Research Article

A Bibliometric Analysis of the Published Literature on the Beneish Model and Tax

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Abstract: *Accounting professionals around the world are increasingly seeking to improve financial and tax reporting. This paper attempts to identify and map current research trends on the Beneish model as a proxy for financial manipulation and taxation worldwide through a bibliometric analysis. Documents published in Scopus journals between 1994 and 2022 were collected and subjected to a series of bibliographic analyses. These analyses included documents profile, publication trends, citation metrics, and keywords. A total of 591 documents were retrieved and analysed using Microsoft Excel to use the bibliographic profiles for further investigation in the bibliometric analysis. Then, Hazing's Publish or Perish software was used to measure the h-index, g-index, and total number of citations using h-core to analyse the citation profiles. Finally, VOSviewer software is used to visualise and map the research results using bibliometric networks. The results show that the literature on this topic is growing rapidly, with the highest number of publications reaching 88 documents in 2022. The most cited article is based on the 2005 paper by Graham et al. with the most citations (3048). The study also shows that the most frequently used keywords are earnings management, financial manipulation, and corporate governance. Finally, agency theory is also listed among the 20 most frequently cited keywords, indicating that agency theory serves as the basis for the theoretical framework of the field under study.*

Keywords: bibliometric analysis; taxation; beneish model; visualization map

1. INTRODUCTION

Financial statements are the primary medium through which stakeholders are informed about a company's financial performance, growth, and financial condition. In most cases, the primary goal of companies is to maximize their book income while minimizing their taxable income. According to Downing and Langli (2019), financial statements play an important role in estimating a company's tax liability because they serve as the basis for tax reporting. Due to the different reporting landscapes required for financial reporting and tax reporting, the amount of income reported to shareholders and tax authorities differs. Nevertheless, it is possible to manipulate financial reporting figures in order to draw shareholders' attention to the company's profile in capital market transactions. Financial manipulation therefore also affects corporate tax reporting.

Koubaa and Jarboui (2017) note that the extensive literature on agency theory has shown that managers have significant advantages in manipulating accounting and taxable income. This suggests that managers may resort to manipulating financial information to minimize their tax liability and optimize their cash flow. Beneish (1999) developed the M-score to determine the extent of a company's financial manipulation, with the M-score indicating whether it is on the threshold of profit manipulation. Therefore, this study is motivated to examine the published documents on the topic of Beneish's model and taxation.

This study provides a bibliographic analysis of works published by scholars around the world and indexed in the Scopus database to find evolving themes in existing works. Academics interested in the field of accounting may benefit from a collection of articles devoted to a specific subfield of the discipline, such as tax accounting or financial manipulation. Thus, the specific objectives of this study are as follows:

1. To identify the subject area, source type, document type, keywords, and sources.
2. To examine global trends in Beneish model and tax research
3. Analysis of co-authorship by author and country
4. Analysis of keyword co-occurrence by author
5. To examine the dispersion of Beneish models and taxes by country

The remainder of the paper provides an overview of the research methods used to achieve the objectives of this study, followed by a discussion of the research findings. The conclusion of the paper consists of a brief description of the results.

2. METHOD & MATERIAL

Bibliometrics is a method that provides an overall view of research by providing citation, author, country, keyword, and publication data. One of the most often used techniques for assessing the trend and movement of publications is bibliometric analysis. (Ahmi & Mohd Nasir, 2019). Bibliometric methods serve two primary purposes: first, to assess the effectiveness of scientific work, which includes the results of research and publications conducted by individuals and organizations; and second, to map science by determining the structure and dynamics of scientific fields (Nevzorova et el., 2017).

In this study, the Scopus database was used to perform the bibliometric analysis. The flow of the search strategy is as depicted in Figure 1. To achieve the research objectives, the search query is based on the keywords "Beneish and tax". Based on the search terms, a total of 591 documents were found and used for the analyses. The bibliographic profile was exported from the Scopus database and analyse using Microsoft Excel for further investigation in the bibliometric analysis. Then, Hazing's Publish or Perish software was used to measure the h-index, g-index, and total number of citations using h-core to analyse the citation profiles. Finally, VOSviewer software is used to visualise and map the research results using bibliometric networks.

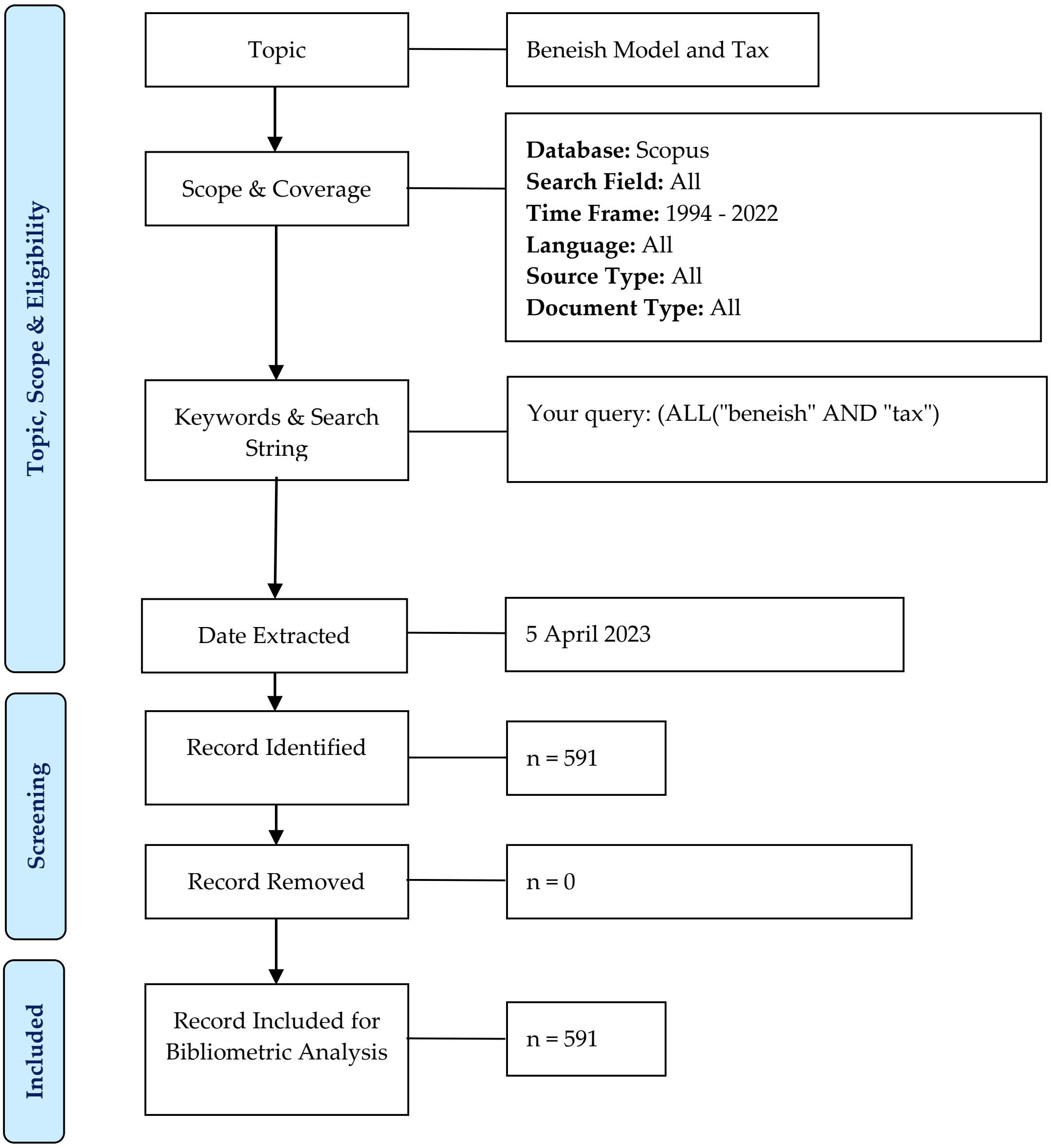

Figure 1. Flow diagram of the search strategy. Source: Zakaria et al. (2020)

3. FINDINGS & DISCUSSION

3.1 Documents Profiles

The analysis of the data begins with the categorization of the documents and sources published by researchers from all over the world. This is important so that the reader can determine which sources and documents were published in Scopus at a given time. Articles, conference papers, book chapters, and reviews are examples of document types, while journals, conference proceedings, books, and book series are examples of source types. The results listed in descending order in Table 1 show that most publications are articles (87.65%), while other document types account for less than 10%. Table 2 shows the source types, with journals having the highest percentage (92.72%), followed by other source types with less than 10%.

Table 1. Document Type

Document Type	Total Publications (TP)	Percentage (%)
Article	518	87.65%
Review	30	5.08%
Conference Paper	17	2.88%
Book	13	2.20%
Book Chapter	11	1.86%
Note	2	0.34%
Total	**591**	**100.00**

Table 2. Source Type

Source Type	Total Publications (TP)	Percentage (%)
Journal	548	92.72%
Book	19	3.21%
Book Series	14	2.37%
Conference Proceeding	10	1.69%
Total	**591**	**100.00**

The most common language used for publishing the topic in the Scopus database is English. As shown in Table 3, 97.48% of the published papers were written in English. Only 1.17% were published in Spanish, and the rest were published in other languages, representing less than 1%.

Table 3. Languages

Language	Total Publications (TP)*	Percentage (%)
English	581	97.48%
Spanish	7	1.17%
Chinese	4	0.67%
Portuguese	2	0.34%
French	1	0.17%
Korean	1	0.17%
Total	**596**	**100.00**

*Few documents have been prepared in dual languages

The report compiled from the Scopus database contains several subject areas covered by the published documents. As shown in Table 4, the top five subject areas are business, management and accounting (79.19%), followed by economics, econometrics and finance (68.87%) and social sciences (15.40%). Apart from that, this topic was also published in other disciplines in the journal, namely arts and humanities, and decision sciences.

Table 4. Subject Area

Subject Area	Total Publications (TP)*	Percentage (%)
Business, Management and Accounting	468	79.19%
Economics, Econometrics and Finance	407	68.87%
Social Sciences	91	15.40%
Arts and Humanities	28	4.74%
Decision Sciences	23	3.89%

*Few documents belong to more than one subject area

3.2 Publication Trends

Figure 2 shows the results of a trend analysis of the number of publications on these topics in the Scopus databases. The number of publications has steadily increased over the last decades. It is particularly striking that the total number of publications has increased significantly since 2008. These results show that these topics are gaining in importance over time, with researchers' interest in the topic of financial and tax reporting increasing.

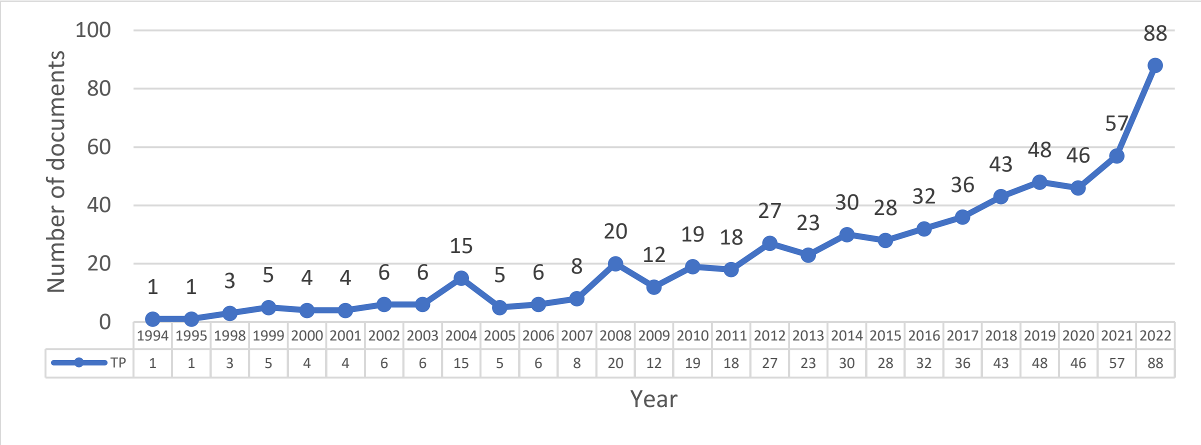

Figure 2. Publications trends by year

3.3 Citation Metrics

Table 5 summarises the citation metrics for the April 5, 2023 document. The summary includes publications associated with the search term "Beneish Model and Tax." The first publication dates from 1994, so the time frame for this bibliometric analysis is from 1994 to 2022. A total of 591 documents with 32,342 citations, 1,115.24 citations per year, 54.72 citations per paper, 2.55 authors per paper, and a time period of 29 years were used for the bibliometric analysis.

Table 5. Citations metrics

Metrics	Data
Papers	591
Number of Citations	32342
Years	29
Citations per Year	1115.24
Citations per Paper	54.72
Authors per Paper	2.55
h-index	76
g-index	174

3.4 Highly Cited Documents

The most cited articles are another important factor to consider when conducting bibliometric analyses to determine which papers are cited by scholars worldwide in specific subject areas. The 20 most cited articles are listed in Table 6, John R. Graham, Campbell R. Harvey, Shiva Rajgopal (2009) top the list with an article titled "The economic implications of corporate financial reporting" tops the list with 3048 total citations and an average of 169.33 citations per year. The most recent highly cited article is from 2016 by Campbell R. Harvey, Yan Liu, Heqing Zhu and is ranked eighth.

Table 6. Top 20 highly cited articles

No.	Authors	Year	Title	Cites	Cites per Year	Source
1	John R. Graham, Campbell R. Harvey, Shiva Rajgopal	2005	The economic implications of corporate financial reporting	3048	169.33	Journal of Accounting and Economics
2	Paul M. Healy and James M. Wahlen	1999	A review of the earnings management literature and its implications for standard setting	2178	90.75	Accounting Horizons
3	Patricia M. Dechow, Weili Ge, Catherine M. Schrand	2010	Understanding earnings quality: A review of the proxies, their determinants and their consequences	1553	119.46	Journal of Accounting and Economics
4	Ross L. Watts	2003	Conservatism in accounting part I: Explanations and implications	1172	58.6	Accounting Horizons
5	Mark DeFond, Jieying Zhang	2014	A review of archival auditing research	1109	123.22	Journal of Accounting and Economics
6	Kothari Sri Prakash	2001	Capital markets research in accounting	1083	49.23	Journal of Accounting and Economics
7	Daniel Bergstressera, Thomas Philippon	2006	CEO incentives and earnings management	1046	61.53	Journal of Financial Economics
8	Campbell R. Harvey, Yan Liu, Heqing Zhu	2016	…. and the Cross-Section of Expected Returns	740	105.71	Review of Financial Studies
9	Patricia M. Dechow, Berkeley Weili Ge, Chad R. Larson, Richard G. Sloan	2011	Predicting Material Accounting Misstatements	736	61.33	Contemporary Accounting Research
10	Sudheer Chava, Michael R. Roberts	2008	How does financing impact investment? the role of debt covenants	722	48.13	Journal of Finance
11	Mark L. Defond, Kannan Raghunandan, Keith. R. Subramanyam	2002	Do non-audit service fees impair auditor independence? Evidence from going concern audit opinions	706	33.62	Journal of Accounting Research
12	Christopher S. Armstrong, Wayne R. Guay, Joseph P. Weber	2010	The role of information and financial reporting in corporate governance and debt contracting	585	45	Journal of Accounting and Economics
13	Vinay T. Datar, Narayan Y. Naik, Robert Radcliffe	1998	Liquidity and stock returns: An alternative test	577	23.08	Journal of Financial Markets

14	Alastair Lawrence, Miguel Minutti-Meza, Ping Zhang	2011	Can big 4 versus non-big 4 differences in audit-quality proxies be attributed to client characteristics?	523	43.58	Accounting Review
15	Christian Leuz, Peter Wysocki	2016	The Economics of Disclosure and Financial Reporting Regulation: Evidence and Suggestions for Future Research	497	71	Journal of Accounting Research
16	Maureen F. McNichols	2000	Research design issues in earnings management studies	449	19.52	Journal of Accounting and Public Policy
17	Jan Barton, Paul J. Simko	2002	The balance sheet as an earnings management constraint	412	19.62	Accounting Review
18	Siew Hong Teoh, Tak J. Wong, Gita R. Rao	1998	Are accruals during initial public offerings opportunistic?	373	14.92	Review of Accounting Studies
19	Cornett, Marcia Millon, Jamie John McNutt, Hassan Tehranian	2009	Corporate governance and earnings management at large U.S. bank holding companies	294	21	Journal of Corporate Finance
20	Messod D. Beneish	1999	Incentives and penalties related to earnings overstatements that violate GAAP	287	11.96	Accounting Review

3.5 Top Keywords

Another interesting result of the bibliographic analysis is the identification of the keywords most frequently used by the authors. This finding is important to determine the research area that can be addressed within the topic. In this section, the authors' keywords are presented in both tabular and visual form. The authors' top three keywords were earnings management, financial manipulation, and corporate governance, as shown in Table 7. The keywords are consistent with Shahzad (2016), who asserts that a good governance structure is necessary to ensure quality financial reporting, thereby reducing the manager's ability to distort and misrepresent a company's financial performance. Moreover, agency theory is among the 20 most frequently used keywords, which shows that the theoretical framework of the subject area is based on agency theory. Since agency theory refers to the opportunistic behaviour of managers, it explains the relationship between financial manipulation and tax reporting.

Table 7. Top 20 author's keywords

Author Keywords	Total Publications (TP)	Percentage (%)
Earnings Management	145	24.53%
Financial Manipulation	94	15.91%
Corporate Governance	44	7.45%
Discretionary Accruals	32	5.41%
Financial Reporting	31	5.25%
Internal Control	30	5.08%
Audit Quality	28	4.74%
Earnings Quality	23	3.89%
Executive Compensation	20	3.38%
Financial Constraints	20	3.38%
Agency Theory	17	2.88%
Insider Trading	15	2.54%
IFRS	14	2.37%
Conservatism	14	2.37%
Tax Avoidance	11	1.86%

Author keywords were then generated using VOSviewer software. The network visualisation of the co-occurrence of author keywords is shown in Figure 3. The relationships between the terms were represented by the thickness of the lines between them, the size of the squares, and the colour.

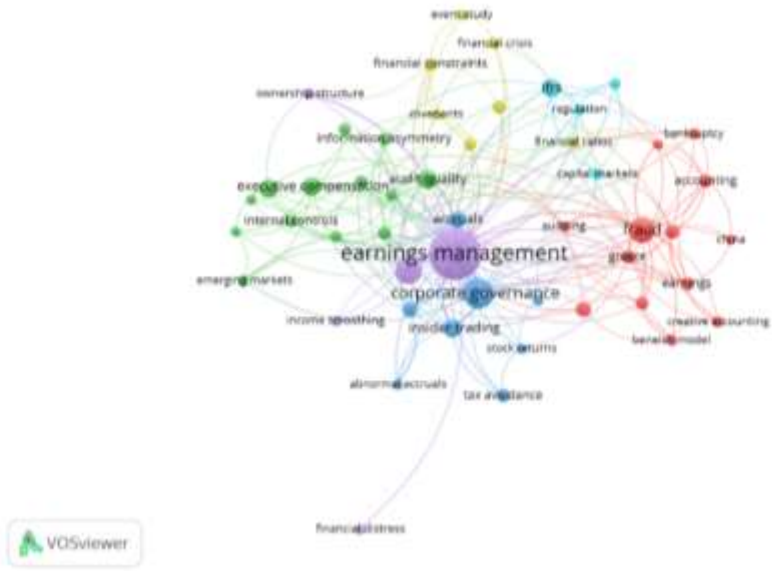

Figure 3. Network visualisation map of the co-occurrence of author's keyword

3.6 Co-authorship by countries

The bibliographic analysis then records the number of contributions from each country to get a better idea of which countries were the most productive. Table 8 shows the results for the 20 countries with the most contributions. The United States, China, and the United Kingdom made the most contributions to this scientific work. In addition, visual examination of the network map, as shown in Figure 4, reveals that there are several clusters with different colours. The clusters show the co-authorship by country. It is also clear which countries are leading in each cluster, as indicated by the size of the circle. The United States was identified as the strongest link in this theme. Malaysia ranks as top 15 countries that have contributed the most to this research area.

Table 8. Top 20 countries

Country	TP	%
United States	264	44.67%
China	41	6.94%
United Kingdom	39	6.60%
Canada	27	4.57%
Taiwan	25	4.23%
Australia	24	4.06%
South Korea	24	4.06%
Spain	23	3.89%
Indonesia	20	3.38%
India	17	2.88%
Hong Kong	15	2.54%
Italy	15	2.54%
France	14	2.37%
Greece	14	2.37%
Malaysia	14	2.37%
Germany	12	2.03%
Slovakia	11	1.86%
Singapore	10	1.69%
Iran	9	1.52%
Netherlands	9	1.52%

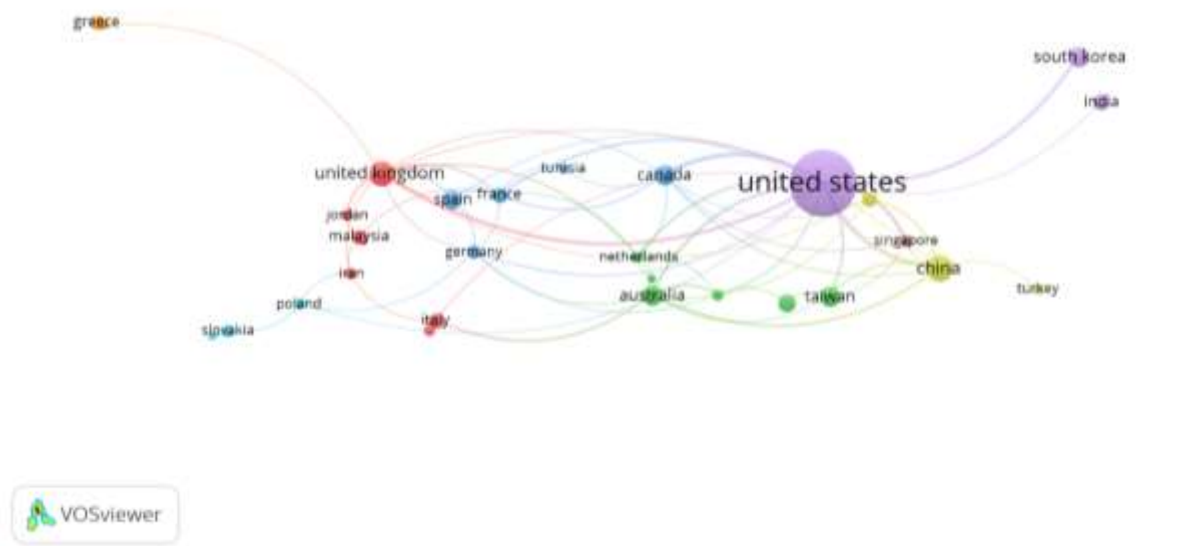

Figure 4. Network visualisation map of the co-authorship by countries

4. CONCLUSION

The results of the bibliometric analysis show the great relevance and popularity of topics related to the study of Beneish models and taxes, which relate to financial and tax reporting. The first individual publications on these topics were contacted in early 1994. From year to year, the number of publications on these topics has steadily increased. One of the reasons for this growth is the importance of the quality of financial reporting, as it serves as the primary medium for investors to evaluate the performance of companies. Clustering of research networks by geographic area has confirmed the high level of collaboration among researchers from different countries. Nevertheless, there is a limitation in the study that, if considered in further research, could open other avenues of research. This study relied on a single database, Scopus. Future studies should therefore expand the scope of the study to include other academic databases such as Google Scholar, Science Direct, and Web of Science. Despite its limitations, this study contributes to the body of knowledge by examining data from the published literature using bibliometric indices.

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