THE IMPORTANCE OF NON-FINANCIAL REPORTING RESEARCH -A BIBLIOMETRIC ANALYSIS

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Abstract:

Non-financial reporting is a system of transparency reporting, exponentially increasing in the latest years, where entities properly disclose information apart from the financial reporting. The main purpose of this article is to document, through a quantitative analysis, the evolution of research in the field of non-financial reporting. We investigated the most significant 638 publications indexed in the Web of Science Core Collection database and applied a quantitative research methodology. By using the VOSviewer software, we performed a bibliometric analysis based on the topic of non-financial reporting in terms of co-occurrence keywords that reveals the most prominent relationships between non-financial reporting and company performance for the available papers on the research field. The results of the study certify that after the implementation of the Directive 2014/95/EU, the scientific interest in the field of non-financial reporting has progressively increased. The most interest countries in research of non-financial reporting are USA, followed by China, Italy, England, Poland and Romania.

1. INTRODUCTION

The main purpose of this article is to determinate the state of knowledge in what concerns the research associated to non-financial reporting in the Web of Science (WOS) database. This paper contains a bibliometric overview of the non-financial reporting research through which we have identified the most frequently used terms regarding non-financial reporting by using relational techniques in VOSviewer software. (http://www.vosviewver.com; van Eck & Waltman, 2010).

Firstly, after querying the Web of Science Core Collection (WOSCC) database and adding the filter of economic field, 638 scientific papers were identified in the database containing in the title the keywords: non-financial reporting, non-financial information, environment and research.

Secondly, we identified the most frequently used terms regarding non-financial reporting, by using relational techniques in VOSviewer software.

We identified a research gap regarding our investigation area, by searching both databases WOS and Google Academic. The last bibliometric analysis found on this subject was published in 2015 (Erkens et al., 2015), with data analyzed from the period 1973- 2013, just before the implementation of Non-Financial Reporting Directive. After the implementation of the mentioned directive, the number of studies on non-financial reporting has progressively increased, so we had the possibility to analyze all the publications before and after the implementation of this directive.

Others bibliometric analysis were found to be related to similar fields like corporate social responsibility reporting (Sikacz, 2017), social and environmental reporting practices in the public sector (Fusco and Ricci, 2019), integrated thinking and reporting (Vaio et al., 2021), etc.

The rest of the article is structured as follows. The paper begins with a literature review-a short overview, followed by the presentation of the research methodology. Next, the paper explains

the process of conducting the bibliometric analysis on non-financial reporting and then, the last section of the article highlights the conclusion of the study.

2. LITERATURE REVIEW – A SHORT OVERVIEW

Globalization, climate change constraints and growing concerns about reducing environmental impacts have led to the implementation of new systems for measuring and reporting performance other than traditional ones. Thus, a transparent reporting system was introduced, including both financial and non-financial perspectives. It gradually led to the development of new, voluntary forms of non-financial reporting, such as social, environmental and governance reporting, corporate social responsibility reporting, sustainability reporting or integrated reporting (Stefanescu et al., 2021). Reporting in an integrated, concise and clear manner became one of the top issues for companies. (Manes - Rossi et al., 2018).

The need of non-financial reporting has been highlighted by various international institutions, such as the Global Reporting Initiative (GRI), the United Nations Global Compact (UNGC), Sustainability Accounting Standards Board (SASB), International Integrated Reporting Council (IIRC), Carbon Disclosure Project (CDP), Climate Disclosure Standards Board (CDSB) (Raucci and Tarquinio, 2020). etc., together with academic researchers. Both in the academic literature and in practice, we find that if a company does not mention environmental, social and governance activities, then it loses the advantages associated with competition in the financial market and exposes them to financial risk.

The introduction in traditional reporting of non-financial aspects such as environmental issues is interpreted as the foundation of the success and survival of both companies and the entire economy. A balanced approach to economic and environmental issues is the key to achieving sustainable development. As a result of pressure from users of financial and non-financial information, concepts such as sustainable reporting and integrated reporting have gained in front of traditional financial reporting (Stefanescu et al., 2021).

Taking into account the fact that the companies activities generate not only economic and financial consequences, but also social and environmental, the need for non-financial reporting from companies has gradually imposed itself at national, european and international level, giving rise to the development of various regulations. Non-financial reporting has become an important preoccupation for the managers, because firms are evaluated not financially, but also socially.

Today, organizations are increasingly focusing on non-financial reporting, over the past two decades non-financial reporting practices have made enormous progress (Christofi et al., 2012).

Since 2014, the European Union, Parliament and Council have imposed new rules on certain categories of companies and groups of companies on the provision of information related to non-financial matters. Directive 2014/95/EU entered into force on 6 December 2014 and is addressed to all companies with more than 500 employees, which must publish a non-financial statement or a separate non-financial report in addition to the management report.

According to that directive, non-financial reporting must contain at least four categories of information: (1) environmental information, (2) social information, (3) information on respecting human rights and (4) information on the fight against corruption and bribery (Directive 2014/95/EU of the European Parliament and of the Council, https://eur-lex.europa.eu/).

Even if the Directive 2014/95/EU requires certain companies and large groups to provide non-financial and diversity information, there is no indication of any framework to be used by companies for non-financial reporting, but its adoption increases the use of this reporting (Tiron-Tudor et al., 2020). However, although non-financial practices have made progress, unlike the financial reporting guidelines, the existing non-financial guidelines do not lead to comparable results (Christensen et al. 2019, European Commission 2019). Since 2016, the disclosure of non-financial information became mandatory in the European Union countries, renewing in this way the challenge of integrated reporting.

3. RESEARCH METHODOLOGY

The main objective of this study is to perform a bibliometric analysis of the published scientific papers on non-financial reporting research using data extracted from the WOS database and to explore the relationships among the most frequently used terms regarding non-financial reporting by using relational techniques. In order to be able to identify the scientific interest in the field of non-financial reporting and to be able to determine its evolution, a bibliometric analysis was elaborated on the works published in the above-mentioned field.

The analysis was carried out with the help of information obtained from the query of the existing database in the WOSCC, which includes more than 21,894 journals, books and conference proceedings and it covers over 82 million records, more than 126,000 books and over 226,000 conferences covered (https://clarivate.libguides.com/woscc/coverage). Through all its scientific resources, WOSCC provides users with a database that can form the basis for designing quantitative analyses on the progress of research in the most diverse fields, including non -financial reporting research.

In order to find the specific publication on our interest field we carried out a performance analysis, that presents the contribution of the research constituents to the non-financial reporting, so we investigated the prolific research constituents in terms of types of documents published, research areas, languages, countries, number of publications.

In the second part of our analysis, the science mapping presents the connection between keywords. In term of science mapping, our study investigated the structure of networks as well as different research constituents in terms of research topics, clustering identified for the research topics, the importance of the key issues identified and how they relate in different contexts (clusters).

Because we wanted to elaborate a quantitative analysis of the scientific interest in terms of non-financial reporting research, we used the VOSviewer software in order to create science mapping by visualizing the structure and the dynamics of non-financial reporting research.

VOSviewer (version 1.16.17), carried out by Nees Jan van Eck and Ludo Waltman, "is a software tool for constructing and visualizing bibliometric networks. These networks may for instance include journals, researchers, or individual publications. The program also offers text mining functionality that can be used to construct and visualize co-occurrence networks of important terms extracted from a body of scientific literature". Also, this software offers the possibility of making a map that graphically represents the links between the words that appear most frequently in the documents for which the query was made in the database.

The streaming used in order to perform the bibliometric analysis was focused first on data extraction, then on preprocessing, next on network extraction, mapping and finally analysis (Cobo et al., 2011).

The database query available in the WOS platform was performed on October 30, 2021 and had the following protocol:

1. Database selected: WOSCC.
2. Advanced search on the group of words: "non-financial Or non-financial Or nonfinancial" in Title AND "reporting Or information*" in Title AND "environment*" in Title AND "research" in Title.
3. Timespan: All years.

The performance analysis

The global literature about non-financial reporting research, published between 1975 to 2021, was scanned in the WOSCC. After querying the database, 1161 publications on the topic searched were identified. Then, the primary results were filtered by the research area (economics,

management, business, business-finance), so the final result was 638 records of the most relevant publications (fig. no.1).
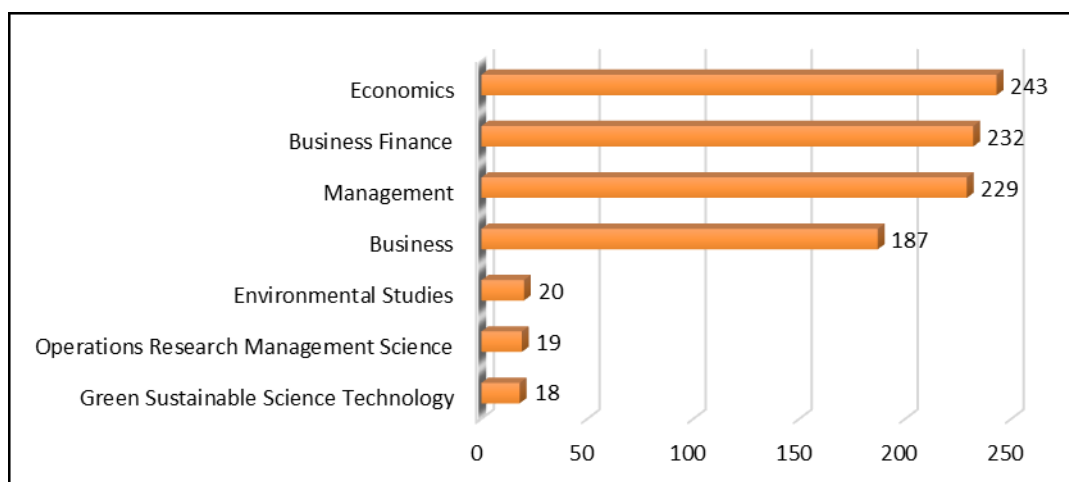

Figure 1. Result analysis based on research areas
Source: own generation using data from WOS database

The final result included 424 articles (62%), 194 proceedings papers (28%) and other forms of publications including early access, book chapters, review articles, editorial materials, etc. (fig. no.2).
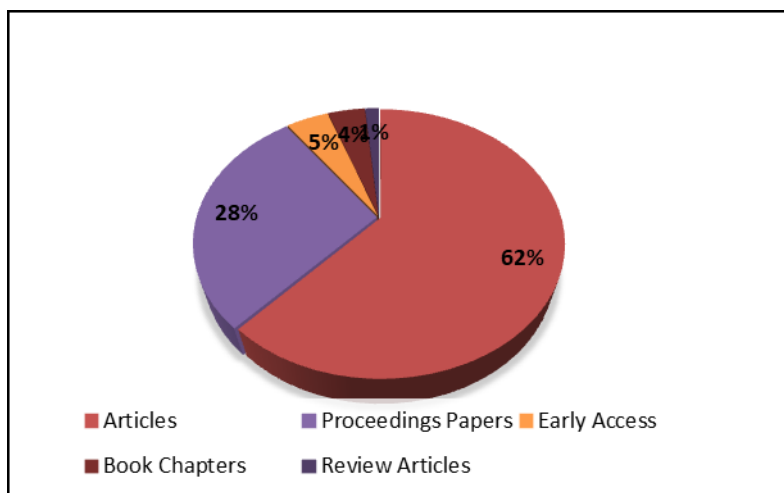

Figure 2. Result analysis based on document types
Source: own generation using data from WOS database

Among the records, the years with most published articles are 2020 -105, 2018 - 85 and 2019 – 72 (fig. no. 3). Looking at the ascending trend of the number of publications over the last few years, it can be observed that there is an increase in the interest in the discussed issues of non-financial reporting, especially after the implementation of the Directive 95/2014/EU. We can visualize that the number of publications has risen 5 times (21 publications in 2014, compared to 105 in 2020).
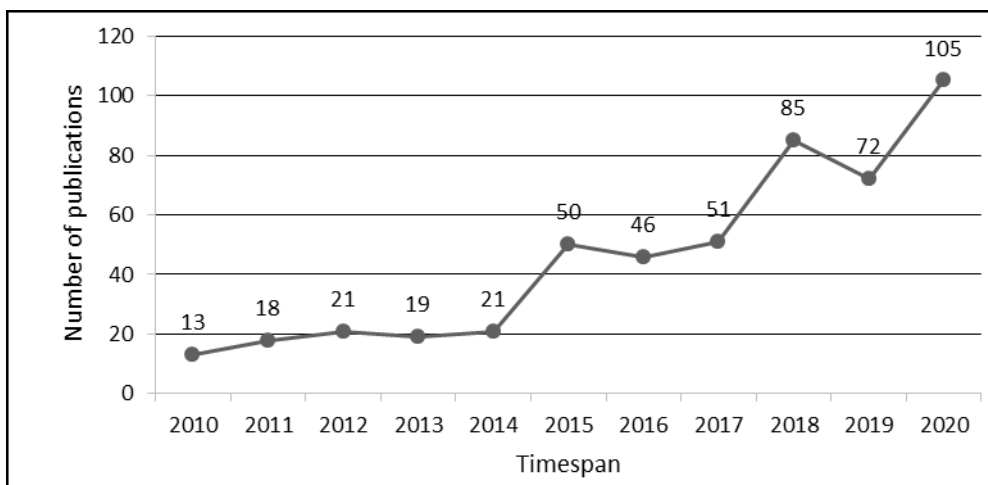
Figure 3. Result analysis based on publication years
Source: own generation using data from WOS database

The analysis of the records located in a geographical system revealed that the authors writing about non-financial reporting come mainly from the USA (65), China (63), Italy (60), England (47), Poland (39) and 34 records from Australia Germany and Romania (fig. no. 4). Also, the majority of publications (603 records, 95%) were written in English, followed by 7 Czech and 7 Portuguese. 154 publications (24%) were open access, 80 gold and 58 green submitted.
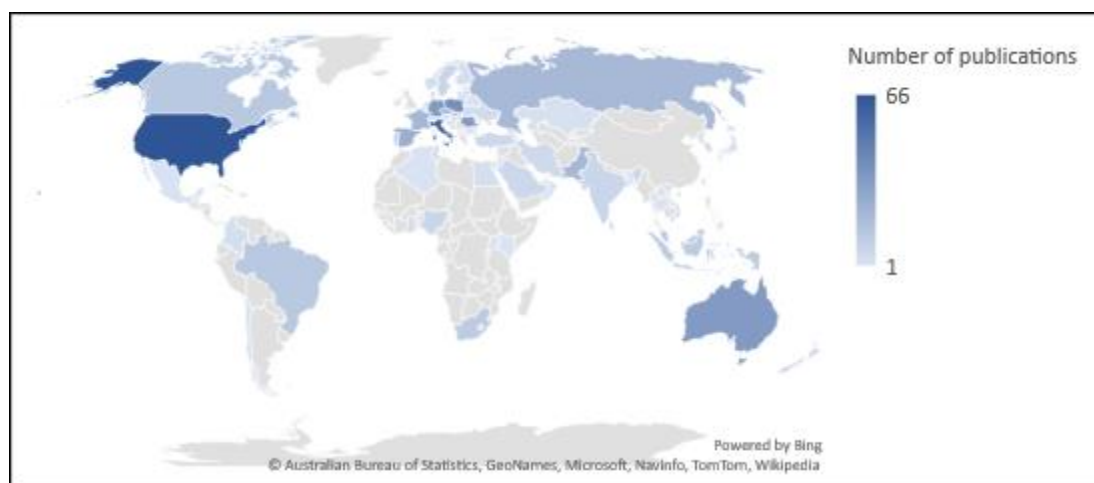

Figure 4. Result analysis based on countries/regions
Source: own generation using data from WOS database

Then, in order to create a science mapping, the 638 retrieved records were exported into a plain text format (txt) containing the following information: author, title, source and abstract, in the VOSviewer software for further analysis.

4.   RESULTS AND DISCUSSIONS

Science mapping
By using VOSviewer tools we created a co-occurrence map relied on the text data exported from the bibliographic database files (WOSCC). We extracted the keywords with minimum 35 occurrences in the titles and abstract fields using full counting method (van Eck and Waltman, 2011).

Out of the 638 publications, the software retrieved 128 terms that met the threshold at least 35 occurrences. From the 128 list of terms, only the most relevant 25 terms (table no.1) in our research were enrolled in the final analysis, many terms have been eliminated because they were common words such as article, author, data, level, model, paper, study, theory, value, year.

Table 1. Summary of the co-occurrence network of the most important terms in VOSviewer

No	Keyword	Number of occurrences		No	Keyword	Number of occurrences
1.	firm	546		13.	non-financial company	77
2.	information	331		14.	non-financial performance	74
3.	disclosure	304		15.	non-financial corporation	58
4.	performance	294		16.	non-financial disclosure	56
5.	non-financial information	203		17.	annual report	55
6.	management	186		18.	corporate governance	46
7.	reporting	155		19.	firm performance	46
8.	environment	146		20.	profitability	43
9.	non-financial reporting	143		21.	financial reporting	42
10.	non-financial firm	114		22.	non-financial performance measure	39
11.	financial performance	101		23.	corporate social responsibility	36
12.	directive	96		24.	financial information	35
				25.	firm size	35

Source: own generation using data from WOS database

Keywords were labeled with colored circles. The size of letters and circles is correlated with the frequency of occurrences of keywords in the titles and abstracts. The more often a keyword appears, the greater the size of the letters and circles.
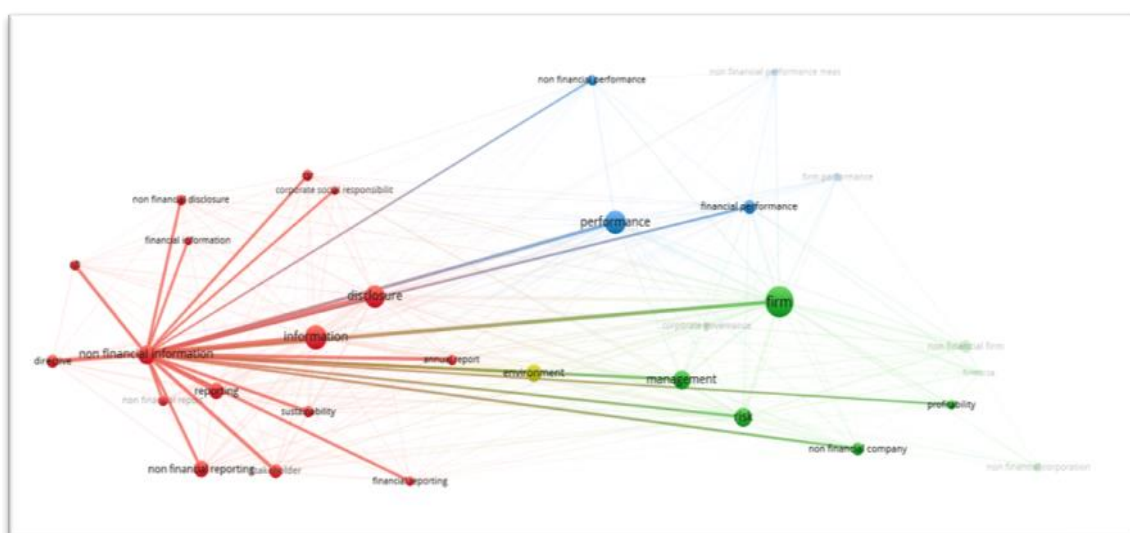
Figure 5. VOSviewer network visualization map – association strength of non-financial information on WOS platform
Source: own generation using data from WOS database

If we are looking at the association strength of non-financial information (fig. no. 5), we can conclude that non-financial information is closely related to performance, management, environment, disclosure, directive, sustainability, corporate social responsibility.
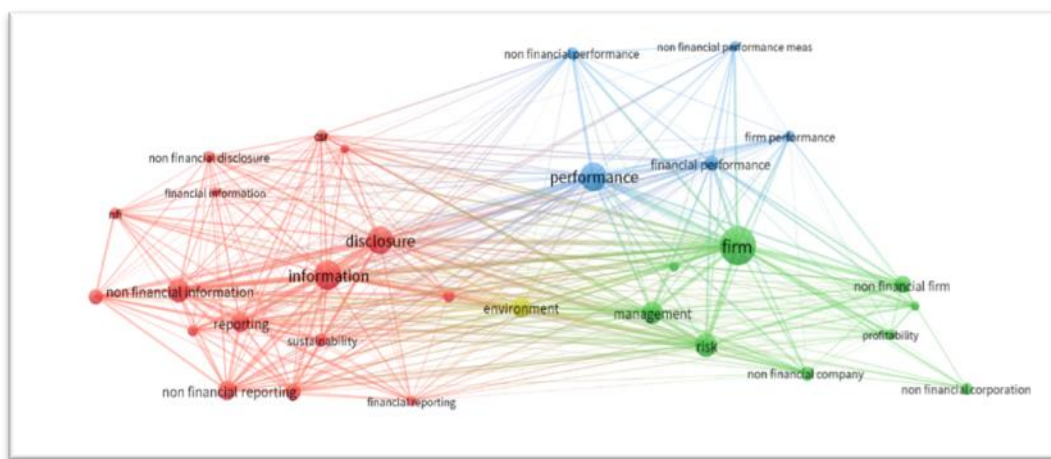
Figure 6. **VOSviewer network visualization map – co-occurrence network of terms on WOS platform**
Source: own generation using data from WOS database

The co-occurrence network of the 25 terms is grouped into 4 clusters (red, green, blue, and yellow) by their relevance (fig. no. 6), each cluster may be regarded as a topic (van Eck and Waltman, 2011). The issue of non-financial reporting, has for a long time, been related to the discussion under two concepts: the performance of the companies or the protection of the environment.

In this case, the red cluster can be the topic of non- financial reporting connected to non-financial information, non-financial disclosure, sustainability, corporate social responsibility. The green cluster can be considered the topic of companies, including management, risk, non-financial company and profitability. The blue cluster refers to performance, financial and non-financial performance, related to non-financial reporting.

The last cluster, the yellow one, refers to environment (fig. no. 7). Even if this cluster contains only one keyword, we can see all the connection between environment and the keywords from the other three clusters: firm, risk, management, performance, non-financial performance, disclosure, information, non-financial reporting.
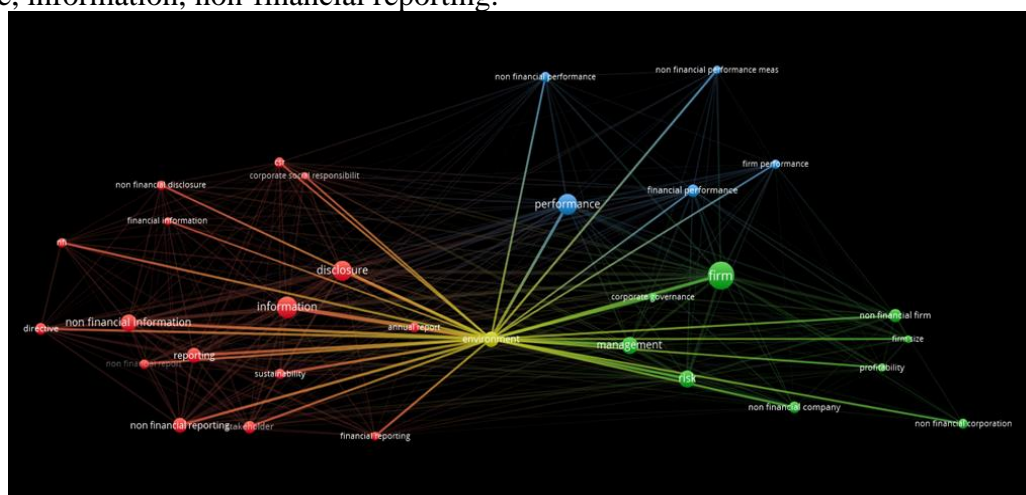

Figure 7. **The co-occurrence between environment and the other clusters**
Source: own generation using data from WOS database

VOSviewer can display bibliometric mapping in three different visualizations: network visualization (fig. no. 6), overlay visualization (fig. no. 8) and density visualization (fig. no. 9).
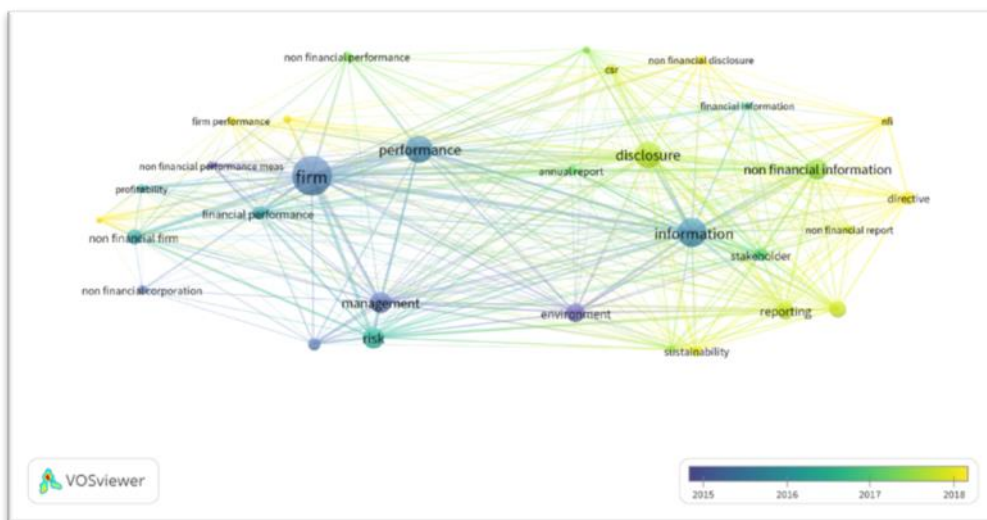
Figure 8. **VOSviewer overlay visualization map of publication year**
Source: own generation using data from WOS database

This overlay map proves that publications that contain keywords like Directive 2014/95/EU, non-financial reporting, sustainability, disclosure, corporate governance, firm performance were published recently. We can see a growing interest in researching non-financial reporting, corporate social responsibility, sustainability or non-financial disclosure in the last few years.
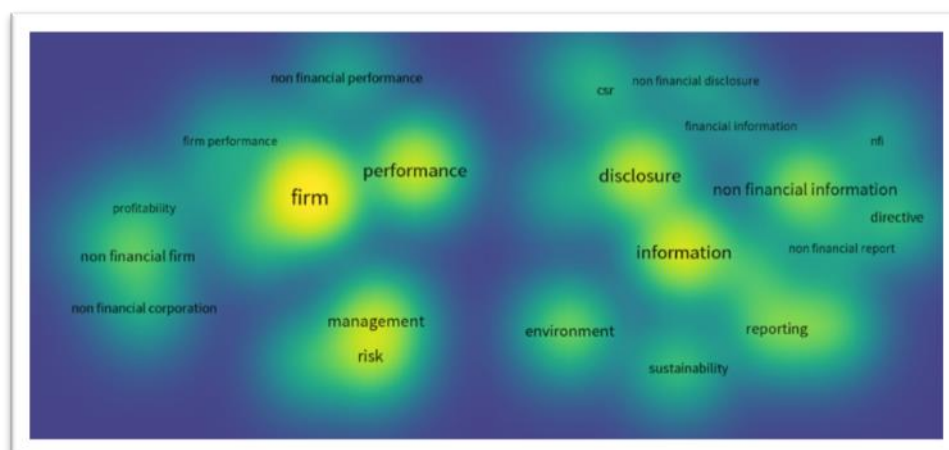

Figure 9. **VOSviewer density visualization map**
Source: own generation using data from WOS database

This type of visualization provides a quick overview to the most important areas on the map, the most densely occurrence of the keywords selected. We can visualize the biggest number of occurrences at the following keywords: firm, information, disclosure, performance, non-financial information.

5. CONCLUSIONS

In conclusion, in this study we have explored the evolution of research in the field of non-financial reporting. We also have examined the relationships among the most commonly used terms regarding non-financial reporting research by using relational techniques.

So, the main result about science mapping is that after performing the bibliometric analysis on the 638 publications retrieved from the WOSCC platform, on the most frequently used terms in non-financial reporting, the co-occurrences maps of terms generated in VOSviewer showed that non-financial reporting is generally directly associated with concepts like: corporate social responsibility, disclosure, performance, non-financial information, management, environment, etc.

The issue of non-financial reporting, has for a long time, been correlated to the debate under two concepts: the performance of the companies or the protection of the environment.

Also, the main results of the performance analysis show that in the last 6 years, due to the implementation of Non-Financial Reporting Directive, the importance of non-financial reporting among academics and the diversity of research related to this area have extremely increased. The number of publications has increased 5 times (21 publications in 2014, compared to 105 in 2020).

Finally, the most interest countries in research of non-financial reporting are USA, followed by China, Italy, England, Poland and Romania.

As a limitation of the research, we can mention the fact that the analysis was associated with a selected bibliography only from WOS platform, without using others databases like Scopus or Google Academic.

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