

MAPPING THE LITERATURE ON INTEGRATED THINKING: A BIBLIOMETRIC ANALYSIS

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Abstract

The goal of this research is to elucidate the idea of integrated thinking, which was introduced in the Integrated Reporting (IR) initiative for the disclosure of non-financial data, because it has not been thoroughly studied and there is no consensus on its meaning. The literature on integrated thinking is thoroughly examined in this study combining the two bibliometric indices: Elsevier's Scopus and Clarivate Analytics' Web of Science databases. The databases on the issue have a high level of complementarity, according to our searches. Their combined use has allowed us to track the volume and impact of studies on the issue in great detail. The main countries, publications, authors, articles, intellectual foundations, and themes are all identified. We also mapped the networks of co-authorship, co-citations, and co-keywords in integrated thinking research using Bibliometrix..

Key words: *integrated thinking, integrated reporting, bibliometrics, research directions.*

JEL Classification: *M40, M41*

I. INTRODUCTION

Entities' disclosure of information is a critical component in building trust. The International Integrated Reporting Council (IIRC) proposes the Integrated Reporting (IR) initiative in response to demands from governments, civil society, and investors for financial and non-financial information to be presented together in an understandable and concise manner in a single document (Eccles and Krzus, 2010; Jensen and Berg, 2012). The following are the fundamentals of IR as defined by the IIRC International Framework (2013): "IR is a process based on integrated thinking that produces a report on the generation of value over time on a regular basis. Integrated thinking is the active study of the relationships between an organization's many operational and functional units, as well as the capitals that are used or influenced by their actions. An integrated report is a concise communication of how an organization's strategy, governance, performance, and perspectives, in the context of its external environment, contribute to the generation of value in the short, medium, and long term".

The concept of "integrated thinking" is embedded in the DNA of IR (IIRC, 2013; IFAC, 2015; Stent and Dowler, 2015; IIRC, 2016; Moolman et al., 2016; Dumay and Dai, 2017), and it leads to a better understanding of the value creation process (Stubbs and Higgins, 2014) and greater transparency (Abeysekera, 2013). In the same way, internal decision-making is favored.

The goal of this research is to elucidate the notion of integrated thinking suggested in the IR initiative, as it has not been fully studied to date (Dumay et al., 2016) and there is no consensus on what it means (SAICA, 2015; Feng et al., 2017). Despite the social and economic importance of integrated thinking and the rising and high-quality literature on the subject, there is no bibliometric approach to the topic. It would assist in mapping the current level of research and provide a better grasp of the topic. We couldn't find a bibliometric or systematic review on the subject, so we opted to study the integrated thinking literature using bibliometrics to inform individuals engaged academically with the topic because there was no bibliometric review accessible despite the topic's relevance. The Scopus and Web of Science databases were chosen as the primary research indexes for

this purpose.

II. LITERATURE REVIEW

Despite the fact that IR does not directly relate to the idea of sustainability, several authors have drawn attention to the connections between value creation and integrated thinking, two key concepts in the IR conceptual framework, and long-term sustainability (Stubbs and Higgins, 2014; Oliver et al., 2016).

The first, value creation process analysis, includes a description of the business model (IFAC, 2013), the definition of accessible capital (Moolman et al., 2016;), and the analysis of environmental trends (Moolman et al., 2016; SAICA, 2015).

The second, integrated thinking, is based on a holistic view of the organization (Abeysekera, 2013; Moolman et al., 2016; Feng et al., 2017) that necessitates an understanding of the company's complex relationships with its environment, as well as the social, environmental, and financial impacts of decisions (Abeysekera, 2013). This kind of thinking is required to ensure the production of long-term value (Melloni, 2015; Oliver et al., 2016; Dumay and Dai, 2017) (Mihaila, 2020).

The goal of an integrated report is not to analyze the value of an organization or all of its components in isolation (Ahmed and Hossain, 2016), but to give information that allows stakeholders to assess the organization's ability to produce value in the future (Ahmed and Hossain, 2016). (IIRC, 2013), (Cosmulese, 2019). For this, it is necessary to develop integrated thinking that connects internal management with the environment (Oliver et al., 2016), takes into account the relationships between organizational units and the capital that is available or created (Feng et al., 2017), and supports decision-making and actions so that they focus on creating value in the short, medium, and long term (IIRC, 2013; SAICA, 2015; IIRC, 2016). Despite its relevance, the IIRC does not go into detail about or analyze this notion (SAICA, 2015; Feng et al., 2017).

Integrated thinking is not easy to achieve (Dumay and Dai, 2017). It entails comprehending the connections between capital and the creation of value, as proposed by the business model, without losing sight of the risks and opportunities (Moolman et al., 2016; Manes-Rossi et al., 2017), both in financial and non-financial terms (Moolman et al., 2016; Manes-Rossi et al., 2017). (IFAC, 2015). The internal contacts built to prepare the report, on the other hand, boost the organization's holistic view, which increases understanding of the business and strategy (IIRC, 2016). Integrated reporting and integrated thinking processes reinforce one other in this way.

This means that the integrated report is the tangible manifestation of this shift in organizational thinking, planning, and reporting. However, such integration necessitates integrating not just the contents of the given information, but also the people, functions, processes, and internal and external information systems (Stubbs and Higgins, 2014; IFAC, 2015). The report's preparation forces diverse organizational units to participate in the process, fostering the communication and collaboration required for integrated thinking to evolve (Feng et al., 2017). It's not simply about avoiding a segregated organizational vision (SAICA, 2015; Feng et al., 2017), but also about encouraging cross-functional collaboration (Stubbs and Higgins, 2014).

As a result, data connectivity is a fundamental principle for achieving integrated thinking (IFAC, 2015; SAICA, 2015; IIRC, 2016; Feng et al., 2017). One of the most prominent principles in the development of IR is connection (Ruiz-Lozano and Tirado-Valencia, 2016). Connectivity isn't established merely by combining internal and external data or by creating links between different reports. According to IFAC (2015), connectedness refers to the linking of several aspects of integrated thinking, such as external analysis, internal planning, process governance, and information transmission.

In a similar vein, Dumay and Dai (2017) define integrated thinking as having two parts. The first is the interdependencies between factors that have a meaningful impact on the potential to create value over time, such as business model, strategy, governance, performance, and future prospects. The connection between different departments and supervisors is the second component of integrated thinking (Feng et al., 2017). The creation of an integrated report necessitates a greater awareness of the internal processes and relationships across the various organizational units (IIRC 2013; Stubbs and Higgins, 2014). A major cultural change in attitudes and ways of doing things is fostered by assisting in the breaking down of barriers and facilitating a more effective communication between different functional areas.

Aside from a lack of agreement on the concept, there are also concerns about how to put it into practice (SAICA, 2015; Feng et al., 2017). The drivers of integrated thinking have been studied by certain researchers (IIRC, 2016), emphasizing the importance of managers' commitment to IR issues (SAICA, 2015; Oliver et al., 2016; Feng et al., 2017), the existence of multifunctional work teams that are well-coordinated (Oliver et al., 2016; Feng et al., 2017), a heightened awareness of non-financial capital (SAICA, 2015), the existence of non-financial difficulties with financial issues and strategy (SAICA, 2015; Feng et al., 2017) and the organization's ability to respond to legitimate stakeholder interests (SAICA, 2015; IIRC, 2016).

Another feature of integrated thinking implementation is that, in its attempt to connect different types of analysis, it goes beyond simply disseminating historical data to providing prospective stakeholders with information on future prospects (Melloni, 2015; Manes-Rossi et al., 2017). Furthermore, in order to grasp the context of the report and give it greater credibility, an effective link necessitates the combination of qualitative and quantitative characteristics (Manes-Rossi et al., 2017).

III.METHODOLOGY

a. Data Collection

The selection of the dataset is the first step in the research approach. The Web of Science (WoS) and Scopus databases were utilized for this investigation. These databases are one of the most comprehensive indexing platforms in the world, incorporating research from a variety of academic disciplines and diverse sources, based on impact ratings that meet the highest quality requirements.

With the above considerations in mind, the following search query was created: integrated thinking. This term was searched for in the title, abstract, and/or keywords by the algorithm. There were no time limits placed on the project.

Tabel 1. Main information about data from WoS and Scopus

MAIN INFORMATION ABOUT DATA		
	<i>Scopus</i>	<i>Web of Science</i>
Timespan	1985:2021	1993:2021
Sources (Journals, Books, etc)	162	128
Documents	212	179
Average years from publication	6,15	4,83
Average citations per documents	15,17	14,42
Average citations per year per doc	2,689	3,175
References	9359	7163

Source: Elaborated by the author on the basis of Scopus and Web of Science results

The final sample contains 179 documents from WoS and 212 publications from Scopus database. The first publication is dated in 1985 and the newest one is from 2021..

b. Data Treatment

The quantity of bibliometric studies has increased dramatically in recent years. Such studies are important for a discipline because they provide a thorough picture of what is currently being discussed in that topic. This is especially beneficial in an era when new works are being published at an alarming rate. In this context, bibliometric studies are extremely beneficial since they give a structured study of a vast body of data, allowing researchers to identify the most relevant contributions, prolific authors, and institutions, as well as predict trends and detect shifts in discipline boundaries. Manually managing such a large volume of data is nearly difficult. New techniques for assisting science mapping analysis have been developed as a result of technological improvements. Bibliometrix, VOSviewer, Cite Space, CitNetExplorer, and SciMAT are some of the most well-known tools for bibliometric analysis that have been developed. Bibliometrix, an open-source tool built in R, and, more precisely, biblioshiny, a shiny app that provides a web-interface for bibliometrix, was chosen for this study.

c. Analysis

Two methods of analysis were used to examine the documents in the collection. First, there is a descriptive study that gives a broad overview of the available literature on integrated thinking. The findings include an examination of document distribution through time, the most referenced documents, the most prolific writers in this subject, the most productive countries, and the most common sources (e.g., journals, book series, etc.) where researchers publish their work.

Second, the study goes a step further and delves deeper into the themes covered by scholars, as well as the potential for transient patterns to emerge. The relationships between the important terms used in the papers are studied using co-word analysis and combining traditional performance analysis with scientific mapping approaches to develop the conceptual framework of the existing research on integrated thinking.

IV.RESULTS

According to the conclusions of the investigation, the volume of paper devoted to integrated thinking in the Scopus database remained constant until 2003, but began to rise following that year, with an average growth rate of 12.02 percent. A similar trend can be seen in the number of papers focusing on integrated thinking that

were published in journals indexed by the WoS database, with an average growth rate of 14.82 percent, indicating that this database saw a considerable increase in publications in 2012.

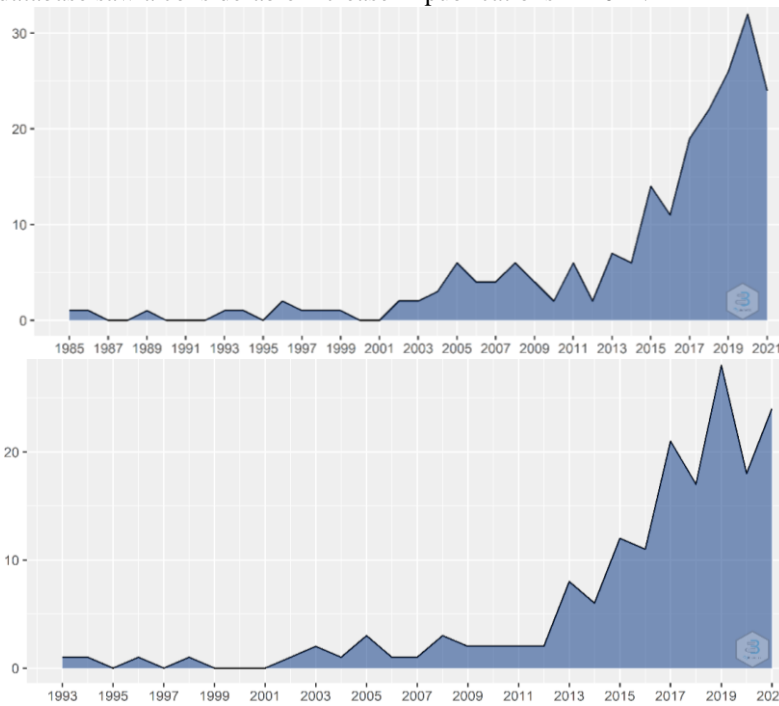


Figure 1. Annual scientific production between 1985-2021

Source: own compilation based on the records extracted from the Web of Science and Scopus

As illustrated in figure 1, it can be noted that the most productive years, according to Scopus database was 2020, when 32 documents were published. At the same time, Web of Science platform offers another perspective, stating that 2019 was the most fruitful year, with 28 documents published.

We conducted two separate analyses about the origin of research when aggregating articles and citations by country, because Scopus and WoS cover different journals and hence different articles. Although it necessitated more study, differentiating the databases allowed us to investigate their discrepancies and present two opposing perspectives on the literature's origins.

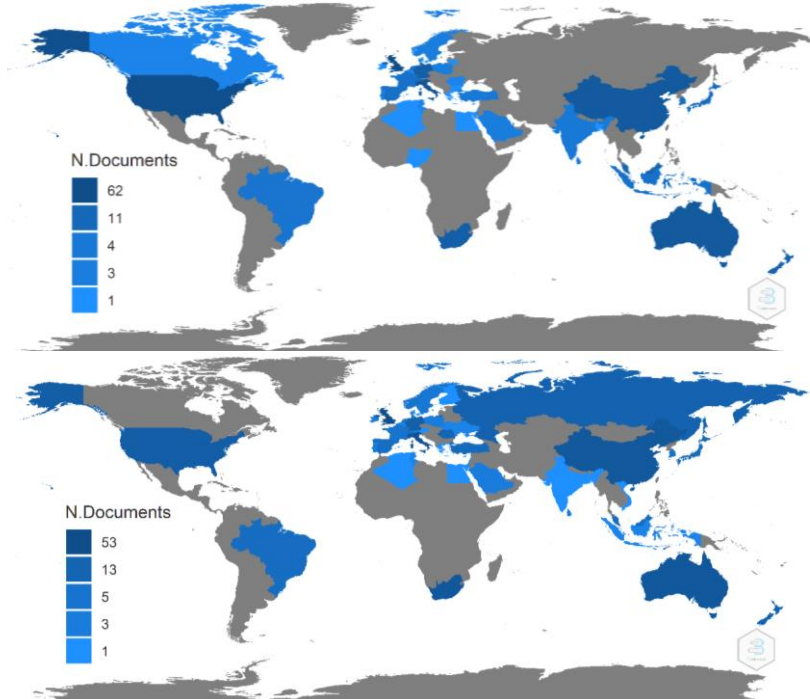


Figure 2. Country scientific production

Source: own compilation based on the records extracted from the Web of Science and Scopus

According to Scopus, the United Kingdom has the biggest concentration of papers (38), followed by Italy (26), the United States (25), Australia (19), and South Africa (16). There are some differences in the top countries when compared to WoS, with England taking first place with 28 publications, followed by Italy with 23 researches, South Africa (19), Australia (18), and the United States (15).

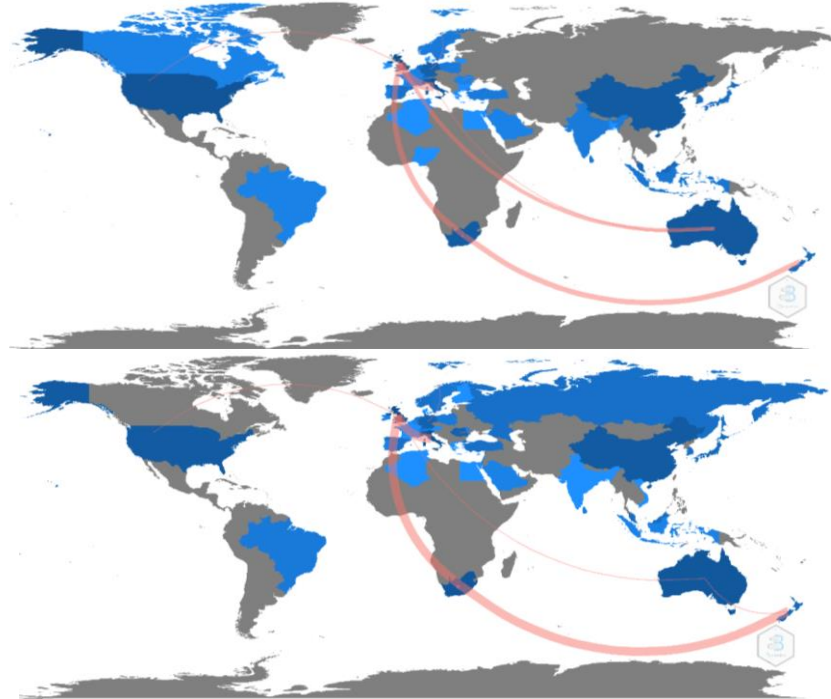


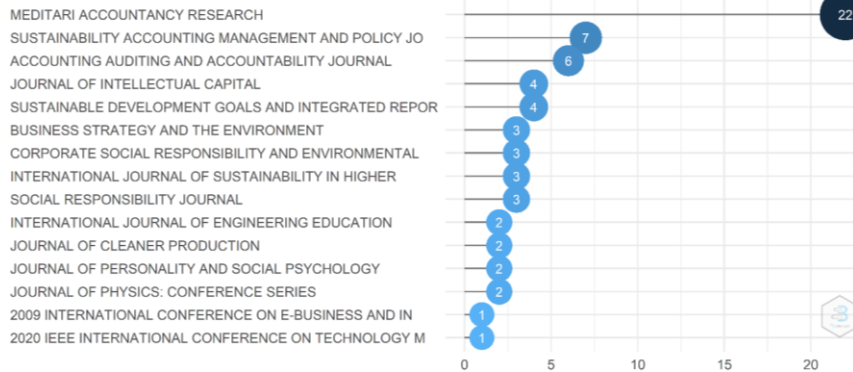
Figure 3. Country collaboration map

Source: own compilation based on the records extracted from the Web of Science and Scopus

Figure 3 shows the locations of authors who produced integrated thinking-related publications from 1970 to 2017 based on Scopus and WoS data. Collaboration between writers is indicated by the links. The picture depicts a significant concentration of research in the United States, Australia, and Europe, particularly the United Kingdom. In addition, those areas have the greatest number of co-occurrence linkages. Figure 3 also depicts a number of independent research centers that could be more interactive.

Figure 3 also shows that more developed and populous places in a number of large countries are active research hubs for integrated thinking. More research is needed to identify whether these hubs are a cause or outcome of economic progress, or if they reflect a culture that encourages integrated thinking.

The 15 most cited journals in the literature on integrated thinking are listed in Table 2. When a journal appears in both Scopus and WoS, the database with the most citations is used to determine its ranking. Because certain citations may overlap, the citation counts of both databases were not added together. If there were journals with citations in only one database, choosing one database over the other to rank the journals would be difficult. Scopus articles were published in 162 different journals, while WoS(179) publications were published in 128 different journals.



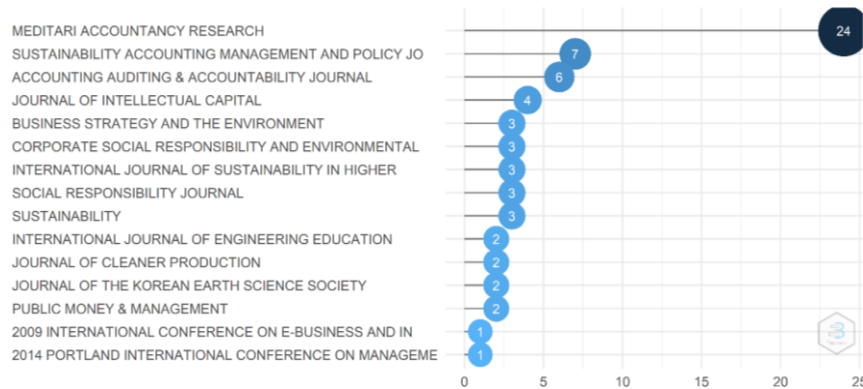


Figure 4. Most relevant sources

Source: own compilation based on the records extracted from the Web of Science and Scopus

The most cited journal from both databases is the Meditari Accountancy Research, encourages innovative and multidisciplinary approaches to accountancy-related issues, with a special focus on the social impacts of accounting, sustainable accounting, CSR, and integrated reporting, through research. The second journal is the Sustainability Accounting Management and Policy Journal with 7 publications, and the third is the Accounting Auditing & Accountability Journal, which had six articles. The journal listed fourth by number of citations is The Journal of Intellectual Capital, a high-impact factor journal in the Business Finance field. These findings support the idea that integrated thinking research has gotten a lot of attention from academics.

Analyzing the evolution of scientific research, which appears in the Scopus database, it can be seen that, at an early stage of the development of the concept of integrated thinking, the authors Na Na, Besterfield-Sacre and Ahlers had an influence. In recent years, the topic of integrated thinking has been addressed by such authors as De Villiers, Maroun, Busco, Hassan, Dumay, etc.

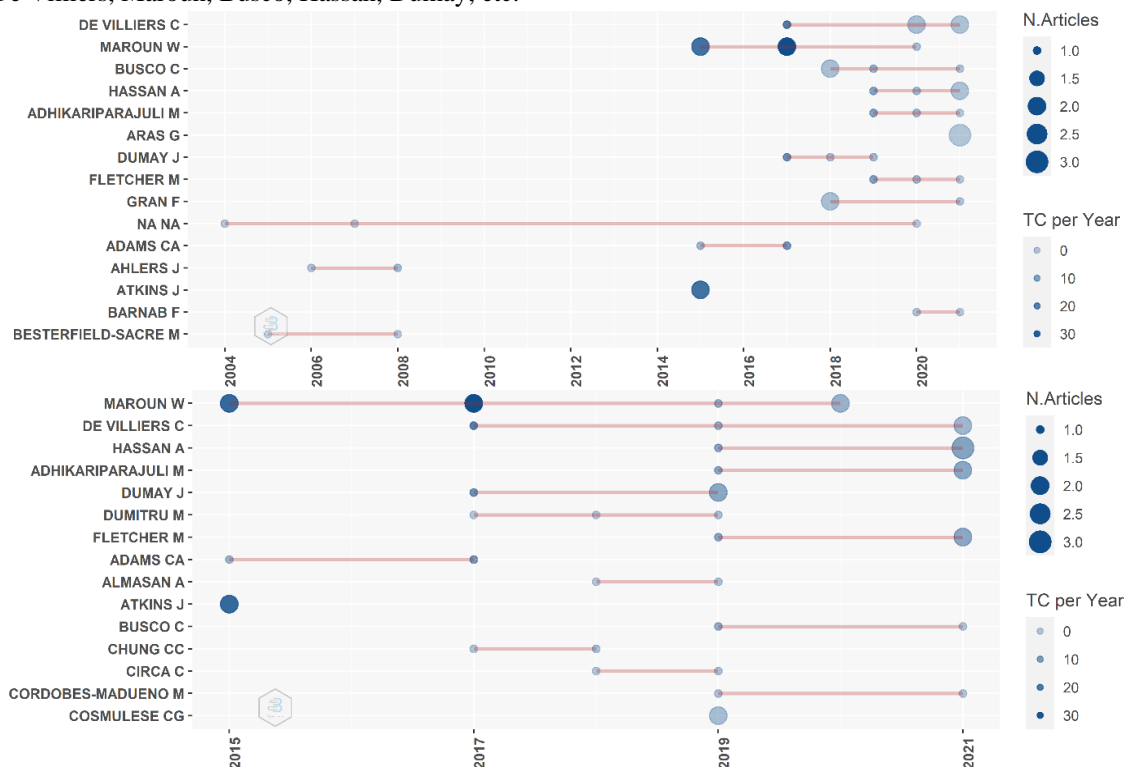


Figure 5. Authors production over time

Source: own compilation based on the records extracted from the Web of Science and Scopus

According to Figure 5, a difference can be seen between the results obtained through WoS and Scopus. The representation of the authors' productivity according to the WoS data also includes the work of the Romanian researcher Cosmulese, with the work published in 2019. Most of the published works are by the authors Maroun, Atkins and De Villiers.

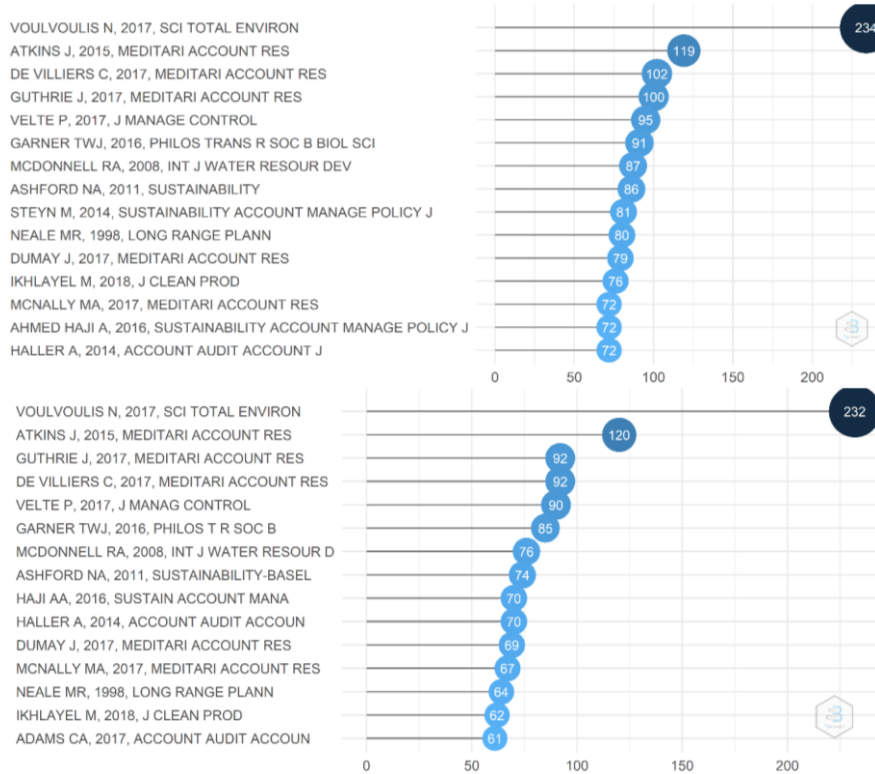
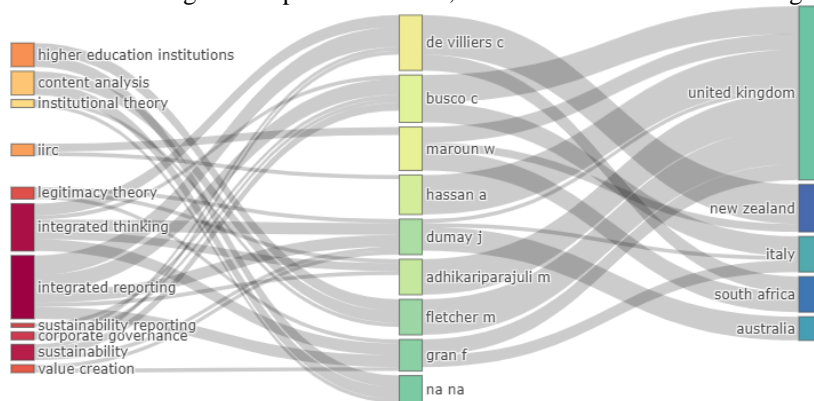


Figure 6. Most global cited documents

Source: own compilation based on the records extracted from the Web of Science and Scopus

Figure 6 depicts the publications in the dataset that have garnered the most citations. According to the Scopus and WoS databases, the most cited paper in 1985-2021 was an article of Nikolaos Voulvoulis, Professor of Environmental Technology, at the Centre for Environmental Policy at Imperial College London. This article was cited by the WoS ranking journal 234 times, and 232 times by Scopus. The second most cited paper is „Integrated reporting in South Africa in 2012: Perspectives from South African institutional investors”, by Jil Atkins and Warren Maroun. This paper is followed by the work of De Villies, in the case of Scopus database, and Guthrie, in the case of WoS. The top ten papers by citation can serve as basis for the development of the research field, but also other papers with less citations can have a very high value for the understanding of the integrated thinking concept.

By looking at the most repeated terms, a preliminary approximation of the material discussed in the selected papers can be obtained. Figure 7 depicts the results, with the most common ones highlighted.



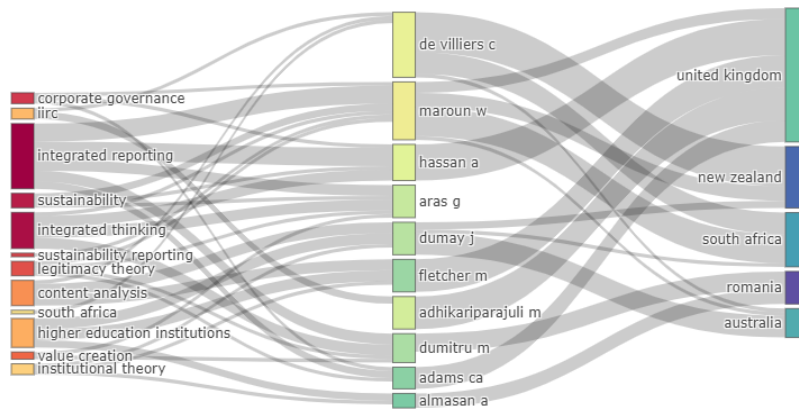


Figure 7. Three-fields plot

Source: own compilation based on the records extracted from the Web of Science and Scopus

Taking into account the figure above, we can conclude that the most common keywords in publications on integrated thinking are, unsurprisingly, reporting and integrated thinking. There is also a correlation between the topic addressed and sustainability issues, some of the most commonly used keywords being sustainability, sustainable development, sustainability reporting. The notions of corporate governance, corporate reporting and corporate social responsibility, although less used, compared to other notions, are no less important and have an influence on the disclosure of integrated thinking. Also, it is visible that the most interested authors in this field, who included in their studies an impressive number of the aforementioned keywords are De Villiers, Maroun, Busco, Hassan and Dumay, the UK, New Zealand, South Africa and New Zealand being the countries with the most influence on integrated thinking.

The following keywords are reorganized into clusters to adhere to the thematic map, as illustrated in figure 8, as mentioned in the technique section. The general strategic diagram for the literature on integrated thinking is plotted in a very intuitive way in this figure, and it can be used to analyze the intensity and relevance of the themes that interrelate with the topic of integrated thinking according to the quadrant in which they are placed. The most notable feature of this figure is that it has the most clusters in the upper-left and lower-right quadrants, while the "motor themes" (upper-right quadrant) and "emerging or declining themes" (lower-left quadrant) are both empty.

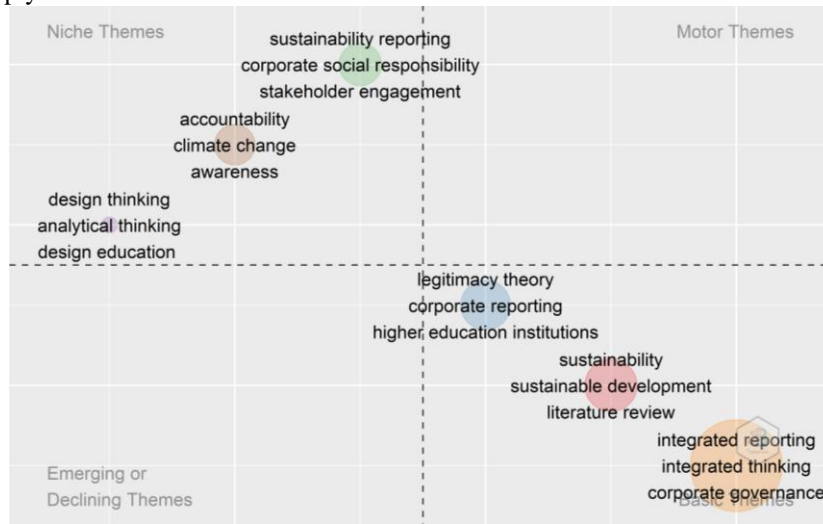


Figure 8. Clustering by coupling

Source: own compilation based on the records extracted from the Web of Science and Scopus

This clustering indicates that the literature on integrated thinking is fairly fragmented. One probable reason for this pattern is that integrated thinking research is still in its infancy, requiring consolidation. Equally logical is to argue that the phenomenon of integrated thinking has piqued the interest of academics from a variety of fields, who have applied their knowledge to better understand and model the functioning of integrated thinking and its role in the economic, social, and environmental spheres. The quadrant with the largest concentration of clusters is the upper-left quadrant, which has three clusters that clearly represent separate areas of knowledge: sustainability reporting, accountability, and design thinking, and the lower-right with, also, three themes: legitimacy theory, sustainability and integrated reporting.

V. CONCLUSION

This work has offered a bibliometric review of integrated thinking research that may be useful to people interested in the topic, especially considering the apparent lack of such a study and the research area's importance to the international academic community. The study found that integrated thinking research has exploded in popularity and will continue to do so in the near future. Scopus and WoS were used to search the literature. We were able to review citations and articles from a variety of nations, journals, and authors, as well as a variety of referenced references and themes, using these alternative databases; we also made recommendations for further research. Furthermore, we were able to map the networks of co-authorship and co-occurrence of keywords in integrated thinking research using Bibliometrix.

Despite the fact that the literature became more relevant after 2003, we were able to find publications from 1985. Over the last decade, we've seen an increase in the quantity of articles published. In terms of origin nations, the United Kingdom and Italy are well ahead in terms of publishing articles on integrated thinking, followed by the United States, Australia, and South Africa.

The leading authors are from the United Kingdom; in fact, we discovered a remarkable network of British authors that write integrated thinking research, for whom Bibliometrix visualization helped highlight the impact of research group networking and leadership on research outputs. Top-ranked finance and economics journals are well-known for publishing highly cited integrated thinking research. *Meditari Accountancy Research* is the most cited journal and the one with the most articles.

This article makes a contribution by organizing the literature on integrated thinking, which may entice researchers to participate in their research. The findings could lead to more research and scientific advancements into the peculiarities of such financial institutions. Scholars are not required to limit new research to the areas specified or proposed in this study, although it may serve as a helpful guide.

It's important to acknowledge the study's shortcomings. The first is that Scopus and WoS are the only sources available. Other databases may include additional and appropriate sources and records, despite the fact that they offer a thorough bibliography and are considered the major such indexes. The second point to mention is that it was entirely performed in English. As a result, future research might look at different databases and languages. We also advise future bibliometric researchers to enhance the process used to carry out this study and, as a result, the study's application's success.

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