

# Analysis of Publications on Financial Accounting in Web of Science Database with Vosviewer Mapping Techniques and Bibliometric Analysis Method

Finansal Muhasebe Konusunda Web of Science Veri Tabanında Yer Alan  
Yayınlara Bilimsel Haritalamada Vosviewer Haritalama  
Teknikleri ile Analizi

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## ABSTRACT

This study aims to analyze 1,009 publications on “Financial Accounting” limited according to certain criteria in the Web of Science database, using the VOSviewer software program and the traditional bibliometric analysis method. In this context, the findings of the study are that the most influential author on financial accounting is Thomas Stober, the most influential country is the USA, the most cited publication is April Klein (2002), with the publication titled “Audit Committee, Board of Director Characteristics, And Earnings Management”, and the most cited source is the Accounting Horizons magazine. In addition, it was concluded that the institutions with the strongest connection with financial accounting are Carolina University, Michigan University, Duke University and MIT in the USA. In addition, as a result of analyzing the numerical trend of online books published in the field of financial accounting using the Google Books Ngram online analysis program within the scope of the study, it was concluded that the number of books published in the field of financial accounting reached its highest level in 2003 and followed a steady decline from 2003 to 2014.

**Keywords:** Financial Accounting, VOSviewer Software Program, Text Mining

**Jel sınıflandırması:** M40, M41

## ÖZ

Bu çalışmada, Vosviewer haritalama teknikleri ve geleneksel bibliyometrik analiz yöntemi kullanılarak, Web of Science veri tabanında belirli kriterlere göre sınırlandırılan “Financial Accounting” konulu 1.009 yayının analiz edilmesi amaçlanmıştır. Bu bağlamda çalışmadan elde edilen bulgular finansal muhasebe konusunda en etkili yazarın Thomas Stober, en etkili ülkenin ABD, en çok atıf yapılan yayının “Audit Committee, Board Of Director Characteristics, And Earnings Management” başlıklı yayın ile Klein (2002) olduğunu ve en fazla atıf yapılan kaynağın Accounting Horizons dergisi olduğunu ortaya koymuştur. Ayrıca finansal muhasebe ile en güçlü bağlantıya sahip kurumların ABD’ de bulunan Carolina Üniversitesi, Michigan Üniversitesi, Duke Üniversitesi ve MIT olduğu sonucuna ulaşılmıştır.

**Anahtar kelimeler:** Finansal Muhasebe, Vosviewer Haritalama Teknikleri, Metin Madenciliği

**Jel sınıflandırması:** M40, M41

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## 1. Introduction

The amount of information in the literature can put researchers on a difficult path when it comes to reaching certain conclusions. At this point, the bibliometric analysis method emerges as one of the analysis techniques that can help researchers narrow, classify or summarize the literature in a certain field according to certain criteria and draw conclusions. This method makes it possible to examine the macro-level literature at a micro level and to determine its trends over time (Kurutkan and Orhan, 2018a; Kurutkan and Orhan, 2018b). VOSviewer is a program that can be used for visualization purposes in bibliometric analyses. This analysis technique visually displays the bibliometric data, performs on the basis of bibliographic data in the literature and allows the analysis of Co-Authority, Co-Occurrence, Attribution, co-citation and Bibliographic Matching and Analysis.

In this context, as a result of the search made in the domestic and foreign literature on the VOSviewer software program, it is possible to list the purpose of some studies using the VOSviewer software program and the information about the findings obtained from these studies as follows. Yu et al. (2020) aimed to analyze the publications in the global literature on Covid-19 between 2019-2020 with the VOSviewer software program. The authors found that the strongest keywords were pneumonia and epidemiology, in which they examined a total of 3,626 publications in the literature on Covid-19. The highest ranked journal was the British Medical Journal and the most cited journal was the Lancet. In the same study, Christian Drosten, from the Berlin Institute of Virology, was determined as the most cited author. The countries with the most cooperation in Chinese publications are the USA, England and Germany (Yu et al., 2020). In another study, Li et al. (2020) used the VOSviewer software program and the Cite Space software to analyze the publications in the literature on Deep Learning (DL) in Web of Science between 2007-2019. According to the findings obtained from the study, 94.19 percent of the publications on deep learning (DL) consist of articles and papers. Most of the publications are based in the USA and China. The USA and Canada were the most cited countries, and the most cited authors were Bengio and Yoshua. It has been determined that Chinese Acad Sci and Chinese Acad Sci University are the institutions that have the strongest collaborative relationship with each other. Gaitán-Angulo et al. (2018) in their study, in which they aimed to analyze the publications in the Scopus and Dialnet database on social innovation and complexity, with the VOSviewer software program, concluded that the authors who were the most connected and acted as a bridge with other authors were Bousquet and Hajjam. According to another finding obtained from the study, the most used keywords on social innovation and complexity were determined as change, complexity, impact, social networks, and design (Gaitán-Angulo et al., 2018). In another study, Mokhtari et al. (2019) aimed to evaluate the scientific performance and research quality of the journal, together with the bibliometric analysis of the publications published in the Journal of Artificial Intelligence and Social Simulation (JASSS) between 2000-2018. The findings obtained from the study revealed that the quality of the journal, together with the bibliometric data, is high and it is in high cooperation with other journals in the field (Mokhtari et al., 2019). Sinkovics (2016) analyzed the abstracts of publications in 410 peer-reviewed journals on ethics in international marketing research using the VOSviewer software program and contributed to the literature on this subject in his study, which aims to develop the foundations of theory building with the VOSviewer software program (Sinkovics, 2016). In another study, Eck and Waltman (2014) examined commonly used bibliometric network types and especially the VOSviewer and CitNetExplorer software tools. The authors discussed in detail how these software tools can be used to create, analyze and visualize bibliometric networks.

The aim of this study is to perform bibliometric analysis of financial accounting researches according to the VOSviewer software program. In the study, first of all, a conceptual framework was created and a literature review on the subject was included. In the last part of the study, a bibliometric analysis of financial accounting researches between the years 2000-2021 is given. The study was able to evaluate the development of financial accounting from a broad perspective and presented a comprehensive analysis in terms of financial accounting literature on the Web of Science between the years 2000 and 2021. In this context, it is believed that the study provides preliminary information for future publications on financial topics and can serve as a guide for researchers. In addition, the numerical trend of online books published between 2000 and 2018 in the field of financial accounting was analyzed using the Google Books Ngram online analysis program. The numerical

trend of online books published between 2000 and 2018 in the field of financial accounting was analyzed using the online analysis program Google Books Ngram. This analysis program allows viewing books that are available online and published in a specific field until 2018. The study was able to evaluate the development of financial accounting from a broad perspective and presented a comprehensive analysis in terms of financial accounting literature on the Web of Science between the years 2000 and 2021. In this context, it is believed that the study provides preliminary information for future publications on financial topics and can serve as a guide for researchers.

## 2. Background

Within the scope of this study, which aims to analyze the publications on financial accounting in the Web of Science database with VOSviewer software program, 1,763 records were obtained from the Web of Science database on 08/05/2021 under the title of “Subject” containing the word “Financial Accounting”. The publications accessed by applying some restrictions to download these records and reduce the result, Science Citation Index Expanded, Social Sciences Citation Index, Arts & When the Humanities Citation Index were restricted to the studies within the Emerging Sources Citation Index, and 1,179 records were obtained. Finally, a total of 1,009 records were obtained by limiting the number of data to the years 2000-2021. In this context, 1,009 publications obtained by searching the Web of Science database with the word “Financial Accounting” and limited to the criteria described above, were analyzed in terms of certain criteria using the VOSviewer software program and the bibliometric analysis method, and the results were visualized. In the study, the analyses of Co-Authorship, Co-Occurrence, Citation, Bibliographic Coupling and Co-Citation are based on the analysis of the financial accounting section using the VOSviewer software program. Therefore, the analysis of publications using the VOSviewer software program based on bibliographic data identified citation, co-citation, bibliographic matching, strongly linked authors, documents, sources, institutions and countries. As a result of the bibliometric analysis made using the filters in the Web of Science Core Collection database, the prominent disciplines in financial accounting publications, the most cited publications, Turkish publications, the authors with the most publications, and the journals and countries with the most publications were determined. In the study, the trend between the years 2008-2018, when the books published online about financial accounting were published intensively, was visualized with the online analysis program Google Books Ngram.

## 3. Methods

With the help of some filters, it is possible to determine how the publications in the scientific literature are affected by scientific developments, the direction of scientific developments and the main study areas and dynamics in certain areas of the literature. At this point, researchers need bibliometric methods and meta-analysis in data analysis. However, their implementation is quite troublesome for researchers. The exclusion of important publications in the field from time to time also negatively affects the results of the research (Aria & Cuccurullo, 2017). On the other hand, bibliometric methods in data analysis, along with the developments in the field, direct researchers from micro to macro and give the opportunity to evaluate a particular field from different perspectives. Thus, researchers have the opportunity to evaluate the dynamics of the field from a wider perspective (Demir & Erigüç, 2018; Zupic & Čater, 2015). Bibliometrics in data analysis is a fundamental area of information science in the scientific discipline that deals with material quantitatively (Merigó & Yang, 2017). With this applications of the bibliometric analysis method vary as much as the factors analyzed, and this method can be applied to many subjects (de Bakker, Groenewegen & Den Hond, 2005). With this analysis method, data can be collected from publications on any subject by determining interesting factors related to a particular field. In this way, with the bibliometric analysis method, researchers can determine the most frequently cited authors of publications on any subject, the journals in which the publications are published most, countries, institutions and many other factors, and obtain information about the development of publications in any field (Merigó, Mas-Tur, Roig -Tierno and Ribeiro-Soriano, 2015). Despite these advantages that the bibliometric analysis method provides to researchers, its application potential cannot be fully utilized in many cases in business research. This situation arises when studies on bibliometric analysis are based on a limited number of data and techniques and provide only a fragmentary understanding of the field studied. According to the literature, bibliometry was first developed by Cole and Eales in 1917 by comparing academic studies published between 1550 and 1850 in the field of anatomy and analyzing them with a statistical method. Gross P.L.K. and Gross E.M., whose

bibliographies were published in the Journal of The American Chemical Society in 1927, are considered the first work in which citation analysis was performed.

Within the scope of the bibliometric analysis method, the VOSviewer software program, which is based on obtaining scientific visuals of bibliographic data obtained from a certain database with different software, is also used by researchers today (Zupic & Čater, 2015). In this way, it is possible to analyze the increasing data in a certain field with different programs (Bornmann, Stefaner, de Moya Anegón, Mutz, 2014) and to visually present scientific developments and collaborations in the relevant field. (Ellegaard, 2018). In this context, visuals can be created based on scientific publication networks in bibliometric analysis performed with the VOSviewer program. Items in these networks can be linked by co-creation, co-authorship, bibliographic matching, or co-citation links. At this point, bibliographic database files can be obtained from the Web of Science, Scopus, Dimensions, Lens and PubMed databases. The VOSviewer software program provides researchers with three different visualization opportunities, namely network visualization, layer visualization and density visualization, with the data obtained from these databases (Eck and Waltman, 2021).

#### 4. Research Framework

Within the scope of this study, which aims to examine the financial accounting publications in the Web of Science database with the VOSviewer software program and to support the findings with the traditional bibliometric analysis method, a total of 1.009 published between 2000-2021, limited in terms of certain criteria explained under the background title, A number of publications were analyzed and the results were visualized. With the VOSviewer software program discussed in the study, co-occurrence, co-authorship, citation, co-citation and bibliographic matching analyzes were performed. With the bibliometric analysis method discussed in the study, the prominent disciplines in the publications related to financial accounting, the most cited publications, the authors with the most publications, the journals with the most publications, the country and Turkish publications in the relevant field were determined. In addition, within the scope of the research, the trend of the books published online related to financial accounting was examined with the Google Books Ngram online analysis program and the results were visualized. With this study, which was created in this context, the publications in the literature related to financial accounting could be evaluated from a wide perspective, and the development and trend of scientific publications in this field could be determined. In this respect, it is thought that the study can provide preliminary information for future publications on financial accounting and can guide researchers in this regard.

#### 5. Analysis of Publications on Financial Accounting in the Web of Science Database with the Bibliometric Analysis Method

Bibliometrics is a method of analysis used to determine research in a particular area of the academic discipline, the content of that research, and the trends in that research over time (Merigó & Yang, 2017).

Table 1 provides information on the top 20 disciplines in financial accounting publications from the Web of Science database.

Research Area	Registration Number	Total Enrollment Rate (%1.009)
Business Finance	540	53.518
Economics	106	10.505
Business	103	10.208
Management	101	10.010
Education Educational Research	51	5.055
Public Administration	29	2.874
Environmental Sciences	27	2.676
Law	19	1.883
Metallurgy Metallurgical Engineering	19	1.883
Operations Research Management Science	15	1.487

The data presented in Table 1 show that the subject of financial accounting is used in many disciplines. The analysis of the publications by research area shows that the word financial accounting is mainly used in the areas of corporate finance. Other disciplines where the word financial accounting is most commonly used are economics (10.505), business administration (10.208), management (10.010), education, educational research (5.055) and public administration (2.874).

Table 2 provides some information on the top five most cited publications on financial accounting in the Web of Science database.

Author Names	Publication Name	Purpose	Scope	Method	Publication Year	Citation Number	Google Scholar Citation Number
Klein, A.	“Audit Committee, Board Of Director Characteristics, And Earnings Management”	In this study, it is aimed to examine the relationship between the qualifications of the audit committee and the board of directors with the earnings management of the enterprises.	Within the scope of the study, the effect of the independence of the audit committee and the board of directors, which play a role in the audit of businesses, on monitoring the financial accounting process in businesses is discussed.	In the study, data consisting of reports and statements of the audit committees and boards of directors of companies listed in the S&P 500, as well as data obtained regarding shareholder meetings, were used. Different modeling was created with the data obtained and the relationship between abnormal accruals and the independence of the board of directors and audit committee was examined..	2002	1.611	5.917
Bushman, R.M. & Smith, A.J.	“Financial Accounting Information And Corporate Governance”	In the study, it is recommended to conduct research on the financial accounting data presented to the public by businesses and the management process of businesses.	The scope of the study consists of examining the usability of financial accounting data of enterprises in managerial incentive plans.	In the study, empirical researches on the governance role of financial accounting information of enterprises were evaluated.	2001	782	3.217

Hanlon, M. & Heitzman, S.	“A Review of Tax Research”	In this study, it is aimed to examine the literature on the publications published on tax research.	The scope of the study consists of the publications published on tax. In this context, the literature was examined in four main areas. The first is income tax reported within the scope of financial accounting, the second is corporate tax avoidance, the third is corporate decision making and the fourth is asset pricing.	In the study, a literature review on the examination of tax research is presented.	2010	692	2.991
Holthausen, R.W. & Watts, R.L.	“The Relevance of The Value-Relevance Literature for Financial Accounting Standard Setting”	The aim of the study is to evaluate the standard setting inferences that can be obtained from value-related studies in determining financial accounting standards.	The scope of the study consists of examining the accounting, valuation and standard setting theories underlying the implications that are effective in determining financial accounting standards.	In the study, a literature review on accounting, valuation and standard setting theories that are effective in setting standards is presented.	2001	633	2.650
Anderson, R.C. & Mansi, S.A. & Reeb, D.M.	“Board Characteristics, Accounting Report Integrity, and The Cost of Debt”	The aim of this study is to examine the relationship between the qualifications of the board of directors and the integrity of the accounting reports and debt costs..	The scope of the study consists of examining the scope of debt costs and their relationship with the independence of the board of directors of enterprises and the size of the board of directors.	In the study, the relationship between debt costs, the independence of the board of directors and the number of a sample selected among S&P 500 companies was examined..	2004	578	2.179

Examination of the data presented in Table 2 reveals that the most cited publication on financial accounting was produced by Klein, A. in 2002 with a number of 1,611 citations (Google academic citations: 5.917).

As a result of the literature review on financial accounting in the Web of Science database, it was found that there were 70 publications published between 2006 and 2020. Information on the first five publications most cited from these publications is presented in Table 3 below.

**Table 3:** Information on the Top Five Most Cited Publications in Turkish Publications on Financial Accounting in the Web of Science Database

Author Names	Publication Name	Purpose	Scope	Method	Publication Year	Citation Number	Google Scholar Citation Number
Basci, E. & Kara, H.	“Financial Stability and Monetary Policy”	The aim of this study is to evaluate communication strategies within the scope of a new policy strategy designed and implemented by the Central Bank of the Republic of Turkey (CBRT) and planned to reduce macro risks.	The scope of the study consists of monetary stability and monetary policy strategies.	A literature review of the new communication strategies discussed in the study is presented	2011	20	61
Akkaya, Y. & Gurkaynak, R. S.	“Current Account Deficit, Budget Balance, Financial Stability, and Monetary Policy: Reflections on a Gripping Episode”	The aim of the study is to evaluate the effects of the 2001 crisis on the Turkish economy.	Within the scope of the study, the periods after the 2001 economic crisis were evaluated and analyzed by classifying them as 2002-2006 and 2007-2012 sub-periods.	In the study, a literature review on the effects of the 2001 crisis on the Turkish economy is presented.	2012	10	9
Demir, P. & Aral, S.	“The Economic and Socio-Economic Analysis of Integration for Production and Industry in Dairy Industry Enterprises in Kars Province”	The aim of the study is to investigate the socio-economic structures and annual activities of enterprises operating in the dairy industry and to determine the measures that can be taken to increase their profitability and productivity.	The scope of the study consists of milk factories and dairy farms operating in the Dairy Industry.	In the study, statistical inferences were made by using the financial and activity data obtained from 35 randomly selected businesses in terms of milk factories and dairy businesses operating in the province of Kars in Turkey.	2010	9	6
Kara, A. H.	“Monetary Policy in the Post-Crisis Period”	The aim of the study is to evaluate the results regarding the implementation of the new monetary policy adopted by the Central Bank of the Republic of Turkey (CBRT) since 2010.	The scope of the study consists of the evaluation of the monetary policy implemented by the CBRT since 2010.	In the study, statistical calculations and inferences are presented in the evaluation of the new monetary policy by using central bank data, gross domestic product growth rate, core inflation, policy rate, central bank balance sheets and similar economic data.	2012	8	11

Karacavus, B.	“Optimization of Solar Domestic Hot Water System for Certain Climate Zones of Turkey”	The aim of the study is to investigate the optimization of solar hot water system in different climatic regions in Turkey.	The scope of the study consists of data on optimizing the solar hot water system for Edirne, İzmir, Trabzon, Hakkari provinces located in different climatic regions of Turkey.	In the study, the optimization of the solar hot water system in different climatic regions was analyzed annually with certain dimensions. In the study, system design and optimization were performed by combining TRNNSYS and GenOpt software packages.	2017	7	6
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When the data presented in Table 3 is examined, it is seen that the Turkish publication titled “Financial Stability and Monetary Policy”, which is the most cited with 20 citations in the field of financial accounting, was produced by Basci, E. and Kara, H. in 2011 (Google academic citations: 61).

**Table 4.** Information on the Five Authors with the Most Publications at Financial Accounting on the Web of Science Database

Author Names	Country	Number of Publications	Average Citations Per Publication
Thomas, W.B.	USA	6	110
Hope, O.K.	USA	5	92
Hopkins, P.E.	USA	6	19.33
Kohlbeck, M.	USA	6	17.16
Jamal, K.	USA	6	6.33

Table 4 presents information about the top five authors with the most publications on accounting. As can be seen from the table, the country of these authors is the United States. In addition, the first four authors have six publications each, and Thomas, W.B., ranks first with an average number of citations of 110. Hope, O.K., who is at the last of the list, has 5 publications on financial accounting and an average number of 92 citations to his publications.

**Table 5:** Information about the top five journals with the most publications on Financial Accounting on the Web of Science Database

Journal Name	Number of Publications	Impact Factor of the Journal *	Web of Science Category of the Journal *
Accounting Horizons	35	2.162	Business, Finance
Accounting Review	33	4.301	Business, Finance
Issues in Accounting Education	29	-	Business, Finance
Accounting Organizations and Society	26	4	Business, Finance
Contemporary Accounting Research	21	3.543	Business, Finance

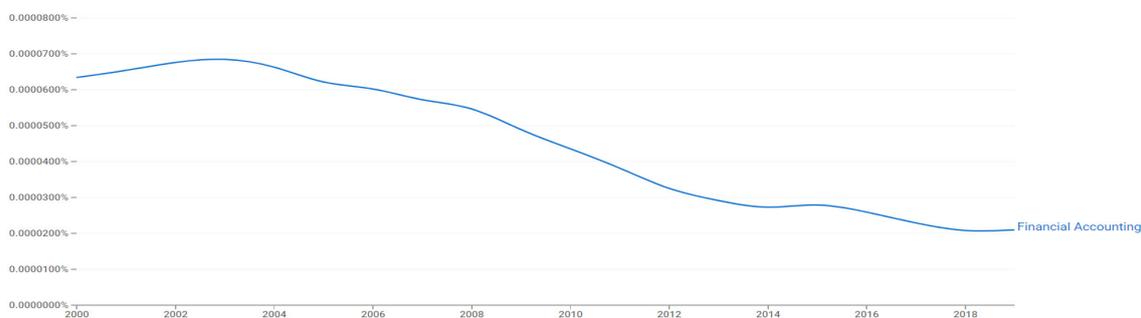
\* The publication impact factors, and journal Web of Science category shown in Table 4 were taken from the 2020 Web of Science

Table 5 lists the top five journals with the most publications on financial accounting in the Web of Science database. The table shows that 35 of these publications were published in Accounting Horizons in the business and finance category with an impact factor of 2,162.

**Table 6:** Information on the Five Universities with the Most publications at Financial Accounting on the Web of Science Database

Name of the University	Number of Enrollment	Rate of Total Enrollment (%1.009)
State University System of Florida	23	2.779
University of Texas System	20	1.982
University of North Carolina	15	1.487
University System of Georgia	15	1.487
University of Houston	13	1.288

Table 6 lists the five universities with the most publications on financial accounting in the Web of Science database. According to the table, the most publications were published at the State University System of Florida (23 publications). Figure 1 shows the frequency and level of interest of financial accounting books published online between 2000 and 2018, provided by the Google Books Ngram Viewer programme.



**Figure 1.** Google Ngram Online Books About Financial Accounting Between 2000-2019

**Reference:** Google Books Ngram Viewer, 2021.

According to the data presented in Figure 1, it is seen that the number of books published on financial accounting reached its highest level in 2003 and followed a steady decline from 2003 to 2014.

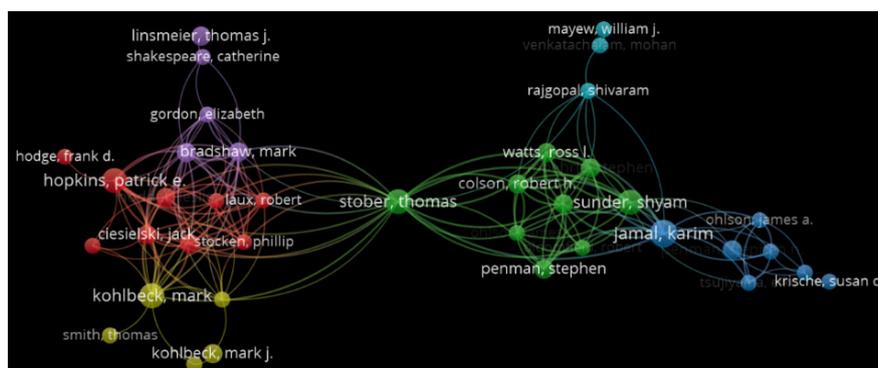
## 6. Analysis of Financial Accounting Publications in Web of Science Database with VOSviewer Software Program

### 6.1. Mapping Based on Co-Authorship Data

The study includes analysis and visualization of co-authorship data in three categories: Authors, Organizations, and Countries.

#### 6.1.1. Authors Mapping

Below is the network map of the relationships between the authors who authored the publications on financial accounting in the Web of Science database (see Figure 2). While creating this map, the minimum number of documents for an author is “2” and the minimum number of citations for an author’s document is “0”. In this context, 208 out of 2,166 authors meet these thresholds, and the total strength of the citation links with other authors for each of the 208 authors is calculated, and the network map is created by selecting the 208 authors with the highest power.

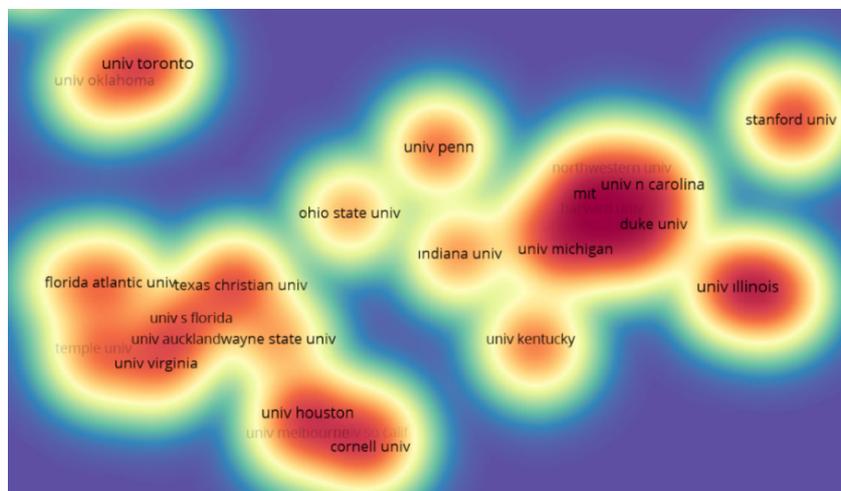


**Figure 2.** Network Mapping of the Relationship between Authors Who have Publications on Financial Accounting in The Web of Science Database with VOSviewer Software Program

Looking at the network map shown in Figure 2, it can be seen that there are several clusters of different colors. Stober, Thomas, who is in the middle according to the map, seems to be the author with the highest connection strength. Linsmeier, Thomas J., Kohlbeck, Mark J., Mayew William J., and Krishe, Suzan D., who are further away from Stober, Thomas, appear to have a lower connection strength.

### 6.1.2. Mapping of The Institutions

The density map of institutions publishing on financial accounting in the Web of Science database is shown below (see Figure 3). In creating this map, the minimum number of documents belonging to an institution was set as “5” and the minimum number of citations received was set as “0”. In this context, 55 of the 1.051 institutions meet these thresholds, and the density map was created by selecting the 310 institutions with the highest overall performance.

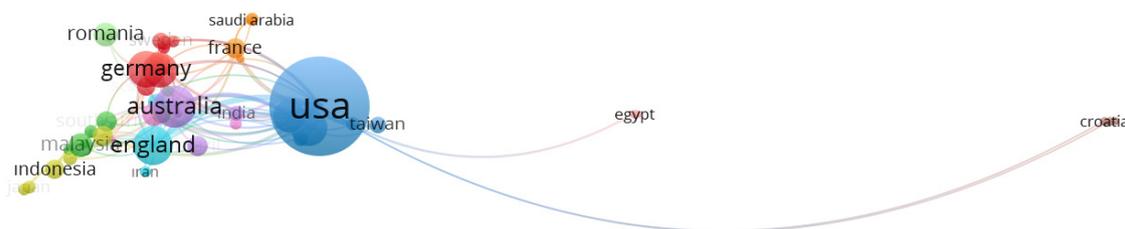


**Figure 3.** Density Mapping of the institutions with the Most Publications on Financial Accounting in the Web of Science Database with VOSviewer Software Program

Looking at the data in the density map shown in Figure 3, we see that universities publish more intensively in financial accounting compared to other institutions. Carolina University, University of Illinois, University of Houston, University of Florida, and MIT, which are shown in red in the density map, are the institutions that have the strongest ties to financial accounting and do the most work in this area. In addition, the map shows that the institutions that collaborate in financial accounting are located in close proximity to each other.

### 6.1.3. Mapping of The Countries

Below is a network map of countries according to financial accounting publications in the Web of Science database. While creating this map, the minimum number of documents belonging to a country is “2” and the number of citations received by a country is accepted as “0”. In this context, 62 out of 82 countries meet these thresholds. Therefore, the network map was created by calculating the total strength of the partnership ties of the 62 countries with the highest connection strength with other countries.



**Figure 4.** Network Mapping of the Countries Work the Most in Financial Accounting in the Web of Science Database with VOSviewer Software Program

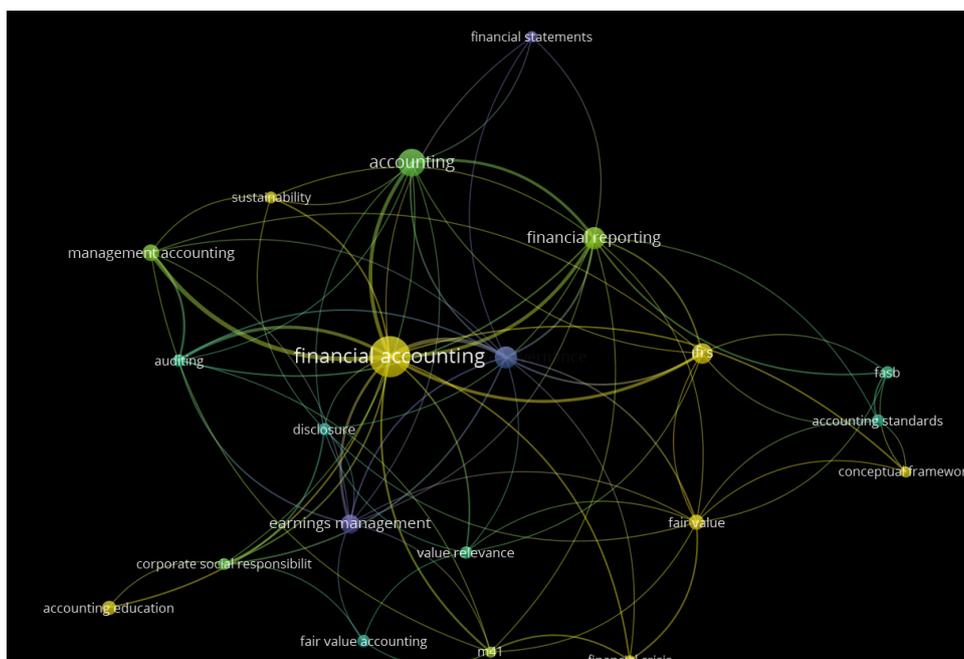
Examining the data in the network map shown in Figure 4, it can be seen that there are several clusters of different colors. From the map, it can be seen also that the countries that collaborate in financial accounting are grouped in close proximity to each other and the country with the strongest and weakest connections are the USA and Croatia respectively.

## 6.2. Mapping Based on Co-Occurrence Data

Co-occurrence data included in the study were analyzed and visualized in the of author's keywords category.

### 6.2.1. Keywords Mapping

Below is a network map of publications related to Financial Accounting in the Web of Science database. In creating this map, the minimum number of repetitions of a keyword was set as "10". In this context, 21 of the 2.647 keywords meet these thresholds, and the network map was created by selecting the 21 keywords with the highest total strength.



**Figure 5.** Network Mapping of the Most Frequently Found Keywords in Financial Accounting in the Web of Science Database with VOSviewer Software Program

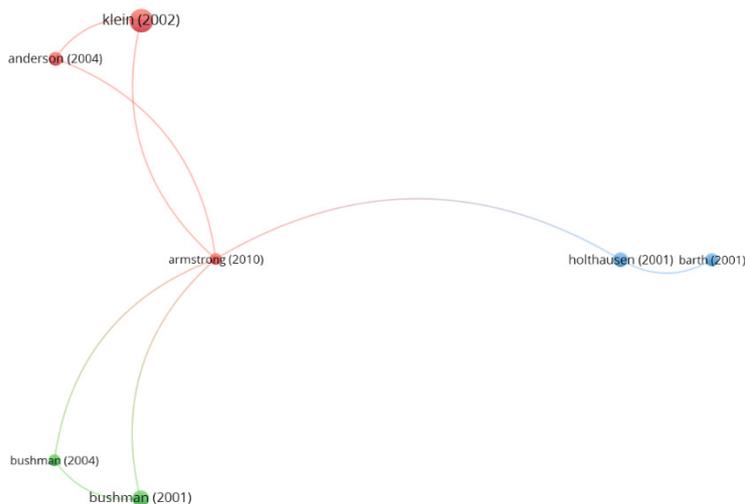
By examining the data in the network map shown in Figure 5, it can be seen that there are several clusters of different colors and the related keywords in financial accounting are clustered in close proximity to each other. According to the map, the strongest keywords in financial accounting are IFRS, financial reporting, accounting, sustainability, accounting, auditing, earnings management and corporate governance.

## 6.3. Mapping based on Citation data

In the study, citation data were analyzed and visualized in five categories: documents, sources, authors, organizations and countries.

### 6.3.1. Mapping of Documents

Below is the network map of the main studies that guide the publications on financial accounting in the Web of Science database, that is, the most cited publications. When this map was created, the minimum number of citations for a document was "391". In this context, 10 out of 1,009 documents meet these thresholds, and a network map was created by selecting the 10 documents with the highest total number of citations.

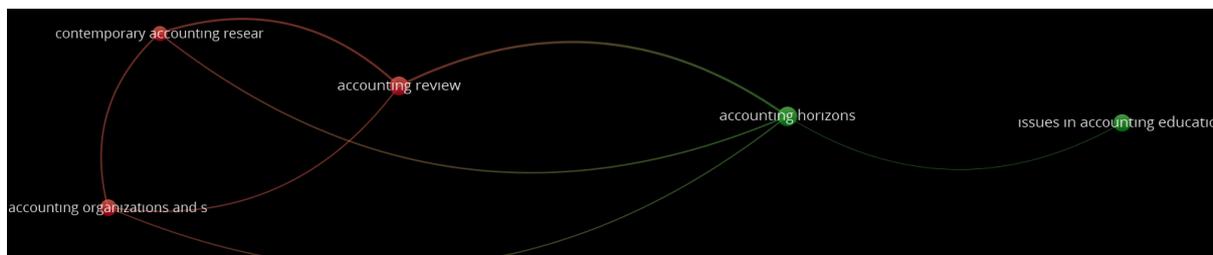


**Figure 6.** Network Mapping of the most Cited Publications on Financial Accounting in the Web of Science Database with VOSviewer Software Program

Looking at the data in the network map shown in Figure 6, it can be seen that the most frequently cited publications on financial accounting, which can be described as fundamental studies in this field, are shown. From the map, it can be seen that Klein (2002) is the most cited publication among the publications on financial accounting. Moreover, since the publications on the map are widely spaced, it can be said that the topic on which the expertise is studied is broad.

### 6.3.2. Mapping of Resources

Below is a network map of resources in the Web of Science database of published studies in financial accounting (see Figure 7). While creating this map, the minimum number of documents associated with a resource is “20” and the minimum number of citations for a resource is “0”. In this context, 5 out of 408 sources met this threshold and a network map was created for the 5 sources with the highest total link strength.

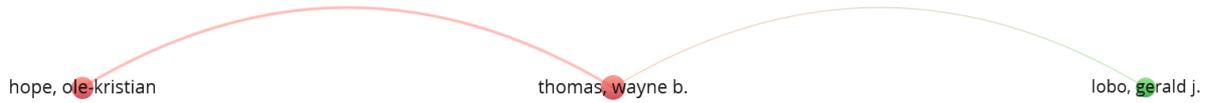


**Figure 7.** Network Mapping of the Relationship Link of the Resources on which Publications on Financial Accounting Published in the Web of Science Database with VOSviewer Software Program

The citation network between the five sources is shown in Figure 7. The map shows that the sources used directly or indirectly in the financial accounting publications are grouped in two different clusters. The map also shows that the most cited source is Accounting Horizons.

### 6.3.3. Mapping of The Authors

The network map of the authors who published on financial accounting in the Web of Science database is presented in figure 8. While creating this map, the minimum number of documents for an author is “4” and the minimum number of citations for an author is “0”. In this context, a network map was created by selecting 13 authors from 2,166 authors who meet the threshold and have the highest total connection strength.



**Figure 8.** Network Mapping of Relationship of Authors Publishing on Financial Accounting in the Web of Science Database with VOSviewer Software Program

The citation network between the three authors is shown in Figure 8. From the map, it can be seen that there is only one main link between the authors, the authors are directly related to each other, and the citation links between them are strong. Moreover, it can be seen from the map that Thomas, W.B. is the author with the highest connection strength.

#### 6.3.4. Mapping of The Institutions

The network map of the institutions that contribute the most to the financial accounts in the Web of Science database is presented in Figure 9. While creating this map, the minimum number of documents belonging to an institution is “10” and the minimum number of citations of an institution is “0”. In this context, a network map was created by selecting 6 institutions with the highest total connection power from 1,051 institutions.

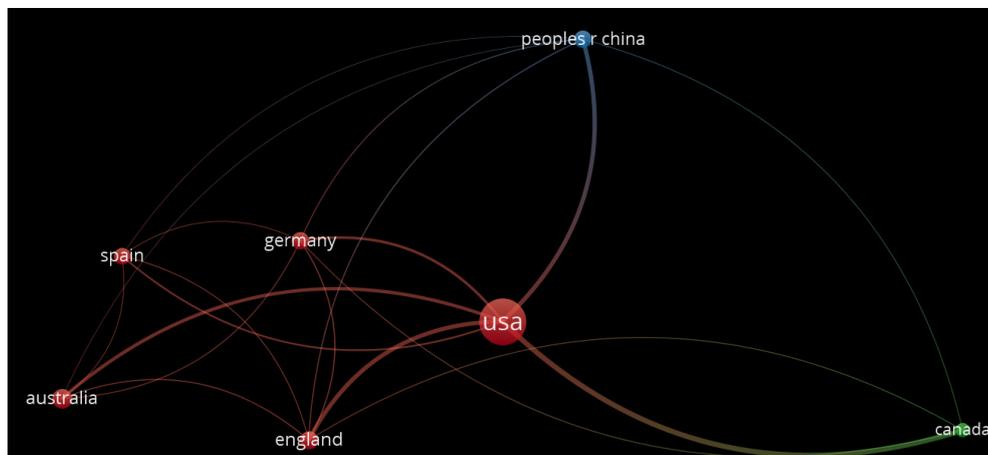


**Figure 9.** Network Mapping of Relationship Link of Institutions That Contribute Most to Financial Accounting in Web of Science Database with VOSviewer Software Program

Figure 9 shows the citation network of the institutions that contribute the most to the field of financial accounting. Figure shows that they are grouped into six different clusters and that they are directly or indirectly related to each other. In addition, it can be seen also that a significant amount of content in the field of financial accounting is provided by universities.

#### 6.3.5. Mapping of The Countries

Below is a network map of the top contributors to financial accounting in the Web of Science database (see Figure 10). While creating this map, the minimum number of documents for a country is “30” and the minimum number of citations for a country is “0”. In this context, a network map was created by selecting the 7 countries that met the thresholds from 82 countries and had the highest total connection strength.



**Figure 10.** Network Mapping the Relational Link of Countries Contributing the most Financial Accounting in Web of Science Database with VOSviewer Software Program

Based on the address information of the institutions in Figure 10, the map created ranked the institutions that stood out in the area of financial accounting on the scale of countries. By looking at the network map, it can be seen that the countries that contribute the most to the field of financial accounting are grouped in seven different clusters and that they are directly or indirectly related to each other. The map shows that a significant part of the content in the financial accounting field is provided by the US, and the cooperation network between the US and other countries is quite strong.

### 6.4. Mapping Based on Bibliographic Coupling Data

Bibliographic matching is when two different sources cite the same publication (Al and Tonta, 2004). Bibliographic matching is illustrated in the figure below.

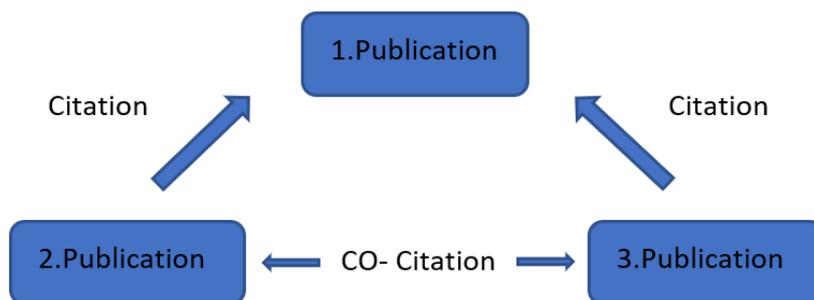


Figure 11. Display of Bibliographic Matching

In this study, the bibliometric matching data was analyzed and visualized in five categories: Documents, Sources, Authors, Organizations, and Countries.

#### 6.4.1. Mapping of The Documents

Below is a network map of the most cited financial accounting publications in the Web of Science database. While creating this map, the minimum number of citations for a document is “100”. In this context, 43 out of 1,009 documents meet these thresholds, and a network map was created by selecting 43 documents with the highest total citations.

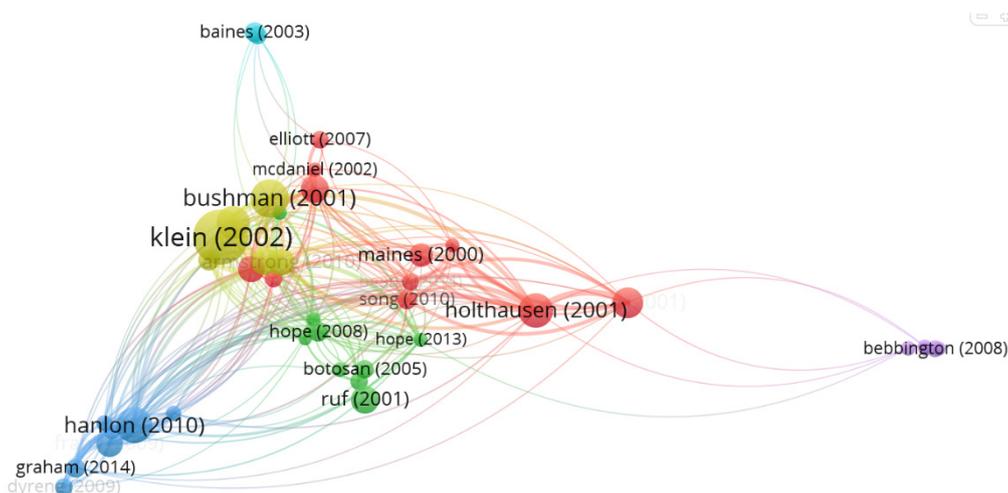


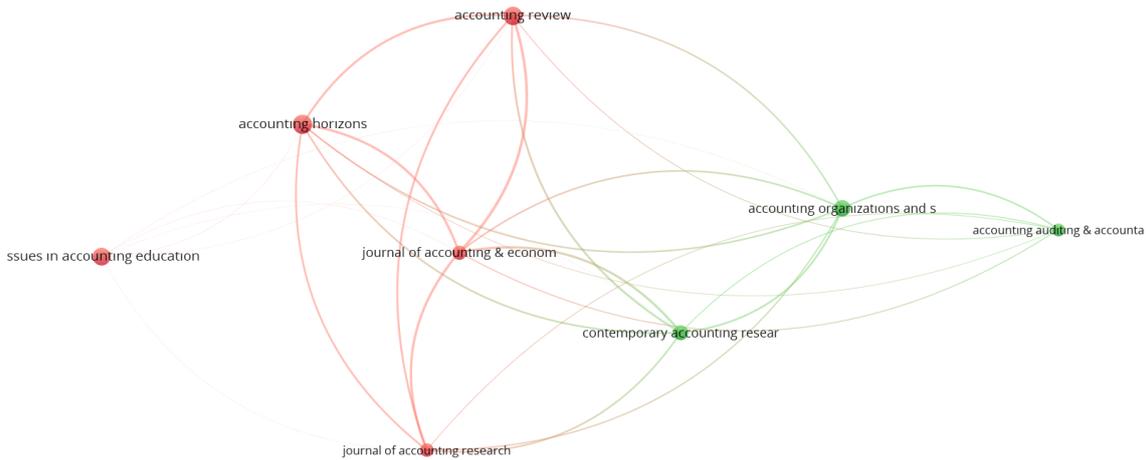
Figure 12. Network Mapping of the Most Commonly Cited Publications on Financial Accounting in the Web of Science Database with VOSviewer Software Program

Looking at the data in the network map shown in Figure 12, it can be seen that the most frequently cited publications on financial accounting, which can be described as the most important publications on financial accounting, are shown. From the map, it can be seen that the publications that guide the field of financial accounting are grouped into six different groups. Moreover, it can be observed from the map that the bibliographic network between Klein (2002), Hanlon (2010), Bushman (2001) and Holthausen (2001) are the strongest and most cited publications. It is also worth noting that the bibliographic

network between Graham (2014) and Hanlon (20210) is strong. According to the map, it can be said that the strongest bibliographic matching network was established with Klein (2002).

**6.4.2. Mapping of Resources**

Below is a network map of publications related to financial accounting in the Web of Science database. In the creation of this map, the minimum number of documents for a source is “15” and the minimum number of citations for a source is “0”. In this context, a network map was created by selecting 8 sources that meet the thresholds and have the highest total link strength from 408 sources.

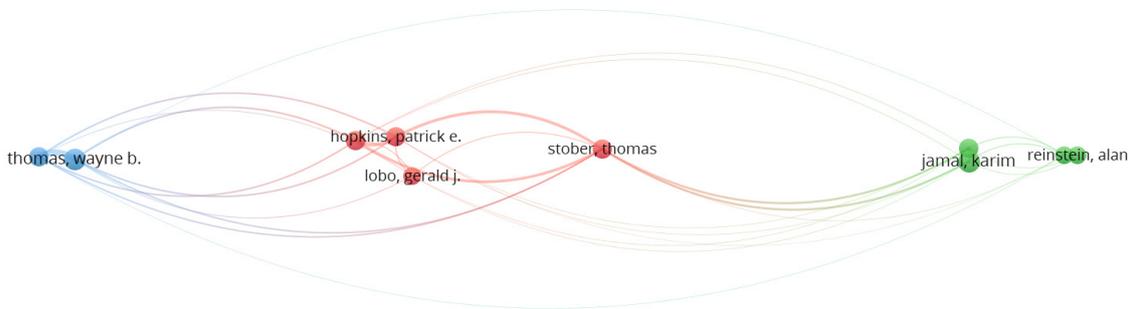


**Figure 13.** Network Mapping of Financial Accounting Publications in the Web of Science Database with VOSviewer Software Program

Looking at the citation network between the five sources in Figure 13, it can be seen that the sources used in the accounting publications are directly or indirectly grouped in two different clusters. From the network map, it can be seen that the most frequently cited sources are Accounting Horizons, Accounting Review, Issues in accounting education and Accounting Organization and Social.

**6.4.3. Authors’ Mapping**

The network map of the authors who publish in the field of financial accounting in the Web of Science database is presented below (see Figure 14). While creating this map, the minimum number of documents belonging to an author was accepted as “4” and the minimum number of citations by an author was accepted as “0”. Thus, the network map was created by selecting the author with the highest total connection strength by meeting the thresholds from 2,166 authors.

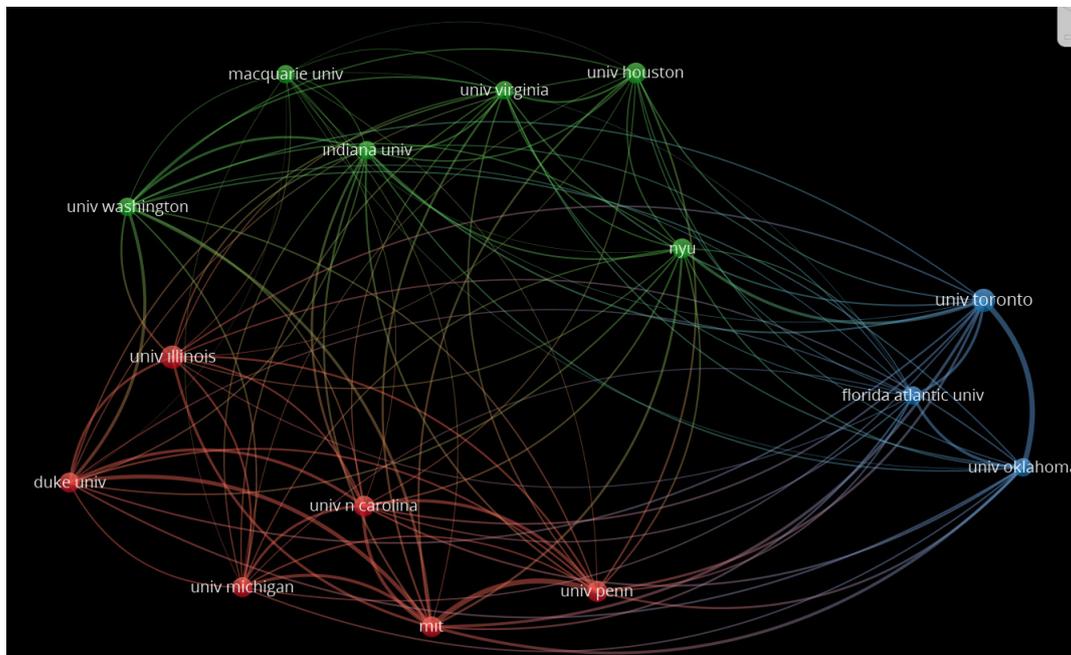


**Figure 14.** Network Mapping of Authors Publishing on Financial Accounting in Web of Science Database with VOSviewer Software Program

The citation network between the five authors is shown in Figure 14. From the map, it can be seen that the authors are grouped directly or indirectly in three different clusters. According to the map, it can be said that Stober, Thomas, Thomas Wayne B. and Jamal Karim are the authors with the highest connectivity.

### 6.4.4. Mapping of The Institutions

The network map of the institutions that contribute the most to the field of financial accounting in the Web of Science database is presented below. In the creation of this map, the minimum number of documents belonging to an institution was accepted as “8”, and the minimum number of citations of an institution was accepted as “0”. As a result of this selection, a network map was created by selecting the 15 institutions with the highest total connection strength by meeting the thresholds from 1,051 institutions.

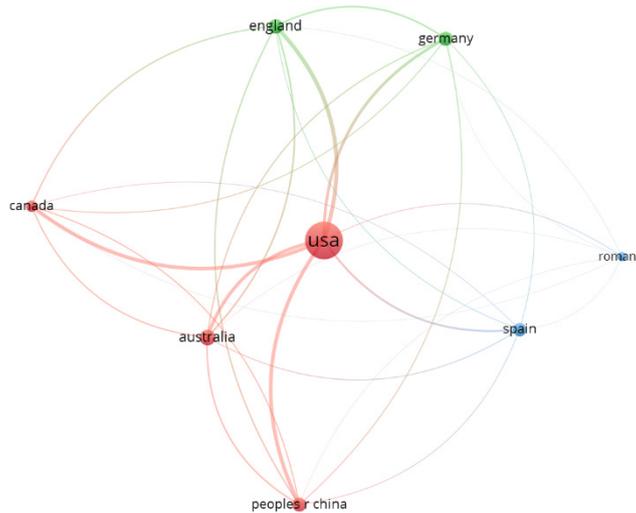


**Figure 15.** Network Mapping of Institutions That Contribute Most to Financial Accounting on the Web of Science Database with VOSviewer Software Program

Figure 15 shows the citation network of the institutions that contributed the most to the field of financial accounting. From the map, it is seen that these institutions are directly or indirectly related to each other and are gathered in three different clusters. It can also be concluded from the map that a significant amount of content in the field of financial accounting is provided by universities and there is a strong cooperation between the University of Toronto and the University of Oklahoma.

### 6.4.5. Mapping of The Countries

Below is a network map of the countries making the largest contribution to financial accounting in the Web of Science database. While creating this map, the minimum number of documents for a country is “24” and the minimum number of citations for a country is “0”. As a result of this selection, a network map was created by selecting 8 countries that met the thresholds from 82 countries and had the highest total connection strength.

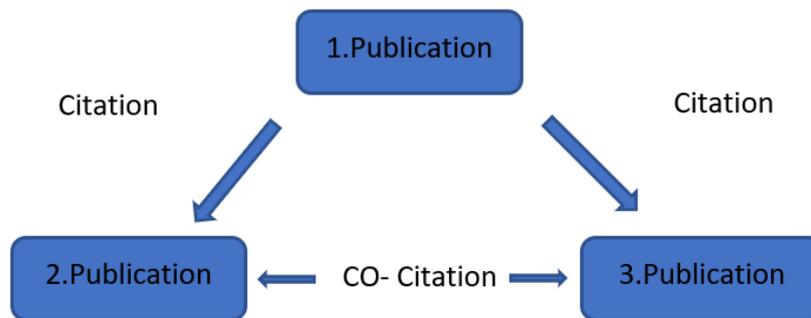


**Figure 16.** Network Mapping of the Countries that Contribute Most to Financial Accounting in the Web of Science Database Using VOSviewer Software Program

Looking at the network map created using the address information of the institutions in Figure 16, it can be seen that the countries that contribute the most to the field of financial accounting are directly or indirectly connected to each other and are grouped in three different clusters. The map suggests that most of the content in the financial accounting field is provided by the US and the cooperation network between the US and other countries is quite strong. In addition, the map shows that the strongest cooperation networks have been established between the US and Australia, the US and China, the US and Canada, the US and England, and the US and Germany.

**6.5. Mapping Based on Co-Citation Data**

Co-citation is defined as a source citing two different sources (Small, 1973). The joint reference is shown in the figure below.



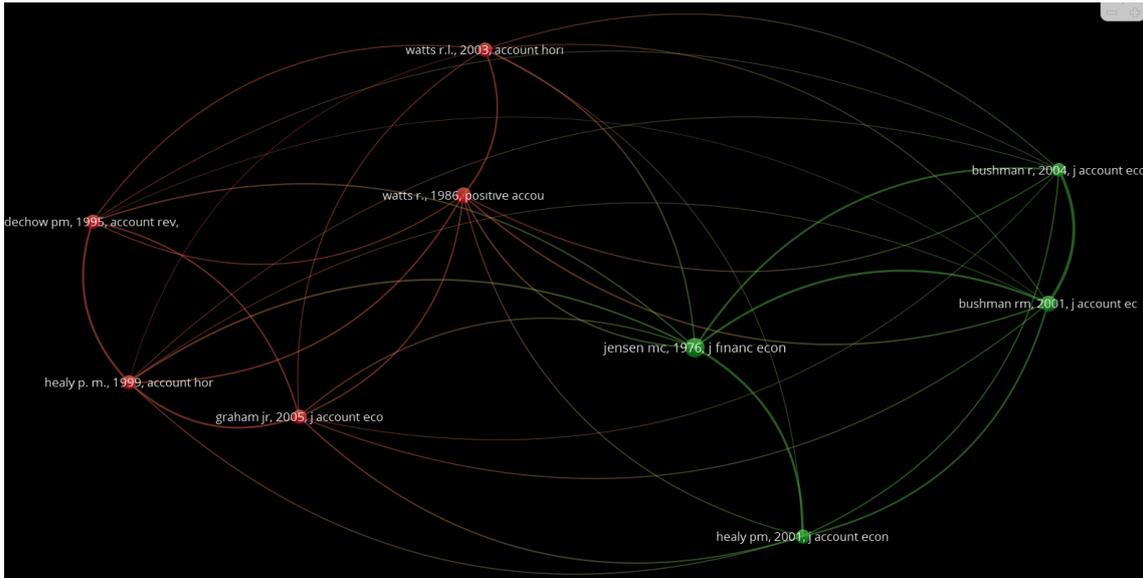
**Figure 17.** Co-citation

The study analyzed the general citation data and visualized them in three categories: cited references, cited sources, and cited authors.

**6.5.1. Mapping Cited References**

Below is a map of the references cited in the Web of Science database in the field of financial accounting. When creating this map, the minimum number of citations for a reference was chosen as “33”. As a result of this selection, the network map was created by selecting the 9 references with the highest total link strength, meeting the thresholds from 36,100 references.

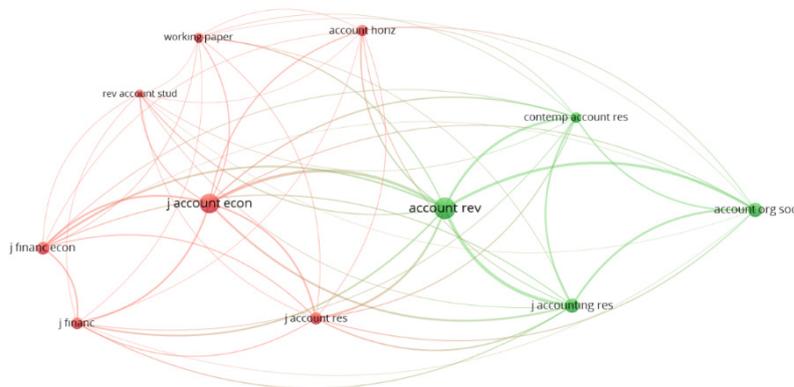
In Figure 18, where the network map of references is shown, we see that there are two clusters, green and red. It can also be seen from the map of Burshman R. (2004) and Bushman R.M. (2001) that there is a direct and strong relationship between Burshman R. in 2004 and Burshman R.M. in 2001.



**Figure 18.** Network Mapping of References Cited on Financial Accounting in Web of Science Database with VOSviewer Software Program

**6.5.2. Mapping Cited Sources**

Below is the network map of cited sources in financial accounting in the Web of Science database. In creating this map, the minimum number of citations for a source was set as “241”. As a result of this selection, 11 of 14,975 sources meet these thresholds, and the network map was created by selecting the 11 references with the highest total citations.



**Figure 19.** Network Mapping of Resources Cited on Financial Accounting on the Web of Science Database with VOSviewer Software Program

The connection strength of the above citation sources is shown in Figure 19 with the network map. It can be seen that there are two clusters in green and red on the map and there is a complex relationship between the citation sources. The size of the circles on the map indicates the importance of the sources. Accordingly, it can be said that Account Review is the most cited and leading source.

**6.5.3. Mapping of The Cited Authors**

The density map of cited authors in the field of financial accounting in the Web of Science database is presented below. In creating this map, the minimum number of times an author was cited was “117”. As a result of this selection, 7 of the 22,404 authors met these thresholds, and the density map was created by selecting the 7 authors with the highest total citations.



**Figure 20.** Density Mapping of Cited Authors on Financial Accounting in the Web of Science Database with VOSviewer Software Program

The map of the connection strength density of the above authors is shown in Figure 20. It can be seen that there is more than one cluster on the map. According to the map, the clusters with the highest density consist of clusters with Barth Me, Ball R., and Dehow P.M.

## 7. Results and Discussion

When the study is compared with other studies in which financial accounting publications are handled with the VOSviewer Software Program, it is possible to say that the findings obtained by the VOSviewer software program in this study are supported by the findings obtained by the bibliometric analysis method. In addition, it is possible to say that the number of data on publications related to financial accounting within the scope of the study is higher than previous studies and that publications with a wider date range are discussed in this study. As a matter of fact, Marina (2021) handled a total of 162 publications indexed on the web in her study, which aimed to analyze the publications that deal with the harmonization of accounting with IFRS using the VOSviewer software program. Within the scope of this study, a total of 1,009 records published between 2000-2021 were accessed and publications related to financial accounting were evaluated from a broader perspective. In addition, although not discussed in other related studies, the trend of online books published on financial accounting within the scope of this study was also analyzed with the Google Book Ngram program. In this context, it has been determined that the number of online books published between 2000-2018 in the field of financial accounting reached the highest level in 2003, and it was in a continuous downward trend between 2003-2014.

According to another finding obtained within the scope of the study, the earnings management keyword, which is one of the most frequently used keywords in financial accounting publications, is the most frequently used keyword, which Kumari and Naresh (2023) determined in their study where they carried out a bibliometric analysis of the publications on the adoption of the International Financial Reporting Standards and its impact on the financial reporting quality is the same as the frequently used keyword. In addition, the keywords of management accounting and accounting education, which are among the most frequently used keywords obtained by Monteiro and Cepêda (2021) in their study aiming to present the bibliometric analysis of publications on accounting information systems, also overlap with the most frequently used keywords obtained within the scope of this study. In addition, the State University System of Florida, which the authors determined among the institutions with more than two publications on accounting information systems within the scope of the study, was determined as the university with the highest number of publications on financial accounting within the scope of this study.

## 8. Conclusion

According to the results of the co-authorship analysis obtained as a result of the analysis of the bibliographic data obtained from the Web of Science Core Collection database with the VOSviewer software program, the author with the highest link

strength was Stober, Thomas. In addition, it has been concluded that universities publish more than other institutions, and the University of Carolina, University of Illinois, University of Houston, University of Florida are the universities with the strongest connections. In addition, it was concluded that the country with the strongest connection in co-authorship was the USA, and the country with the weakest connection was Croatia. According to the analysis results based on co-occurrence data, the most used keywords in financial accounting were accounting and financial reporting. In addition to these keywords, sustainability, management accounting, auditing, earnings management and corporate governance keywords were determined as strong keywords in the field of financial accounting. According to the results of the analysis based on the Citation data, the most linked publication among the publications on financial accounting belongs to Klein (2002). The most cited source is Accounting Horizons and the most cited author is Thomas, W.B. In addition, it was concluded that most of the content in the field of financial accounting was provided by the USA. According to the analysis results based on bibliographic coupling data, it can be mentioned that there is a strong bibliographic matching network between Klein (2002), Hanlon (2010), Bushman (2001), Holthasen (2001). In addition, there is a strong bibliographic matching network between Graham (2014) and Hanlon (20210). According to the results of the analysis, it was concluded that the most cited sources are Accounting Horizons, Accounting Review, Issues in accounting education and Accounting Organization and Social. In addition, the authors with the highest connection strength were identified as Stober, Thomas, Thomas Wayne B. and Jamal Karim, and it was concluded that the cooperation between the University of Toronto and the University of Oklahoma was strong. The strongest cooperation network has been established between USA-Australia, USA-China, USA-Canada, USA-England and USA-Germany. According to the results of the analysis based on the co-citation data, it was concluded that there is a direct and strong relationship between the publication of Burshman R. in 2004 and the publication of Bushman R.M. in 2001. In addition, when evaluated in terms of the cited authors, it can be mentioned that there is a strong relationship between Barth Me, Ball R. and Dehow P.M.

According to the results of the bibliometric analysis carried out within the scope of the study, it was concluded that the word financial accounting is mostly used in the discipline of business finance in the publications prepared on financial accounting in the Web of Science database, and the most cited author on financial accounting is Klein, A. (2002). The most cited work in Turkish publications was created in 2010 by Hosal-Akman, Nazlı and Sigma-Mugan. The author with the most publications on financial accounting is Thomas, W.B. The journal with the most publications in the field of financial accounting in the Web of Science database was Accounting Horizons, and the university with the most publications was the State University System of Florida.

In this context, it is possible to say that the trend in the field of financial accounting has been evaluated from a very broad perspective in terms of scanning the literature on financial accounting in the Web of Science between 2000-2021 within the scope of the study. Therefore, it is anticipated that this study, which presents a comprehensive analysis in the field of financial accounting, can guide researchers in future publications. In addition, in the studies to be carried out in the following period, the plan is to analyze the trend in the field of financial accounting with different criteria with the CiteSpace analysis method, which can be described as the continuation of this study.

**Peer Review:** Externally peer-reviewed.

**Author Contributions:** Conception/Design of Study- F.K., S.G.; Data Acquisition- F.K., S.G.; Data Analysis/Interpretation- F.K., S.G. ; Drafting Manuscript- F.K., S.G.; Critical Revision of Manuscript- F.K., S.G. ; Final Approval and Accountability- F.K., S.G.

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