

### **Bibliometric Analysis of Accounting Fraud and Earnings Management During the period 2012-2022**

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Received May 23, 2022; accepted September 30, 2022.

#### **ABSTRACT**

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This study performs a bibliometric analysis of articles on accounting fraud and earnings management published in the period from 2012 to 2022. The bibliometric analysis makes it possible to evaluate the production and impact of the scientific literature on the subject under study. To carry out the analysis, the Scopus database was used to search for papers containing the terms "accounting fraud" and/or "earnings management". A total of 688 articles were analyzed. The results show that the United Kingdom, the USA and several Asian countries have published more in this field. Likewise, the journals that have published the most articles on this subject are the Journal of Applied, Business Research, Journal of Business Research and Corporate Ownership and Control. And, the main topics of the articles deal with the relationship between earnings management and corporate governance, ethical aspects, auditing and regulation, together with accounting fraud detection techniques. The study shows a great interest in this subject in the scientific community.

#### **KEYWORDS**

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Accounting fraud, earnings management, bibliometric analysis, Scopus.

## **1. Introduction**

Fraud and earnings management are matters of high scientific relevance today (Pinda, B.R., 2019; Morales, L.J., 2020). This is a consequence of the accounting scandals that have shaken the markets and undermined the confidence of the economic world in companies that have been affected by this phenomena (Karpoff et al., 2008; Hernández - Gil et al., 2019 and Cornejo-Saavedra et al., 2017). The importance of the fight against accounting fraud is essential in order to achieve compliance with the Sustainable Development Goals, included in the 2030 Agenda. This is crucial because the transparency of financial information must be reliable so as to have strong institutions (Goal 16: Promote just, peaceful and inclusive societies).

The aim of this work is to evaluate the production and impact of articles published on fraud and earnings management, through a bibliometric analysis of publications collected between 2012 and 2022. Thus, the methodology used responds to an exploratory analysis of the scientific production related to fraud and earnings management in the period 2012-2022 in a recognized database to present the results and conclusions and, assess the trend, in more than a decade, of this problematic. The results reflect direct relationships with corporate governance, with ethical aspects, with regulation, as well as with the techniques of detection and prevention of accounting fraud.

The database used is Scopus and the bibliometric study focuses on the concepts of accounting fraud and earnings management, in the period 2012-2022 according to the academic literature analyzed.

After the introduction and the characterization of accounting fraud and creative accounting, the exploratory methodology of the bibliometric study is detailed and the results are presented, which allow, through the appropriate discussion, to present the conclusions of the study, identifying the limitations of the work and future lines of research.

One important contribution of this research is the confirmation of the scientific interest of the subject studied and its relationship with the objectives of transparency and sustainable development. Other contributions are the knowledge concerning the countries more active in the research of accounting fraud and earnings management; the journals that have published more about these matters and the concrete topics of the articles published, which deal mainly with the relationship between fraud and earnings

management, and other relevant aspects of organizations such as corporate governance (gender diversity, profile of board members, etc.), auditing (characteristics of audit firms and auditors, fees, etc.), ethical aspects of finance, types of accounts manipulation and techniques for detecting frauds.

## 1.1. Accounting fraud and earnings management (accounting manipulations or creative accounting)

### *1.1.1. The importance of accounting information in the enterprise*

The analysis of a company's accounting information provides useful information on its economic and financial situation, as well as its strengths and weaknesses, which will allow both its managers and other interested parties (shareholders, suppliers, employees, financial institutions...) to make more informed decisions (Amat, 2005). According to Sandoval and Abreu (2008), financial statements, whatever the size of a company, are one of the fundamental instruments for making decisions on its present and future viability, and thus achieving the objectives that have been established.

However, for the company's accounting information to be useful for decision making, it must be accurate, which means that this information must show a true and fair view of the company's economic and financial situation (Cañibano, 1987), since if the accounting information is not correct, the decisions taken on it may not be appropriate and/or may lead to error and be detrimental to those who have made the decision based on this incorrect information.

The reasons why the accounting information may show a picture that does not coincide with the company's reality may be of different kinds. For example, it may be the result of a misinterpretation of current regulations or even ignorance on the part of the person responsible for preparing the company's financial information. In this case, it is an accounting error in which there is no intentionality and once the accounting error is discovered, the accounting accounts are restated and the error and its correction are reported.

Another reason why the financial information does not show the reality of the company is due to the intervention in its preparation process so that the annual accounts show a different image to the one that would have resulted in the case of not having produced this

manipulation according to the interests of managers and administrators, thus deceiving the users of these accounts (Amat, 2017).

### *1.1.2. Earnings management concept*

We can refer to the earnings management in different terms. According to Elvira and Amat (2008), the US literature uses the term earnings management, while in the UK the term used is creative accounting. Gisbert et al. (2005) define earnings management as "any practice intentionally carried out by management, for opportunistic and/or informative purposes, to report desired accounting figures, different from the actual ones". By "creative accounting", Amat, Blake and Moya (1995) mean the process by which accountants, using their knowledge of accounting regulations, manipulate the figures reflected in a company's accounts. In both cases, we observe the existence of "intentionality" on the part of those responsible for preparing the financial information.

In order to carry out the interested modification of accounting information, the company's management can make accounting entries and/or actual transactions (Elvira et al., 2008). In both cases they can be legal or illegal and aimed at modifying profit and/or indebtedness either by increasing or decreasing it according to vested interests. In the first case, these are techniques that take advantage of the different interpretations of the regulations in force, taking advantage of their flexibility or the subjectivity of some of the valuation methods to be used when accounting for the different elements of the balance sheet and the income statement. It would also be the case of possible legal loopholes in accounting regulations. In the second case, we would be dealing with illegal earnings managements or accounting manipulations and would include those real transactions or accounting entries that are not allowed in the legislation and that constitute an accounting crime since it implies documentary falsehood, as well as fraud (Amat, 2017).

### *1.1.3. Accounting fraud*

International Standard on Auditing 240 (ISA 240) reference to the literature defines fraud as "an intentional act by one or more persons in management, those charged with governance of the entity, employees or others, involving the use of deception for the purpose of obtaining an unfair or unlawful advantage". It also refers to fraud risk factors "facts or circumstances that indicate the existence of an incentive or element of pressure to commit fraud or that provide an opportunity to commit fraud." The Association of Certified Fraud Examiners (a non-profit organization whose objective is "to serve the

community through the expansion of knowledge and continuing education on issues related to the prevention, detection, investigation and deterrence of fraud and the fight against corruption", being the world's leading anti-fraud organization, with more than 75,000 members in more than 150 countries), hereinafter ACFE, (2022) considers that fraud "can encompass any crime for profit that uses deception as its primary modus operandi".

With regard to the different types of fraud that can occur in the company, according to ACFE (2022) we can distinguish three blocks: theft of assets, corruption and accounting fraud. In most cases, two or more of these types of fraud concur. Asset theft, which represents the most common fraud in companies, with a frequency of 79% of cases; corruption, which represents 12% of cases on average; and finally, and the least common, accounting fraud, defined by ACFE (2022) as "a scheme in which an employee intentionally causes a material misstatement or omission of information in the organization's financial reports". This type of fraud has the lowest frequency in companies, with a concurrence rate of 9%, according to their report published in 2022.

Regarding the different ways of carrying out accounting fraud, ISA 240 identifies the following modalities:

- Manipulation, falsification, or alteration of accounting records.
- The intentional misrepresentation or omission of material facts, transactions, or other significant information in the financial statements.
- Intentional misapplication of accounting principles

There is no ideal type of company for fraud to occur, but rather it can appear whatever its type, size, sector, ownership, as well as whether or not they have prevention and control mechanisms (Zayas, 2016) is not always easy to foresee. ACFE (2022) reaches the same conclusion when it points out that all sectors and industries are prone to corporate fraud, and not only the sector in which the company operates, but also any place within the organization and any country in which it is located, as evidenced by the fact that the fraud cases analyzed are found in 133 countries around the world.

As for the average duration of corporate fraud, ACFE (2022) estimates the average time from the start of the fraud to its discovery at 12 months. This period increases to 18 months in the case of accounting fraud.

#### *1.1.4. The importance and cost of accounting fraud within the company*

According to ACFE (2022), the costs and effects on companies caused by fraud committed by their employees and executives amount to an estimated global economic loss from fraud of more than \$3.6 trillion. In terms of revenue, this amount of loss represents 5% of corporate revenues. By category, asset theft, which represents the most common fraud in companies, represents a lower average loss (\$100,000 per case); corruption represents an average loss per case of \$200,000; and finally, accounting fraud (with a frequency of 10%) represents the highest loss, with an average figure of \$593,000. Therefore, fraud related to accounting fraud, although the least common category is the one that causes the greatest economic damage.

But the losses caused by corporate fraud (including accounting fraud) are not only economic. The moment the fraud is discovered and comes to light, there is a loss in the image of the company, as well as the distrust of customers and the stock market (Gerety et al., 1997) and any interested party in the company (Amat, 2017), such as workers, competitors (Sadka, 2006) and even affecting the credibility of the market economy system (Rabazo, 2017).

From the above, it is clear that accounting information is essential for decision making, but it is crucial that the information be truthful. However, accounting information is very often unreliable due to the existence of accounting fraud or deception. These are the result of practices, both accounting and modification of actual transactions, which, depending on their nature, may be legal or illegal. Therefore, creative accounting is a relevant problem given the frequency of this type of deception with serious economic consequences, and a bibliometric study is of great interest to understand its nature, causes and consequences in the business world during the time period analyzed.

## **2. Methodology**

Bibliometric analysis is a type of quantitative research that uses mathematical and statistical techniques (Uribe et al., 2019) and allows to evaluate the production of scientific and technical literature (Sancho, 1990; Osareh, 1996) providing quantitative information (on scientific production) and qualitative (on the impact of this production) (Velasco et al., 2012), at various levels, such as countries, authors, journals, institutions (Macías et al, 2021). This is a widely used methodology that allows knowing the characteristics of scientific production in terms of size, growth and distribution of

scientific documents and also allows knowing the groups of users and authors of these documents, as well as their content (Bordons and Zulueta, 1999; González de Dios et al., 1997; Velasco et al., 2012). There is no consensus on when it started to be used. As a sample, some authors place the beginning around 1890 (Sancho, 1990) and others in 1971 (Ardanuy, 2012).

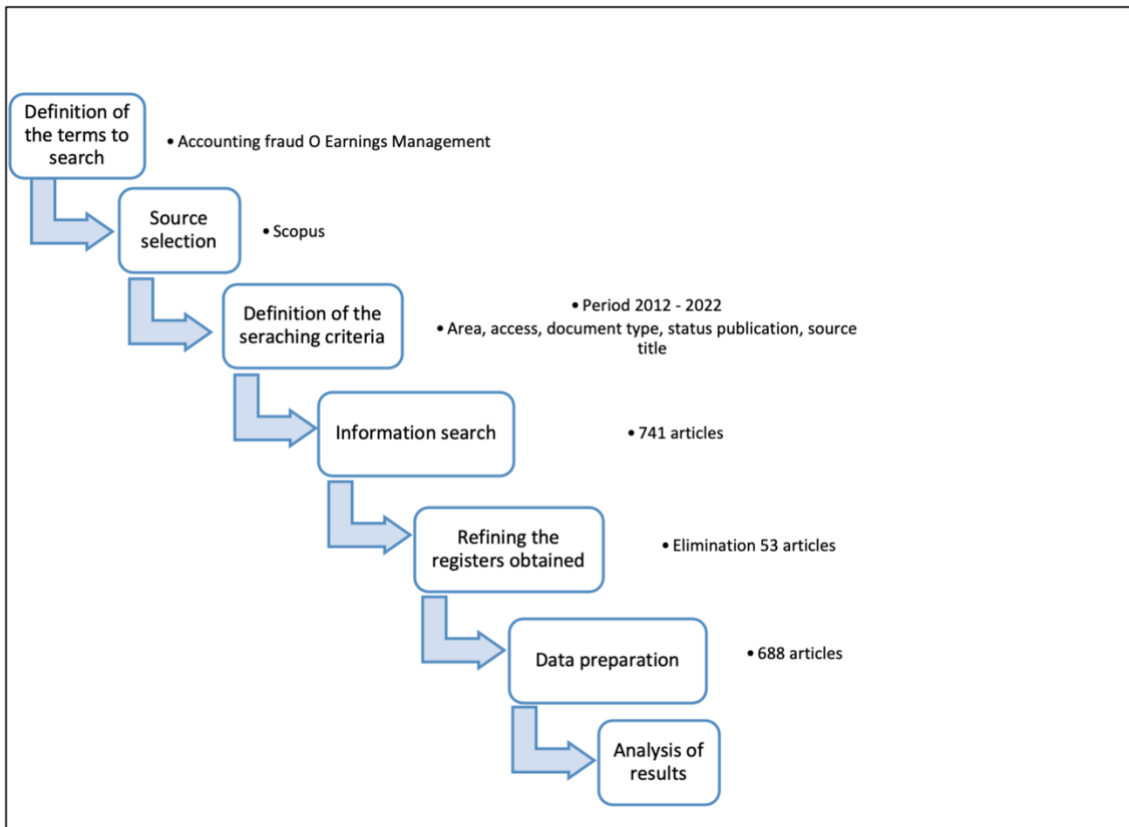
Bibliometric indicators facilitate the analysis of the different characteristics of scientific activity, linked to both the production and consumption of information (Flores and Aguilera, 2019). According to the classification of Ardanuy (2012), we can find the following types of indicators: personal, production, dispersion, visibility or impact, collaboration, obsolescence, and form and content. González de Dios et al. (1997) summarizes them in indicators of scientific quality, scientific importance and scientific impact.

Bibliometric indicators are not free of limitations such as the lower incidence of the quality indicators of the papers, excessive weight of quantitative indicators in relation to the articles to the detriment of qualitative variables; many citations are not related to the article that is cited... (Agarwal et al), 2016; Camps, 2008; Flores and Aguilera, 2019) and sometimes its validity has been questioned (Ardanuy, 2012); although there is consensus on its acceptance and recommending its use with caution and comparing homogeneous groups (Sancho, 1990).

## 2.1. Database selection, search strategy and inclusion criteria.

The present work constitutes an exploratory bibliometric analysis on the scientific production related to accounting fraud and earnings management in the period 2012 - 2022. For this purpose, the bibliometric database Scopus will be used. As search strategies, it will be used, on the one hand: the combination of the following keywords accounting fraud and earnings management from the document search section by: Article title, Abstract and Keywords. And, on the other hand, a second strategy is included choosing the period from 2012 to 2022 (in this last year only two months as it has been mentioned before). The search was carried out in March 2022, resulting in a total of 3,459 papers. In order to narrow down the number of documents, the following inclusion criteria were applied: open access, subject area, type of document, title of the source and publication status. Thus, the refined search is integrated by open access articles already published in journals during the period from 2012 to 2022, both included, from the

following subject areas: Business, Management and Accounting; Economics, Econometrics and Finance, as well as Social Sciences. The total number of publications obtained after applying the inclusion criteria was 741 records, which, once analyzed and discarding those with different subject matter, is 688 articles, as shown in Figure 1. The 53 articles have been eliminated after checking that they do not deal with topics related to accounting fraud and earnings management.



**Figure 1.** Phases of the methodology used in the bibliometric analysis (Prepared by the authors).

### 3. Results

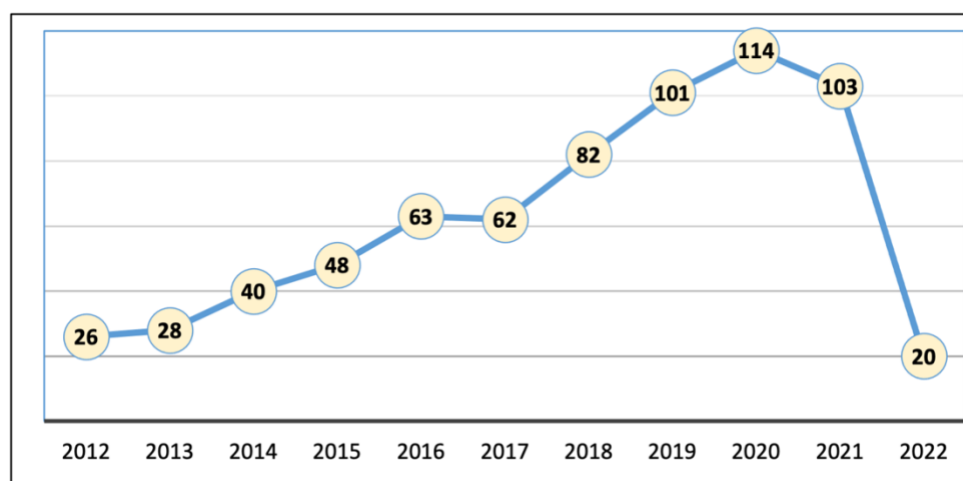
Once the records obtained from the Scopus database search were identified, they were analyzed according to the following variables: number of publications per year, country, language, author, keyword, subject area, institution and journal of publication. The results obtained are presented below.

#### 3.1. Distribution by year in the period 2012 -2022

Figure 2 shows a total of 688 articles published, with an average of 62.5 articles per year. As for its evolution, except in the period 2016/2017 in which practically the production is similar, with only one article difference, and in the period 2020/2021 with a decrease



of 9.6% of publications, a significant growth in the number of papers is observed (see Table 1). The year with the most publications is 2020 with a total of 114 papers.



**Figure 2.** List of articles published on fraud and earnings management by year for the period 2012-2022 (Own elaboration based on the results of the Scopus database).

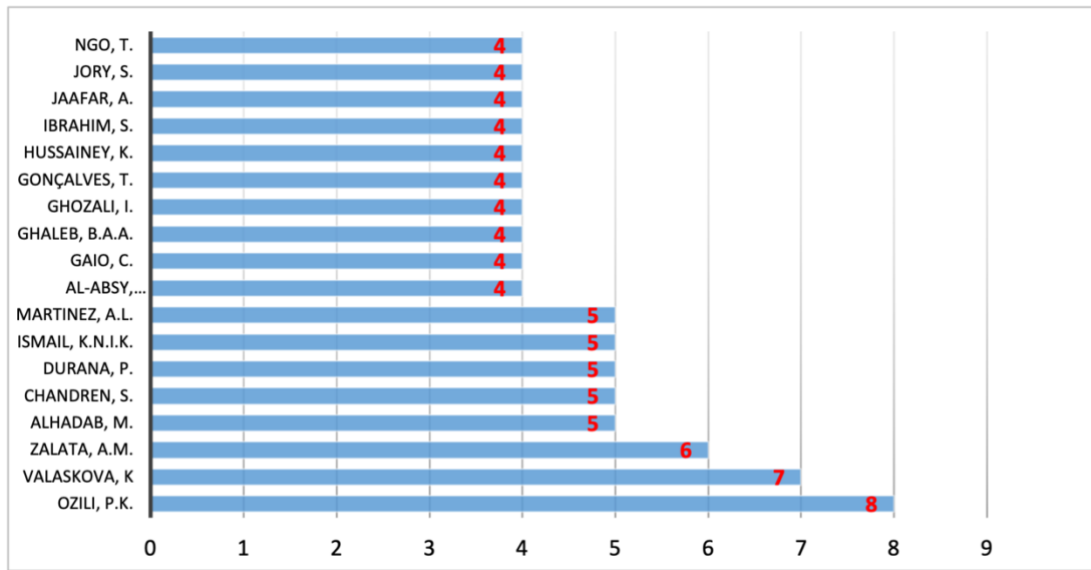
Period	% growth
2013/2012	7,7%
2014/2013	42,9%
2015/2014	20,0%
2016/2015	31,3%
2017/2016	-1,6%
2018/2017	32,3%
2019/2018	23,2%
2020/2019	12,9%
2021/2020	-9,6%

**Table 1.** Change in the number of accounting fraud and earnings management articles from 2012 to 2022 (Own elaboration from Scopus database results).

### 3.2. Distribution by authors

Next, we analyzed the production by authors. We have not reduced the number of articles by author considering if the article has coauthors. Figure 5 shows the distribution of the most productive authors in the sample of 160 authors obtained from Scopus. The mean number of publications per author is 2.6 articles. Of particular note are P.K. Ozili with 9 articles; K. Valaskova, and A.M. Zalata with 7 and 6 publications, respectively. Above

the average we also find 5 authors with 5 publications and finally 6 academics with 4 publications.



**Figure 3.** Authors with the highest number of publications on fraud and earnings management in the period 2021-2022 (Authors' own elaboration based on the results of the Scopus database).

P.K. Ozili, as shown in Table 2, with his 8 articles is the most prolific author and has an average citation rate of 10.4 per article.

Article title	Year of publication	NO. quotes
Bank earnings smoothing, audit quality and procyclicality in Africa: The case of loan loss provisions	2017	
Loan loss provisioning, income smoothing, signaling, capital management and procyclicality: Does IFRS matter? Empirical evidence from Nigeria	2015	
Bank income smoothing, institutions and corruption	2019	
Bank income smoothing, institutions and corruption	2018	
Bank earnings smoothing during mandatory IFRS adoption in Nigeria	2019	
Impact of IAS 39 reclassification on income smoothing by European banks	2019	
Financial reporting under economic policy uncertainty	2021	1
Banking sector earnings management using loan loss provisions in the Fintech era	2022	0

**Table 2.** Article, year of publication and number of citations by P.K. Ozili.

His most cited paper (25 citations) is entitled "Bank earnings smoothing, audit quality and procyclicality in Africa: The case of loan loss provisions" (Ozili, P.K 2017) and is a paper analyzing whether African banks decrease earnings smoothing by manipulating loan portfolio impairments (LLP) in the presence of a Big Four auditor.

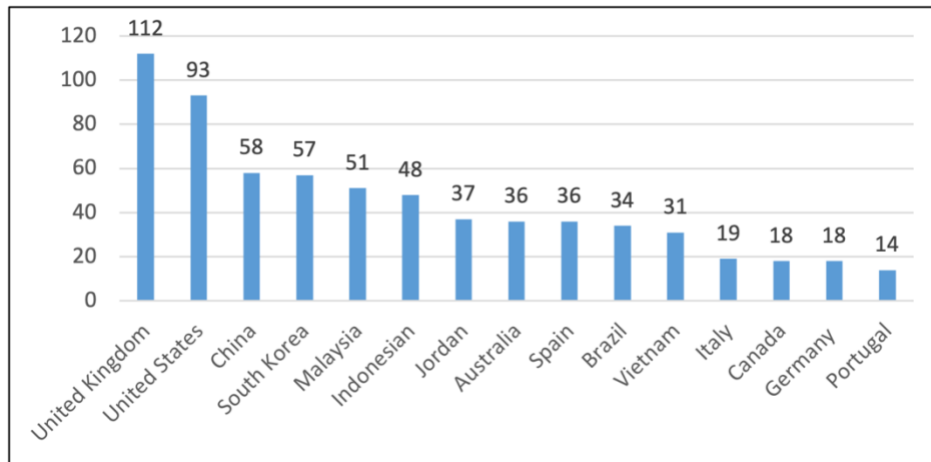
The second position is for K. Valaskova with a total of 7 publications. Her most cited article (85 citations) published together with four other authors is entitled "Advanced methods of earnings management: Monotonic trends and change-points under spotlight in the Visegrad countries" (Kliestik, T., Valaskova, K., Nica, E., Kovacova and M., Lazaroiu, G., 2020). In this paper, the authors aim to discover new methods for benefits management in the countries of the so-called Visegrad Group.

The most cited paper by A.M. Zalata (73 citations) is entitled "Audit committee financial expertise, gender, and earnings management: does gender of the financial expert matter?" (Zalata, A.M., Tauringana, V. and Tingbani, I., 2017). This paper investigates whether the gender of the financial experts present in corporate audit committees influences the reduction in the use of earnings management.

### 3.3. Distribution by country and language of publication.

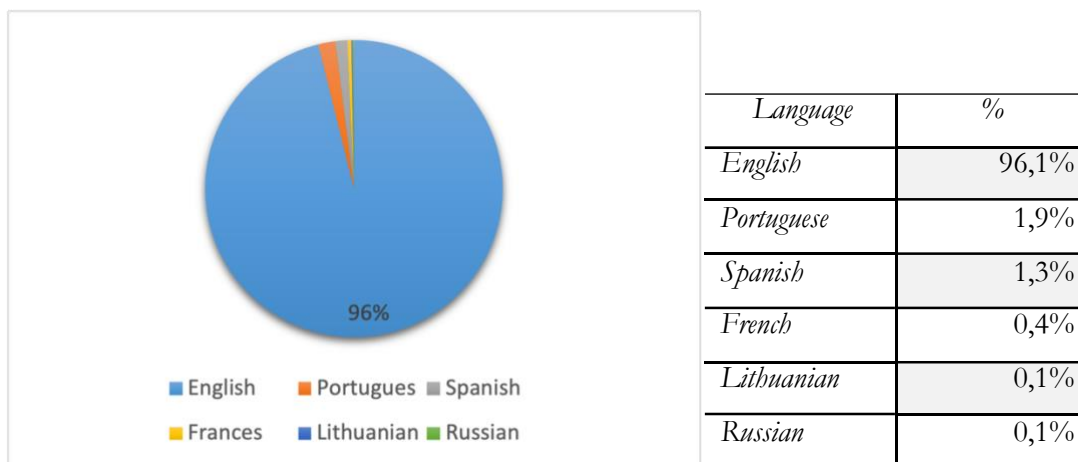
The 688 papers analyzed come from a total of 74 countries located in the five continents, which shows the global interest in these subjects. Figure 4 shows the 15 most productive countries of scientific articles in the subjects analyzed during the period 2012 to 2022. The United Kingdom is the country with the highest number of publications (112) followed by the United States (93) and China (58). The fourth and fifth positions are held by South Korea (57) and Malaysia (48). If we add these last three positions together, with a total of 163 publications, we can see the importance of Asian scientific production in the literature on fraud and accounting fraud.

Spain ranks 9th with 36 publications, together with Australia.



**Figure 4.** Number of publications on accounting fraud and earnings management for the period 2012 -2022 by country (Own elaboration based on the results of the Scopus database).

In terms of the language of the publications, English is the dominant language for scientific production, with a concentration of 96.1% of the publications. The remaining 3.9% of the records are in Portuguese (1.9%); Spanish (1.3%); French (0.4%); Lithuanian (0.1%) and Russian (0.1%), as shown in Figure 5.

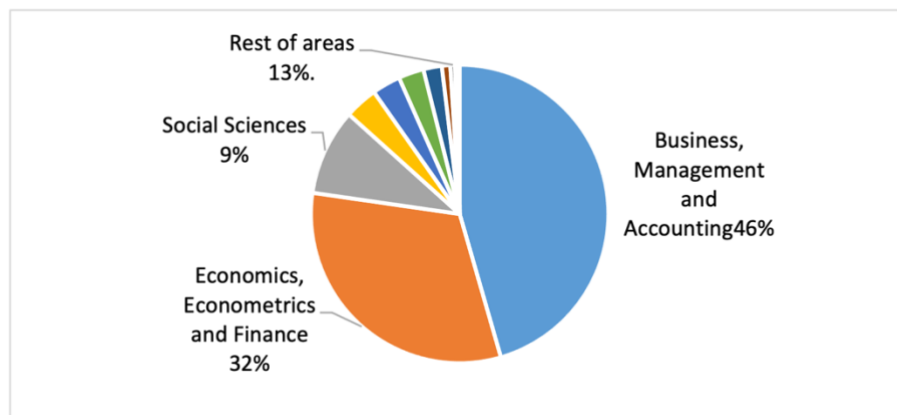


**Figure 5.** Language of fraud and earnings management articles for the period 2012-2022 (Own elaboration based on the results of the Scopus database).

### 3.4. Distribution by subject area.

As described in the Methodology section, in conducting this bibliometric study, the filter of subject areas has been applied, limiting it to Business, Management and Accounting; Economics, Econometrics and Finance, as well as Social Sciences.

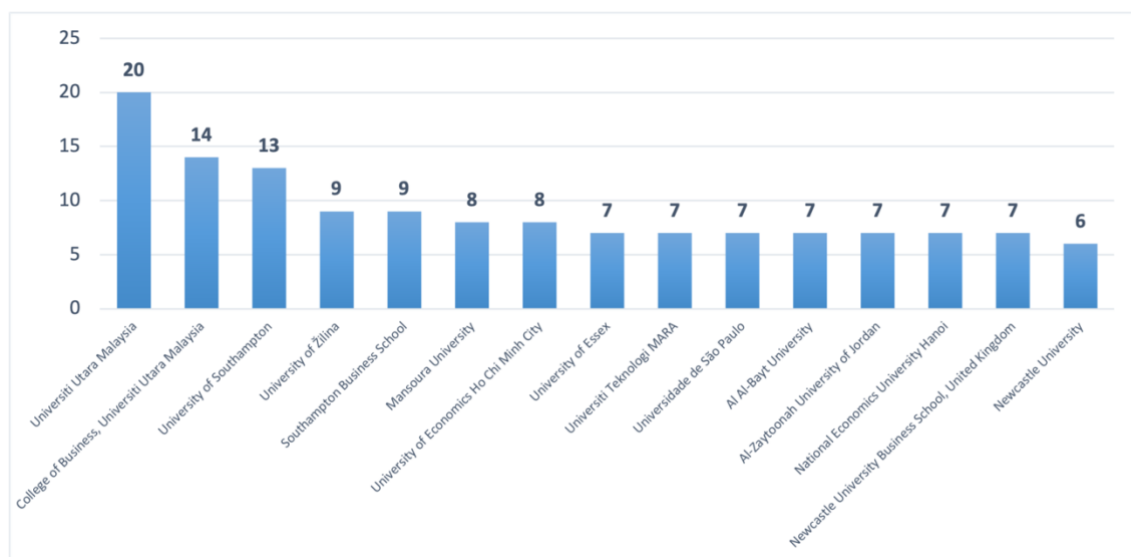
Given the limitation, and as shown in Figure 6, the bulk of the publications belong to the area of Business, Management and Accounting, with a 46% concentration of publications, followed by Economics, Econometrics and Finance, with a percentage of 32%. Social Sciences represents 9% of the total number of documents, and the remaining 13% of the publications, which are referred to as other areas, correspond to disciplines such as Decision Sciences, Mathematics and Environmental Sciences, essentially.



**Figure 6.** Distribution of published articles on accounting fraud and earnings management in the period 2012-2022 by subject area (Own elaboration based on the results of the Scopus database).

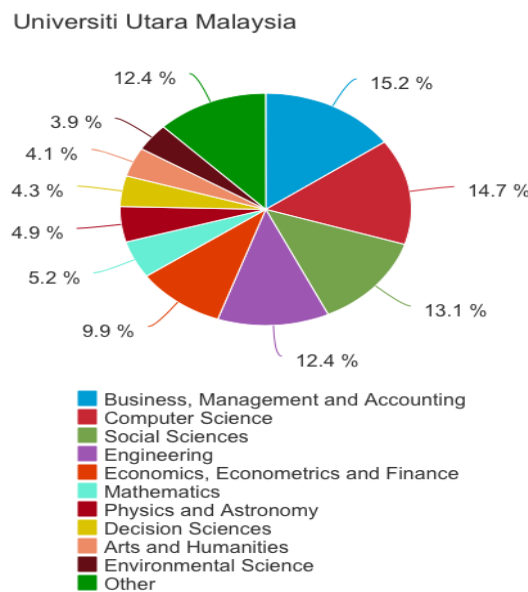
### 3.5. Distribution by institution

The affiliation by institution refers to the institution to which the author is linked. Figure 7 shows the list of the 15 institutions with the highest volume of published articles. In first place is Universiti Utara Malaysia (20 articles) followed by the College of Business, Universiti Utara Malaysia (14 articles). In third place is the University of Southampton, UK (13 articles). Southampton Business School is in fifth position (9 articles).



**Figure 7.** Academic institutions with the most published articles on fraud and earnings management in the period 2012-2022 (Own elaboration based on the results of the Scopus database).

Universiti Utara Malaysia, founded in 1984, is located in Sintok (Kedah, Malaysia). In 2020 it was ranked in the 591-600 group of the Shanghai International University Rankings. It is listed in Scopus with a total of 8,897 indexed papers and 2,431 authors. Figure 8 shows the distribution of the thematic areas of its publications. As can be seen, the area of Business, Management and Accounting represents the most relevant area, with a concentration of 15.2% of the publications; Economics, Econometrics and Finance, 9.9% and Social Sciences, 13.1%.



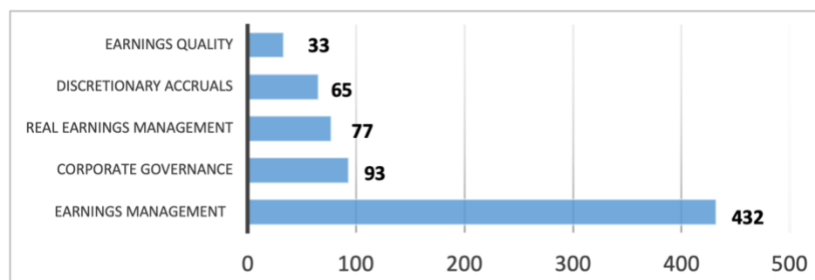
**Figure 8.** Subject areas of Universiti Utara Malaysia publications available in the Scopus database (Scopus database).

In terms of collaborations with other institutions, it collaborates mainly with the rest of the universities and business schools in Malaysia, highlighting the 1,787 joint publications with the university's own business school (College of Business, Universiti Utara Malaysia), which is the second institution in number of publications.

### 3.6. Keyword analysis

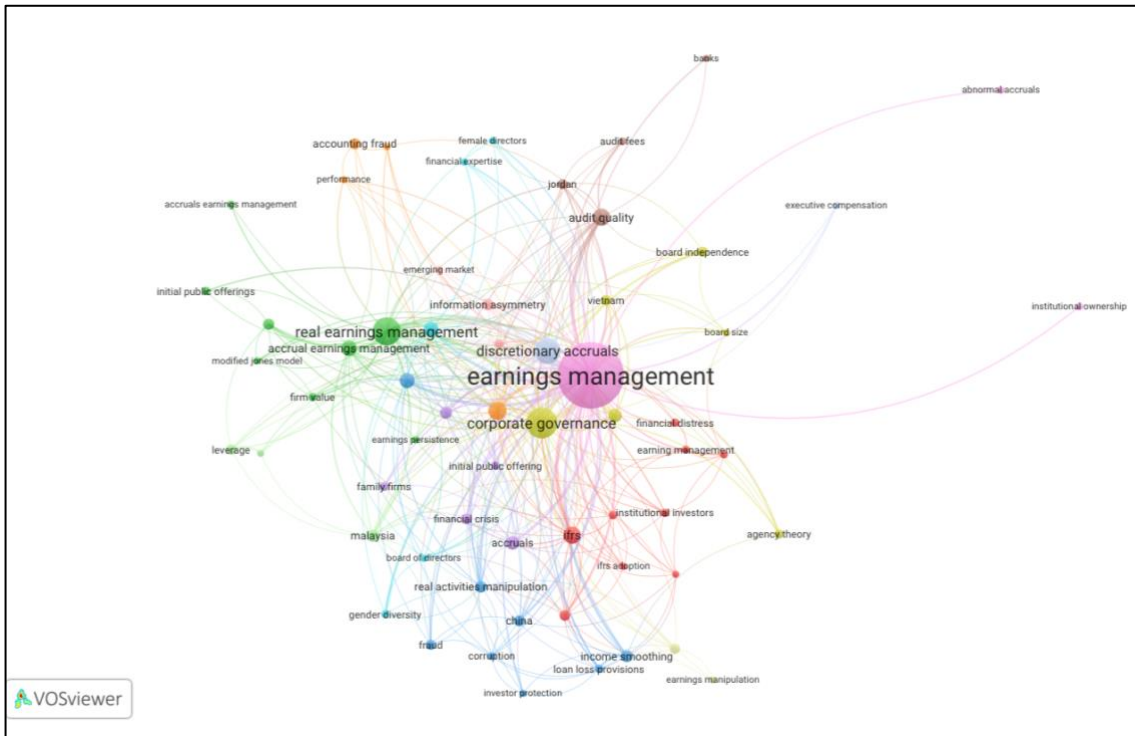
*Keywords* are the words that the authors select from their article and that, in their opinion, reflect the content of the article. They are usually found after the abstract of the document and allow the identification of its subject matter (Bermeo et al. 2021). The analysis of

keywords is very useful for those who write and for those who search for information on related works or thematic areas, since they allow, on the one hand, the dissemination of a manuscript, as well as the detection of the relationship between several similar works (González and Mattar, 2012). According to Granda et al. (2003), their usefulness goes beyond a bibliographic search, since they can help in the study and analysis of works by subject, providing information on research currents and aspects of interest to researchers. Of the 160 keywords obtained from Scopus, Figure 9 shows those that appear most frequently in the total number of documents. The first position is occupied by the keyword *earnings management* (430 documents), followed by *corporate governance* (93 documents) and *real earnings management* (77 documents).



**Figure 9.** Keywords of the articles published between 2021 and 2022 (Own elaboration based on the results of the Scopus database).

Figure 10 shows the network of keywords by author. Of the total of 62 elements or words, we can again observe that the most cited words are *earnings management*, present in 430 documents, grouped in 9 clusters and linked to 346 other terms.

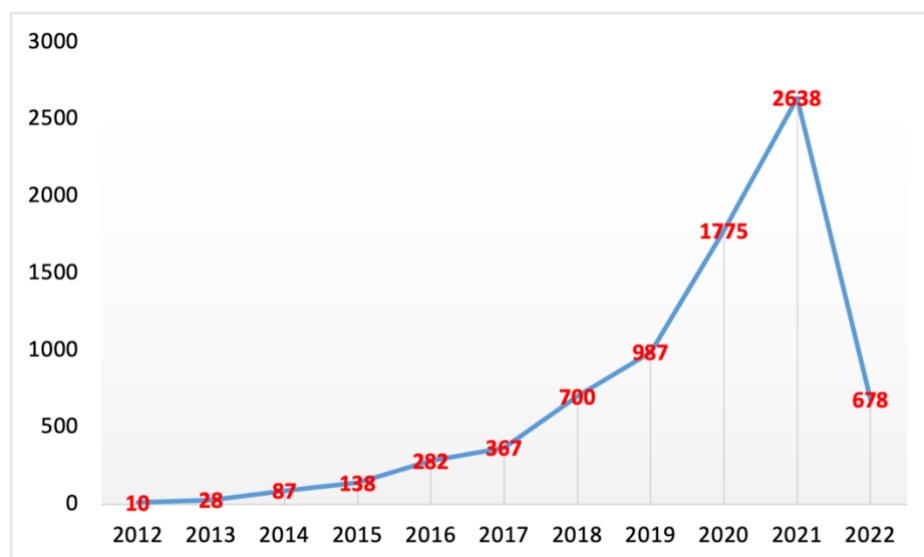


**Figure 10.** Author keyword co-occurrence map for Accounting fraud and Earnings Management (Source: Own elaboration based on VOSviewer software).

### 3.7. Distribution by document citations

The citation analysis of a work allows knowing its impact in the academic world. According to Angulo (2013), authors use the citations of a document to inform about the relationship between their work and other texts that have served as reference, it allows them to make known the origin of their ideas, so that their readers can analyze and evaluate their work, as well as verify the data included. It also allows the reader to obtain more information on the topic under discussion. Citation analysis makes it possible to identify those works with the greatest impact in the field of research (Bermeo et al. 2021). The 688 documents under study in this paper have been cited 7,690 times in the period 2012-2022, as shown in Figure 11.





**Figure 11.** Number of citations of accounting fraud and earnings management articles published between 2012 and 2022 (Own elaboration based on Scopus database).

Order no.	Title	Authors	Year of publication	No. of citations
1	Executive overconfidence and the slippery slope to financial misreporting	Schrand, C.M., Zechman, S.L.C.	2011	349
2	The relation between equity incentives and misreporting: The role of risk-taking incentives.	Armstrong, C.S., Larcker, D.F., Ormazabal, G., Taylor, D.J.	2013	181
3	Board interlocks and earnings management contagion	Chiu, P.-C., Teoh, S.H., Tian, F.	2013	171
4	Earnings management and annual report readability	Lo, K., Ramos, F., Rogo, R.	2017	164
5	Audit quality and auditor reputation: Evidence from Japan	Skinner, D.J., Srinivasan, S.	2012	149
6	Incentives or Standards: What Determines Accounting Quality Changes around IFRS Adoption?	Christensen, H.B., Lee, E., Walker, M., Zeng, C.	2015	140
7	Does Corporate Governance Influence Earnings Management in Latin American Markets?	Sáenz González, J., García-Meca, E.	2014	135
8	Short Selling and Earnings Management: A Controlled Experiment.	Fang, V.W., Huang, A.H., Karpoff, J.M.	2016	133
9	Female directors and earnings management: Evidence from UK companies	Arun, T.G., Almahrog, Y.E., Ali Aribi, Z.	2015	107

10	Accrual-based and real earnings management: An international comparison for investor protection	Enomoto, M., Kimura, F., Yamaguchi, T.	2015	93
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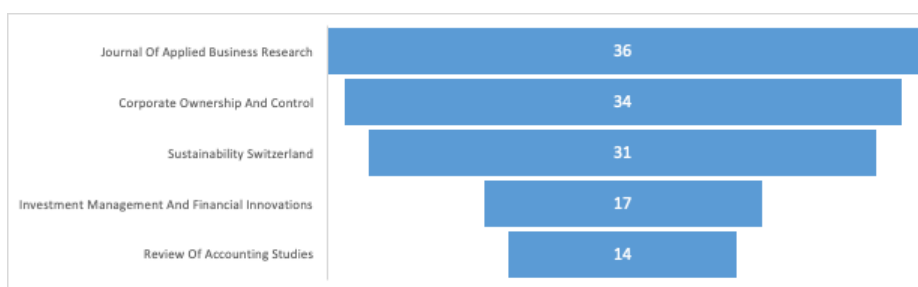
**Table 3.** List of accounting fraud and earnings management articles published in 2012-2022 with the highest number of citations (Own elaboration based on Scopus database).

The most cited publication (349) entitled "Executive overconfidence and the slippery slope to financial misreporting" and authored by Schrand and Zechman is worth mentioning. The paper published in 2011 analyzes whether executive overconfidence in estimating the company's earnings at the beginning of the period is the basis for subsequent earnings misstatements, as these optimistic expectations are not met.

### 3.8. Distribution by journals

The five journals with the highest number of articles on accounting fraud and earnings management for the period 2012-2022 are shown in Figure 12 out of a total of 159 journals listed in the Scopus results. The average publication per journal is 4 publications/journal.

The journal with the highest number of articles on fraud and earnings management is the Journal of Applied Business Research (Q4 2021, Business and International Management), with 36 publications representing 5.7% of the production. This is an open access journal from the United States that brings together articles from the areas of business and economics research. In second place is the journal Corporate Ownership and Control (Q4 Scopus 2019, in Business Management and Accounting), with 34 articles representing 5.4% of the articles. This is an open access journal from the United States, owned and published by Virtus Interpress, whose publications are mainly articles on corporate governance. In third place is Sustainability Switzerland (Q2 Scopus 2021, in Management, Monitoring, Policy and Law), with 31 publications, accounting for 4.9% of the total number of articles published. Like the previous journals, it is also open access, from Switzerland, and focuses on sustainability research.



**Figure 12.** Journals with more articles on accounting fraud and earnings management published between 2012 and 2022 (Own elaboration based on the results of the Scopus database).

Regarding the countries of origin of the five publications shown in Figure 12, three of them are from the United States, one from Ukraine and one from Switzerland.

### 3.9. Main topics covered by the articles

Another aspect that has been analyzed is the main topic of each of the articles analyzed. Considering the high number of articles analyzed in the majority of them the concrete topic has been identified reading the abstract. In a small number of the articles it has been needed to read the article in order to identify the topic. As shown in Table 4. During the period 2012-2020 the main topic of study on fraud and earnings management has dealt with: Corporate governance and earnings management (20.35%), highlighting the articles on the composition and quality of the members of the corporate governance, in aspects such as: the incorporation of women in the management bodies, independence and financial knowledge of the members. Other topics in order of importance have been: Ethical aspects of accounting make-up (10.66%), Relationship between auditing and accounting make-up (9.69%), Incidence of regulation on the quality of accounts (7.75%) and accounting manipulation techniques (6.78%). These terms coincide with the importance and frequency of the keywords analyzed in the previous section, highlighting that the three most frequent topics account for 40.7% of the total number of publications.

	<b>Topic</b>	<b>%</b>
1	Corporate governance and earnings management	20,35%
2	Ethical aspects of earnings management	10,66%
3	Relationship between auditing and earnings management	9,69%
4	Impact of regulation on the quality of accounts	7,75%

5	Accounting manipulation techniques	6,78%
6	Incidence of management profiles on earnings management	4,17%
7	Earnings management detection techniques	3,88%
8	Relationship between institutional investors and account quality	3,78%
9	Relationship between audit committee and accounting fraud	3,39%
10	Takeover bid and accounting manipulations	2,91%
11	Accounting manipulation with real transactions	2,71%
12	Incidence of religion on earnings management	2,42%
13	Country characteristics and account quality	2,03%
14	Non-profit companies and earnings management	1,94%
15	Relationship between budgets and earnings management	1,84%
16	Incidence of incentives on earnings management	1,80%
17	Quality of financial information	1,72%
18	Financial instruments and earnings management	1,45%
19	Influence of the economic sector on earnings management	1,43%
20	Impact of language on the quality of accounts	1,41%
21	Relations between politics and accounting make-up	1,21%
22	Competitive environment and earnings management	1,16%
23	Dividends and earnings management	1,11%
24	Information transparency	1,05%
25	Insider trading and accounting misrepresentation	1,02%
26	Government policy and quality of accounts	0,97%
27	Company typology and earnings management	0,78%
28	Incidence of taxation on earnings management	0,58%
	Total	100,00%

**Table 4.** Main topics covered by articles on accounting fraud and earnings management published between 2012 and 2022 (Own elaboration based on Scopus database).

Continuing with Table 4, other topics covered in the articles analyzed are those that relate earnings management to regulation, the incentives that lead companies or their employees to manipulate their accounts, the influence of politicians, the size of the company, the country and taxation, essentially.

#### 4. Discussion

The research carried out leads to the conclusion that Anglo-Saxon countries (United Kingdom, USA...) and Asian countries are the ones that have produced the most scientific

production on these subjects, with the Asian countries showing a slight superiority in the period analyzed in terms of number of publications both at the level of countries and affiliation per institution.

On the other hand, the journals that have published the most on the topics investigated are the *Journal of Applied Business Research*, *Journal of Business Research* and *Corporate Ownership and Control*. In addition, most of the articles analyzed deal with the relationship between fraud and earnings management, together with other relevant aspects of organizations such as corporate governance and auditing. Regarding corporate governance, aspects related to gender diversity and the role of women on the board of directors stand out. Most of these papers evidence that in those companies in whose board of directors there is at least one woman, earnings management practices are reduced (Arun et al., 2015; Luo et al., 2017; Lakhal et al., 2015 and García Lara et al., 2017). Gull et al., 2017 come to the same conclusion further recommending its incorporation beyond compliance with gender quotas. Another aspect of corporate governance to highlight is the quality of the composition of corporate governance members regardless of their gender status and other characteristics like independence, level of education and financial experience. Most studies show that the higher the number of independent directors, and the greater the financial knowledge and training, the lower the probability of earnings management (Chen et al., 2011; Alves, 2014; Al-Haddad et al., 2019 and Wang et al., 2013). Regarding auditing, aspects such as the conduct of audits in companies (Huguet and Gandía, 2016), audit firm and auditor characteristics (Koh et al. 2012 and Skinner et al., 2012), audit quality (Abdullatif et al., 2020; and Alhadab et al., 2017) and their fees in relation to the veracity of financial reports (Krauss et al., 2015 and Krishan et al., 2011) occupy most of the literature on this topic. In these cases, the articles evidence a direct relationship of the aforementioned aspects with the greater or lesser use of earnings management by companies.

Other analyzed works investigate the ethical aspects of the accounting practices used (Grougiou et al. 2014; Gras-Gil et al., 2016 and Martínez-Ferrero et al., 2016) which conclude that companies with strong Corporate Social Responsibility implement ethical accounting practices and are less prone to accounting manipulations and the incidence of regulation in accounting deceptions (Mongrut et al., 2019; Ho, L. et al., 2015 and Tsiouridou et al., 2012). In this case, most authors conclude that IFRS adoption improves the quality of accounting information.

Among the most relevant areas of study are the works on typology of different accounting manipulation, as well as the techniques for their detection, both being of great interest, as they allow detecting deceptions before it is too late. (Bushman et al., 2015; Kliestik et al., 2020; Vladu et al., 2017; Malikov et al., 2017; Anagnostopoulou et al., 2017 and Francis et al., 2014) These works explore several earnings management techniques such as can be: temporary reclassification of revenues and expenses; intangibles, use of provisions, etc. As detection techniques, the positive results of different statistical methodologies such as: Mann-Kendell trend test, Buishaud's test, Grubbs' test, among others, are evidenced. Other interesting detection techniques are the study of cash flows, the relationship between financial leverage and the use of accruals, as well as the use of different economic-financial ratios.

Finally, it is noteworthy the scientific interest in the issue of accounting fraud, in order to achieve the desired transparency of financial information, in favor of sustainable development, in the business world as stated in the 2030 Agenda (Lashitew, 2021). It should be noted that companies follow the Sustainable Development Goals (SDGs) of the United Nations and the transparency of financial information must be reliable so as not to distort decision-making by investors and other *stakeholders*. In addition, innovations in corporate governance and regulation to improve financial transparency are essential.

## 5. Conclusion

The aim of this paper is to perform a bibliometric analysis of articles on accounting fraud and earnings management published between 2012 and 2022 to assess the output and impact of the scientific literature.

The analysis was carried out using the Scopus database, searching for papers containing the terms *accounting fraud* and/or *earnings management*. In total, 688 articles were analyzed.

Among the main conclusions, we can highlight the following:

- Anglo-Saxon and Asian countries have produced the most scientific output in these areas.
- The journals that have published the most on the topics investigated are the *Journal of Applied Business Research*, the *Journal of Business Research* and *Corporate Ownership and Control*.
- Most of the articles analyzed deal with the relationship between fraud and

earnings management, together with other relevant aspects of organizations such as corporate governance (gender diversity, profile of board members, etc.), auditing (characteristics of audit firms and auditors, fees, etc.), ethical aspects of finance, types of accounts manipulation and techniques for detecting frauds.

Another relevant aspect of this research is the confirmation of the scientific interest of the subject studied and its relationship with the objectives of transparency and sustainable development.

The work carried out has several limitations and, among them, we can highlight that it has investigated a short period of time, the ten years from 2012 to the beginning of 2022. Secondly, only one database (Scopus) has been used. This database, despite being the one that contains more academic publications at present, does not contain all the scientific production. Another limitation is that only two terms were used (*accounting fraud* and *earnings management*) and in English. Therefore, a large part of the scientific production published in other languages or using other terms to refer to accounting fraud may have been left unanalyzed.

Finally, as future lines of action, it would be interesting to deepen the study using a longer period of time and other databases such as Web of Science or Digital Science's Dimensions. It would also be of great interest to broaden the search terminology (*accounting fraud* and *earnings management*), with other possible terms such as *creative accounting*. Another aspect that would allow us to broaden our knowledge of the subject studied would be to analyze in greater depth each of the works identified. This analysis would provide more evidence on the methodologies used and the results obtained.

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