a longitudinal perspective, using a broad sample of publications, separated into research scopes – accounting journals (AJ) and non-core accounting journals (NCAJ). Furthermore, it proposes to identify the main contributors to the IR stream, providing evidence of both individual and collaborative work.

Using an unbiased research strategy, that is to say, one that does not limit the sample to publications in pre-determined journals or to pre-selected research topics, this study supports the interdisciplinary nature of the field by drawing attention to two distinctive, but equally important research scopes which IR research is advancing in. Indeed, the results for both RQ1(number of publications and citations) and RQ2 (metrics for AJ and NCAJ scopes) show there is an undeniably increasing trend in IR research, and that longitudinal analysis cannot be detached from its history, for which this study contributes with a milestone approach to present the progress in the IR debate. With regard to the two scopes, one presents a relatively high number of publications (NCAJ), and the other is a leader in citation frequency (AJ), but both together contribute to this stream. The outcomes for RQ3 (research topics) reveals that AJ and NCAJ have distinct perspectives and research topics (observed in the significantly different keyword density maps), that should be looked into separately, but that suggest interconnected areas that visually create an almost picture-perfect circle in a pooled keyword density map.

Aimed at leveraging this stream even more by potentially inciting collaboration and teamwork, this study adds RQ4 and identifies the top journals, scholars and research clusters that contribute to the growth of this stream. AAAJ and MAR in the AJ research scope, and the JIC and JMG in the NCAJ have all been calling for more research in the area and have launched special issues to help this line of knowledge to develop, with their reward being the highly-cited publications featured in each. Supported by more than 1000 different scholars, and innumerable research clusters, research in the field of IR has already received more than 7600 citations. For each, the 10 identified research clusters have contributed to half, as out of the 540 publications contemplated in this study, 140 are from elements of the clusters referred to, with more than 3700 accumulated citations and an average year citation of 774. The collaborations between authors are likely to be motivated by the increasing number of researchers interested in the field of IR, and by the fact that this topic can link different and complementary perspectives in an interdisciplinary dynamic stream. What is more, being rewarded with citations, acknowledgements, collaborations, and expanded networks, among other performance indicators, means that both journals and scholars benefit from the dissemination of that work.

Limitations

The authors of the present paper acknowledge the limitations of the study. One of which naturally concerns the selection of publications using the topic field. While the method is objective, supported in its use of computerized tools, and replicable by others, the main focus of an article might not be reflected in the title, abstract or keywords. Nevertheless, and given the large population already embraced, we believe that our findings are not biased by this limitation. In fact, the potential for error, should more publications be included, could be even higher and affect the overall picture of the results, as previously stated by Rinaldi *et al.* (2018).

The second and third limitations concern the difficulty involved in performing an exhaustive analysis of the results due to the comprehensive approach taken. Although the findings reveal the most important keyword co-occurrences between papers in AJ and NCAJ, an in-depth analysis would be of interest to better reflect the state of the art in these IR scopes. Despite not being the main purpose of this study, it could be for further studies. Regarding the co-authorship analysis, typically requiring a pre-selection of a minimum number of researchers and/or publications, the authors did not apply a limit to the software's automatic detection, but mainly examined clusters presented visually. This limitation was overcome by calling attention to the existence of RC other than those presented, opening up opportunities for further development and rewarding joint collaboration.

Lastly, as noted, the number of articles is growing, and from 2019 until mid-2020, there was a significant number of different articles. However, being so recent, publications over that period have not yet had time to build a large citation count. Although different citation metrics were applied, it is expected that in the near future, some contributors can largely exceed their current position.

Prospective IR research

The new mid-2020s milestones previously identified in the longitudinal analysis, namely the beginning of the first revision of the IR framework and the launch of a public consultation to review the 2014/95/EU Directive, were contemplated at a time when the Covid-19 outbreak was not an issue. This would justify the launch of additional future research avenues to build on preceding IR research agendas (e.g., Dumay *et al.* (2016), Perego *et al.* (2016), and De Villiers *et al.* (2014, 2017):

- (1) *IR post Covid-19*: Recently, a call went out for brainstorming sessions on the importance of integrated thinking on post Covid-19, and how the value creation model of the <IR> Framework can contribute to the discussion (IIRC, 2020b). While researchers have not yet deeply studied the relationship between integrated reporting and integrated thinking, the IIRC is currently asking how entities would respond differently to the different elements of that model following the Covid-19 pandemic. This reflection should be made considering the impacts of, and on, each of the six capitals defined by IR. Thus, prospective research may be conducted to obtain evidence on how entities are implementing (or expecting to implement) actions to think holistically, even if behaviour is spearheaded by detrimental financial conditions.
- (2) *Corporate reporting during and after the outbreak*: The influence of Covid-19 on global markets is patent. This fact needs to be considered when estimating and assessing an entity's ability to continue as a 'going concern'. This reflection may also be linked to IR, since estimates and judgements can have a direct impact in all of the six capitals, mainly the financial one.

Hence, researchers can take advantage of voluntary or mandatory adopters of IR to analyze changes in behavior with regard to IR disclosures, before and after Covid-19.

- (3) *The Agenda 2030 and the IR*: The commitment of the IIRC with some of the Sustainable Development Goals is not new and dates back to 2017. However, from mid-2020 onwards the pandemic has the potential to present both challenges and opportunities. For example, taking an empirical perspective or a critical and interpretative one, researchers may have the opportunity to perceive differences and similarities between both preparers and users of financial/non-financial information in the way they face ‘materiality’ regarding the disclosure of information about value creation or value destruction.
- (4) *Non-financial reporting after 2021*: The 2014/95/EU Directive was issued in 2014, but only after 2017 were companies required to apply it. Although this Directive is mandatory, research on the impacts of its adoption by large European countries is likely in its infancy, so until there has been time to get a better grasp of its impact, it is probably the closest to the type of disclosures that IR also suggests on non-financial information. In February 2020, the European Commission launched a public consultation on the review of this Directive to collect the views of preparers and end-users of such published information (European Commission, 2020). With a public consultation on-going, and academics included as a target group, a stand-out role for researchers may also be expected. That is, one could look into the motivations of different parties in responding to this consultation process, or even into the expected outcomes of a new regulatory approach in the expected economic environment.
- (5) *The revision of the IIRC Framework*: In February 2020, the IIRC launched this revision, and one of the proposals is the inclusion of “academia” in their list for a global coalition (IIRC, 2020c). Thus, besides future research on the impacts of a new version of this Framework, academics may have an opportunity to more directly bridge the gap between theoretical and practical approaches to the process of preparing, disseminating, assuring and interpreting an integrated report, whilst not forgetting that the Covid-19 outbreak launched new challenges and opportunities for its development.

Finally, a last word for all those who consider that IR research is only now emerging. While it is true that compared to other topics in accounting and non-accounting scopes, the story of IR is recent, the seeds have been widely scattered by all the authors and all the journals whose articles are highlighted here (and still others exist). Just like a well-established tree, IR is also putting down roots and over time will mature and spread its branches.

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Appendix:

Reference	RS	TC	AYC	Top Publication for		
				Journal	Key Scholar	Cluster
Adams, C.A., 2015. The International Integrated Reporting Council: A call to action. <i>Crit. Perspect. Account.</i> 27, 23–28.	AJ	133	22		Adams, C.	RC7
Adams, S., Simnett, R., 2011. Integrated Reporting: An Opportunity for Australia’s Not-for-Profit Sector. <i>Aust. Account. Rev.</i> 21, 292–301.	AJ	99	10	✓	Simnett, R.	RC10
Atkins, J., Maroun, W., 2015. Integrated reporting in South Africa in 2012: Perspectives from South African institutional investors. <i>Meditari Account. Res.</i> 23, 197–221.	AJ	92	15	✓	Atkins, J. Maroun, W.	RC3
Beattie, V., Smith, S.J., 2013. Value creation and business models: Refocusing the intellectual capital debate. <i>Br. Account. Rev.</i> 45, 243–254.	AJ	123	15	✓		
De Villiers, C., Rinaldi, L., Unerman, J., 2014. Integrated Reporting: Insights, gaps and an agenda for future research. <i>Accounting, Audit. Account. J.</i> 27, 1042–1067.	AJ	210	30	✓	De Villiers, C., Rinaldi, L., Unerman, J.	RC2
Dumay, J., Bernardi, C., Guthrie, J., Demartini, P., 2016. Integrated reporting: A structured literature review. <i>Account. Forum</i> 40, 166–185.	AJ	151	30	✓	Dumay, J., Bernardi, C., Guthrie, J.	RC1
Flower, J., 2015. The international integrated reporting council: A story of failure. <i>Crit. Perspect. Account.</i> 27, 1–17.	AJ	151	25	✓		
Giovannoni, E., Maraghini, M.P., 2013. The challenges of integrated performance measurement systems: Integrating mechanisms for integrated measures. <i>Accounting, Audit. Account. J.</i> 26, 978–1008.	AJ	22	3			RC6
Oliver, J., Vesty, G.M., Brooks, A., 2016. Conceptualising integrated thinking in practice. <i>Manag. Audit. J.</i> 31, 228–248.	AJ	19	3,8	✓		
Raemaekers, K., Maroun, W., Padia, N., 2016. Risk disclosures by South African listed companies post-King III. <i>South African J. Account. Res.</i> 30, 41–60.	AJ	22	4,4	✓		
Reimsbach, D., Hahn, R., Gürtürk, A., 2018. Integrated Reporting and Assurance of Sustainability Information: An Experimental Study on Professional Investors’ Information Processing. <i>Eur. Account. Rev.</i> 27, 559–581.	AJ	38	13	✓		
Simnett, R., Huggins, A.L., 2015. Integrated reporting and assurance: where can research add value? <i>Sustain. Accounting, Manag. Policy J.</i> 6, 29–53.	AJ	85	14	✓		
Stubbs, W., Higgins, C., 2014. Integrated reporting and internal mechanisms of change. <i>Accounting, Audit. Account. J.</i> 27, 1068–1089.	AJ	129	18		Higgins, C. Stubbs, W.	RC9
Badia, F., Dicuonzo, G., Petruzzelli, S., Dell’Atti, V., 2019. Integrated reporting in action: mobilizing intellectual capital to improve management and governance practices. <i>J. Manag. Gov.</i> 23, 299–320.	NACJ	4	2	✓		
Dumay, J., 2016. A critical reflection on the future of intellectual capital: from reporting to disclosure. <i>J. Intellect. Cap.</i> 17, 168–184.	NACJ	137	27	✓		
Frías-Aceituno, J.V., Rodríguez-Ariza, L., García-Sánchez, I.M., 2013. The Role of the Board in the Dissemination of	NACJ	188	24	✓	Frías-Aceituno, J.,	RC4

Integrated Corporate Social Reporting. Corp. Soc. Responsib. Environ. Manag. 20, 219–233.					Rodríguez-Ariza, L., García-Sánchez, I.	
Hahn, R., Kühnen, M., 2013. Determinants of sustainability reporting: A review of results, trends, theory, and opportunities in an expanding field of research. J. Clean. Prod. 59, 5–21.	NACJ	314	39	✓	Hahn, R., Kühnen, M.	
Jensen, J.C., Berg, N., 2012. Determinants of Traditional Sustainability Reporting Versus Integrated Reporting. na Institutional Approach. Bus. Strateg. Environ. 21, 299–316.	NACJ	159	18	✓		
Krutova, A.S., Nesterenko, O.O., 2017. MULTIFUNCTIONAL MODEL OF FINANCIAL CAPITAL DESCRIPTION IN INTEGRATED REPORT. Financ. Credit Act. Probl. theory Pract. 2, 397–404.	NACJ	1	0,25	✓		
Lodhia, S., 2015. Exploring the Transition to Integrated Reporting Through a Practice Lens: An Australian Customer Owned Bank Perspective. J. Bus. Ethics 129, 585–598.	NACJ	49	8	✓		
Manes-Rossi, F., Tiron-Tudor, A., Nicolò, G., Zanellato, G., 2018. Ensuring More Sustainable Reporting in Europe Using Non-Financial Disclosure—De Facto and De Jure Evidence. Sustainability 10, 1162.	NACJ	33	11	✓		
Rivera-Arrubla, Y.A., Zorio-Grima, A., García-Benau, M.A., Adriana Rivera-Arrubla, Y., Garcia-Benau, M.-A., 2017. Integrated reports: disclosure level and explanatory factors. Soc. Responsib. J. 13, 155–176.	NACJ	22	5,5	✓		
Serafeim, G., 2015. Integrated Reporting and Investor Clientele. J. Appl. Corp. Financ. 27, 34–51.	NACJ	51	8,5	✓		
Stacchezzini, R., Melloni, G., Lai, A., 2016. Sustainability management and reporting: the role of integrated reporting for communicating corporate sustainability management. J. Clean. Prod. 136, 102–110.	NACJ	64	13		Stacchezzini, R., Melloni, G., Lai, A.	RC5
Vitolla, F., Raimo, N., Rubino, M., 2019. Appreciations, criticisms, determinants, and effects of integrated reporting: A systematic literature review. Corp. Soc. Responsib. Environ. Manag. 26, 518–528.	NACJ	15	8			RC8

Table 1 – List of Publications

Note: RS stands for research scope (AJ: accounting journals or NCAJ: non-core accounting journals), TC stands for total citations, and AYC stands for average year citation.

The columns on the right identify for each contributor the top cited reference (in alphabetical order). Namely, if it is the most cited paper: for the top 10 journals in number of publications (✓); for the top 20 key scholars (name of scholar), or for research cluster (number of cluster).