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Two Decades of Earnings Management Research in MENA Countries: Insights from a Bibliometric Analysis

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عقدان من الأبحاث حول إدارة الأرباح في دول منطقة الشرق الأوسط وشمال أفريقيا: رؤى مستمدة من التحليل البيبليومتري

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الملخـــــــــــص:

حظيت إدارة الأرباح باهتمام واسع عالميًا، خاصة في أبحاث الشرق الأوسط وشمال إفريقيا(MENA) . اعتمدت هذه الدراسة على منهج التحليل البيبليومتري باستخدام قاعدة بيانات Dimensions AI، للأبحاث المتعلقة بإدارة الأرباح بمنطقة الشرق الأوسط وشمال إفريقيا خلال الفترة 2005-2025، وذلك بهدف تحليل اتجاهات البحث العلمي وتحديد عدد الاستشهادات العلمية وشبكات التأليف وأنماط الكلمات الرئيسية. وقد اشتملت الدراسة على 299 منشورًا علمياً، وتوصلت إلى إن هناك نموًا سنويًا بنسبة 20.93% في الإنتاج العلمي خلال العقدين الأخيرين. كما إشارات النتائج بأن "مجلة المحاسبة في الاقتصادات الناشئة" تتصدر قائمة المجلات العلمية من حيث عدد المنشورات، في حين جاءت دولة مصر في مقدمة الدول

الأكثر إنتاجية إقليميًا بـ 23 منشورًا، تلتها الأردن والسعودية بـ 20 و13 منشورًا على التوالي. وقد تبين بأن المؤلفون الأكثر تأثيرًا في مجال البحث العلمي المتعلق بإدارة الأرباح، يرتبطون بأهم الجامعات والمراكز البحثية بالمنطقة. وأبرزت نتائج الدراسة كذلك بأن المصطلحات المتكررة في المنشورات العلمية اشتملت على مصطلحات أساسية تتمثل في: إدارة الأرباح، جودة الأرباح، وأدلة الإدارة. وبشكل عام، تناولت الدراسة تطور البحث في الاقتصادات الناشئة، وسلّطت الضوء إلى ضرورة الحاجة إلى مزيد من البحوث في هذا المجال، رغم أنها اقتصرت على بيانات قاعدة Dimensions AI ، ما يحتّم توسيع نطاق الدراسات المستقبلية لتشمل قواعد بيانات أوسع لبناء إطار شامل وتعزيز الفهم الشامل لظاهرة إدارة الأرباح داخل المنطقة وخارجها.

الكلمات المفتاحية: إدارة الأرباح، المستحقات التقديرية، التحليل البيلومتري، قاعدة بيانات Dimensions AI، دول الشرق الأوسط وشمال إفريقيا (MENA).

Abstract:

Earnings management has gained global attention, particularly in academic research within the MENA region. This study employs bibliometric analysis using data from the Dimensions AI database from 2005 to 2024, utilizing bibliometric software for visualization and analysis of publication trends, citation counts, authorship networks, and keyword co-occurrence patterns. The study analyzed 299 publications, finding a 20.93% average annual increase in scientific output over the past two decades. The Journal of Accounting in Emerging Economies ranks as the top publication. Regionally, Egypt leads the MENA countries with 23 publications, followed by Jordan (20) and Saudi Arabia (13). The most impactful authors are affiliated with the leading universities in the MENA region. Key recurring terms in the literature include earnings management, earnings quality, and management evidence. This study contributes to the discourse on earnings management by offering a bibliometric analysis focused on the MENA region, highlighting the evolution of research interest in emerging economies and identifying opportunities for further investigation into nuanced aspects and underlying dynamics. The study has limitations, relying solely on the Dimensions AI database, which may narrow its findings. Future research should use a broader bibliometric dataset and aim to develop a stronger conceptual framework while identifying emergent themes to enhance the understanding of earnings management in MENA countries and beyond.

Keywords: earnings management; discretionary accruals; bibliometric analysis; Dimensions AI database; MENA countries.

1. INTRODUCTION

1.1 RESEARCH BACKGROUND

The primary objective of publishing financial statements is to inform stakeholders about the firm's current financial status. Reliability, consistency, and transparency are important components in establishing financial reporting as a critical resource for shareholders and other stakeholders. These components make it possible to make precise and informed decisions regarding an organization's financial performance (Rezaee 2005). Thus, financial information users rely on publicly audited financial reports that accurately reflect actual firm's financial performance, rather than creating a positive image through inflating or falsifying reported earnings. When managers inflating or falsifying reported financial information, it leads to manipulating earnings, which poses serious risks to the company and its stakeholders. According to Healy and Wahlen (1999), when the interests between managers and shareholders conflict, the former can exercise some discretion over accounting earnings either to mislead shareholders about the firm's underlying financial performance or to gain some private benefits at the expense of other stakeholders. This opportunistic behavior can be practiced by managers through timing discrepancies, overstated or understated revenues, concealed or inflated liabilities and expenditures, inaccurate asset valuation, and insufficient disclosure. Even though the phenomenon of earnings management is becoming more focused topic worldwide after accounting scandals (e.g. Enron, WorldCom, Global Crossing, Xerox, Qwest and Tyco) Beemamol (2024), few studies have attempted to explore the trend of this phenomenon research in Middle East and North Africa (MENA) countries. Therefore, the fundamental concern of this study is to shed more light on research trends of earnings management in MENA region to provide bibliometric review of this area in accounting research.

1.2 ADDRESSING THE PROBLEM

It has been argued that company management may engage in earnings management to gain some private benefits or to mislead stakeholders regarding the true financial performance of the business, leading to significant losses for shareholders and other interested parties (Healy and Wahlen 1999, p.368). The prevalence of earnings management, coupled with the increase in financial scandals and bankruptcies of large corporations in all countries, has raised serious concerns about the efficiency of corporate governance, internal controls' sufficiency and efficacy, financial statements' accuracy, audits' caliber, and stoke markets' reliability (Rezaee 2005; Hogan et al. 2008). Therefore, a significant number of studies have been conducted using a variety of theories, approaches and methods for predicting and prevent earnings management practices. Accounting choices and discretionary accruals are the two main channels to implement earnings management. Thus, for the purpose of adjusting accounting figures, managers may choose accounting policies from those offered by accounting standards, such as the calculation of inventory costs, revenue recognition techniques, and research and development expenditure (Sweeney 1994; Dechow and Sloan 1991). Another possibility is to use discretionary accrual estimates, e.g. for doubtful accounts, for out-of-date inventories and for deferred tax assets (Bauman et al. 2001). This technique is called accrual-based earnings management. Moreover, managers may manipulate the timing of real decisions, such as the recognition of revenues and expenses, such as accelerating the recognition of sales revenue via credit sales or delaying recognized losses by waiting to establish loss reserves. This approach is referred to as real earnings management.

According to Beneish (2001), there are two main directions of thought regarding earnings management. These directions involve informative and opportunistic perspectives. The Informative earnings management perspective argues that managers practice earnings management to reveal or signal their private expectations to stakeholders regarding the firm's future cash flows, whereas the opportunistic perspective argues that the practice of earnings management is to mislead stakeholders. This distinguish was supported by Parfet (2000), who states that earnings management is not entirely a bad thing if reasonable and proper practices of it are used in a well-managed business and deliver value to shareholders.

A review of the literature reveals a scarcity of systematic review research regarding the phenomenon of earnings management in MENA countries. This review also shows that most of the prior studies relating to this area of research have been conducted in developed countries and there is no single study has been conducted in MENA countries. This offers different institutional economic conditions from MENA countries markets and thus limits the generality of their findings for contexts beyond the developed countries. For these considerations, the current study is motivated to conduct bibliometric review of earnings management studies in the context of the MENA nations.

1.3 CONTRIBUTION

Several systematic review studies have been conducted in the field of earnings management; however, several related studies have addressed bibliometric analyses to synthesize relevant studies and identify current and future research directions of earnings management phenomenon. Given the growing volume of information, theoretical breakthroughs, and data availability, bibliometrics offers an indispensable instrument for objective and trustworthy evaluations. It offers a rigorous methodology to distil trends and patterns, recognizes leading researchers and organizations, and presents a comprehensive overview of the existing research landscape (Aria and Cuccurullo 2017). This research is a contribution to the field as it is one of the few studies to undertake a board-based bibliometric study on earnings management, identifying key research topics and trends based on a citation mapping of the most cited research papers. In addition, this study contributes to the literature by highlighting the state of identifying current research topics, including earnings management and emerging research trends in the context of the MENA nations.

1.4 QUESTIONS

This study leverages bibliometric analysis to pinpoint past, present and future directions in earnings management detection research in the MENA countries. To perform the bibliometric analysis, the following research questions were addressed:

1. How many scholarly articles have been published on the field of earnings management?
2. What are the most cited articles of the field of earnings management?
3. Which journals contribute most significantly to the field of earnings management?
4. Who are the most cited authors, and what are their most influential works in earnings management?
5. Which keywords frequently occur in earnings management research?
6. Which countries and institutions have the highest impact on earnings management?
7. Who are the leading collaborative authors and countries in this field of earnings management?

1.5 OBJECTIVES

These previously highlighted research questions are the source of the following objectives.

1. Determine the origins, developments, and patterns in the field of earnings management research.

2. Analyze and summarize how knowledge is organized in earnings management research.

To achieve its objectives, the study used descriptive analysis and scientific mapping. Conventional descriptive bibliometric study mostly focuses on numerical elements, including the number of publications and citations, whereas, scientific mapping offers a visual and thorough depiction of the knowledge landscape and identifies important research themes and new trends, facilitating the investigation of interdisciplinary connections and collaborations and providing deeper insights into the intricate interactions between research domains.

2. METHODOLOGICAL PROCEDURES

This section discusses the techniques and procedures used to improve our understanding of earnings management in the accounting and auditing literature. To achieve this and provide a comprehensive evaluation of the earnings management phenomenon, bibliometric techniques were employed. These techniques are powerful tools for the evaluation and understanding of academic research. Bibliometrics is a quantitative research method that involves statistical and mathematical techniques to analyze bibliographic data and provides valuable insights into publication trends, the impact of research efforts and collaborative models (Groos and Pritchard 1969). It enables scholars to trace the developments of research topics across a collection of papers, assess the influence of their academic publication, and to gain a deeper understanding of their fields. Ongoing advances in scientific databases and bibliometric tools have encouraged many researchers to adopt bibliometric analysis, which offers a deeper understanding of the complexity of scientific communications. Bibliometric analysis identifies significant contributions from publications, authors, journals, and institutions in a specific field, using data from academic literature databases such as Web of Science, Scopus, and Google Scholar. Therefore, bibliometric analysis is a powerful tool for the comprehensive synthesis and understanding of the scientific landscape within a specific topic (Wong 2015).

The main purpose of the use of bibliometric analysis is to provide a comprehensive view of the social and structural relations between different research constituents, such as authors, countries, institutions and topics. Performance analysis and scientific mapping are complementary techniques included in bibliometric analysis, each offering distinct perspectives on the research landscapes. While performance analysis assesses the impact of academic contributions in a specific field using metrics related to publications and citations, science mapping includes citation analysis, co-citation analysis, bibliographic coupling, co-word analysis, and co-authorship analysis.

2.1 SELECTION OF RESEARCH DATABASE AND DATA COLLECTION

Using data extracted from the Dimensions AI database, which was established by Digital Science collaboration with over 100 reputable research institutes across the world, this study performs a bibliometric analysis of the relevant literature on “earnings management” from 2015 to 2024. The following data extraction procedures were applied to conduct bibliometric performance and science mapping investigation. The following data extraction procedures were applied to conduct bibliometric performance and science mapping investigation (**Fig. 1**). The criteria for the collected data focus on titles, abstracts, and keywords that include specific keywords such as “earnings management”, “earnings manipulation”, “earnings quality”, “accruals management”, “earnings maximization”, “profit management”, “profit minimization”, “profit maximization”, “earnings minimization”, “income maximization”, or “income minimization”. This ensures the inclusion of relevant keywords directly related to the concept of earnings management.

2.2 TOOLS FOR DATA ANALYSIS

This study utilizes Biblioshiny, a web-based graphical interface built on the Bibliometrix R-package, to analyses the data. This open-source tool leverages the R programming language to perform a range of mapping techniques. In addition, VOSViewer, a software tool based on Java designed to generate maps for bibliometric analysis, was used as well. VOSviewer enables us to develop networks that include a variety of elements, such as articles, journals, authors, institutions, countries, keywords, or concepts. These networks are generated by several relationships, such co-authorship, co-occurrence, citation, bibliographic coupling, and co-citation.

3. RESULTS AND DISCUSSION

3.1 MAIN INFORMATION

The retrieved data was analyzed using the Biblioshiny technique within the Bibliometrix R tool, and the main information is summarized in **Table 1**. As shown in Table 1, the study includes 229 documents produced by 466 authors and published in 151 journals and books over a 20-year period (2005-2024), with a focus on the phenomena earnings management in MENA countries. The average number of citations per document is 18.49, with an annual growth rate of 20.93% in the number of publications. From these documents, a total of 466 unique author keywords has been identified, and 20.4% of the documents involve international co-authorship.

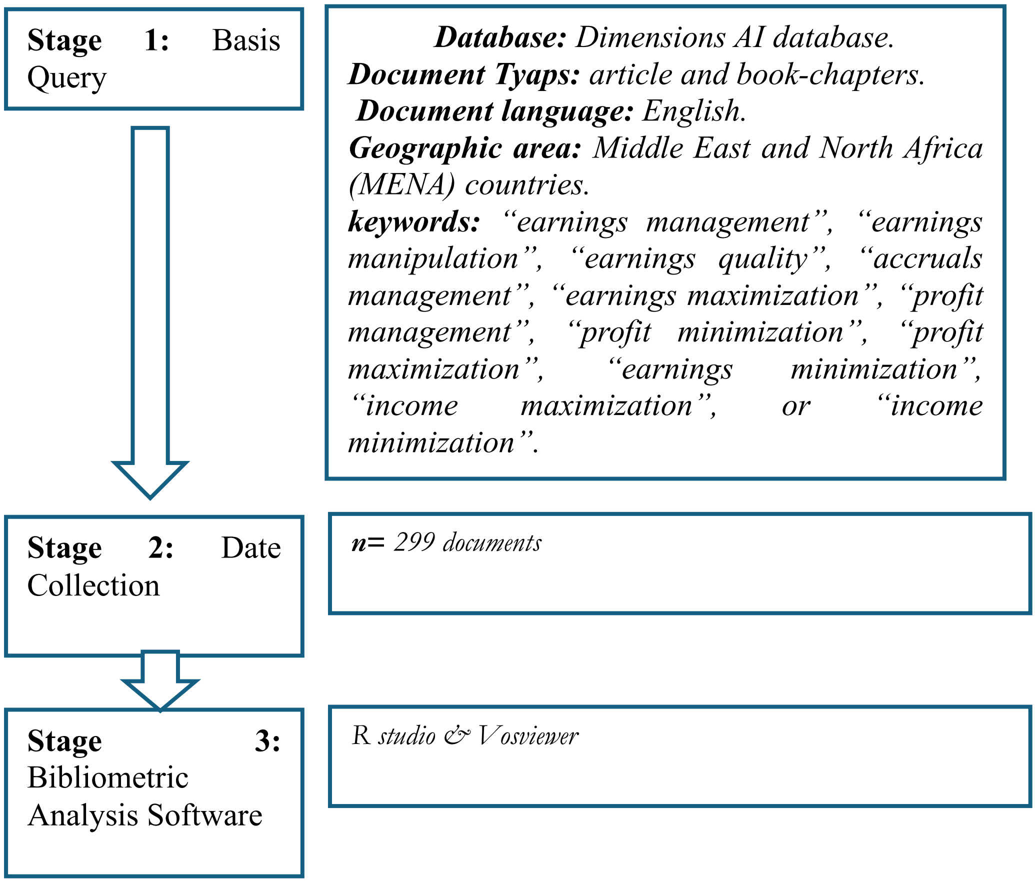

Fig. 1. Data Collection Stages

3.2 DOCUMENTS

3.2.1 ANNUAL SCIENTIFIC PRODUCTION

A bibliometric analysis of annual research on earnings management over the past 20 years is illustrated in **Fig. 2**, demonstrating an obvious upward trend. This period signals a significant shift in MENA countries, highlighting a growing attention toward earnings management. It also reflects an enhanced comprehension of its main causes and impacts, aimed at reducing its prevalence. As indicated in **Fig. 2**, the volume of articles increased significantly in 2024, reaching 37 contributions and accounting for 12% of the total of 299 publications. Merely 34 articles, which is less than 12% of the total, were published between 2005 and 2015. Nonetheless, there was a significant increase in the publications between 2016 and 2024, adding 265 articles, accounting for approximately 89% of the total. Research on earnings management has seen substantial growth in the MENA region, driven by rising global interest in this area and other related financial subjects. The growth in earnings management studies could be attributed to the expanding number of academics focusing on this area. Overall, publication trends on earnings management in MENA countries have demonstrated a significant rising trend in recent years. The number of articles published annually increased substantially between 2015 and 2024, averaging around 265 articles. This increase reflects a growing attention and interest in the research of earnings management, notably among MENA states.

3.2.2 AVERAGE ARTICLE CITATIONS

The average yearly citation is shown in **Fig. 3** below. A notable highlight is the substantial rise recorded in 2016, with the average total citations climbing to around 6.42 per year, marking the period of greatest impact. **Fig. 3** illustrates that from 2005 to 2010, the citation rates remained consistent, with an average of roughly 1.52 citations per article. In 2010, however, there was a sharp and notable surge, with rates rising dramatically to about 5.83 citations per document. Although the number of publications rose after 2016, the average citations per article declined, possibly influenced by the enduring significance of earlier research. This declining trend in average citations in recent years from 2017 to 2024 is typical in academic publishing. The increasing volume of publications suggests that research on earnings management in MENA countries has evolved from an emerging area of research to a subject garnering significant scholarly attention within nations. Furthermore, there is an intensifying emphasis on examining the effects of earnings management practices on the other areas such as the reliability of financial statements and efforts to mitigate its frequency, particularly post-2017. On the other hand, the decline in the average number of citations for more recent studies may reflect on the ongoing development and the steady rise in research activity within this field.

3.2.3 THE MOST CITED ARTICLES

The ten most frequently cited documents are shown in **Table 2**. It is found that the 2011 article titled, “Corporate Governance and Earnings

Management: Jordanian Evidence”, has made a significant contribution to the field of earnings management. Its substantial impact is highlighted by 174 total citations and an average of 21.6 citations per year. Following the highly cited research article "Corporate Governance Quality and Earnings Management: Evidence from Jordan" published in 2016, this study has received considerable attention, with 153 total citations and an outstanding annual citation rate of 21.44. **Table 2** reveals that the third most cited article is “Ownership Structure and Earnings Management: Evidence from Jordan”. It has received a total of 139 citations, averaging 15.80 citations per year, and has a normalized TC count of 2.46

Table 1. Summary Of the Data

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2005:2024
Sources (Journals, Books, etc)	151
Documents	299
Annual Growth Rate %	20.93
Document Average Age	5.77
Average citations per doc	18.49
References	7457
DOCUMENT CONTENTS	
Keywords Plus (ID)	392
Author's Keywords (DE)	345
AUTHORS	
Authors	466
Authors of single-authored docs	62
AUTHORS COLLABORATION	
Single-authored docs	89
Co-Authors per Doc	2.24
International co-authorships %	20.4
DOCUMENT TYPES	
article	289
book-chapter	10

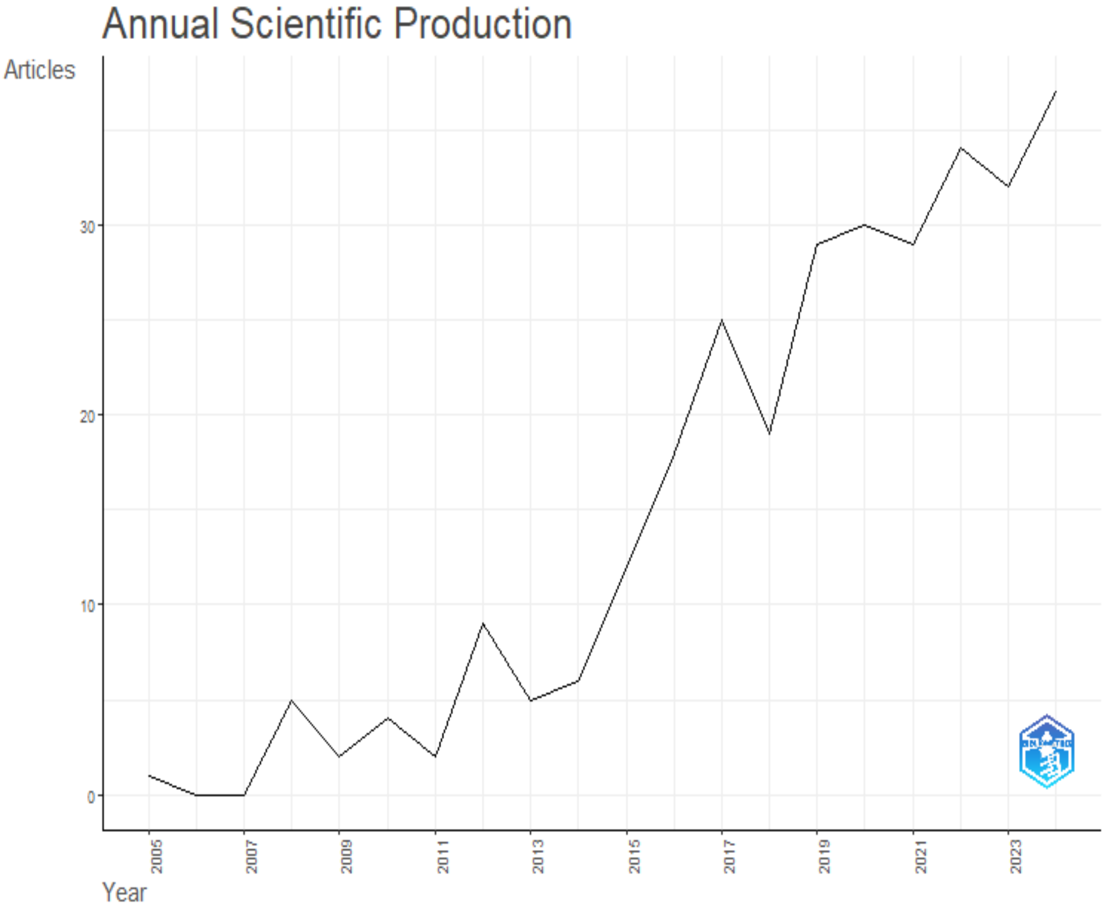

Fig. 2. Annual Scientific Productivity

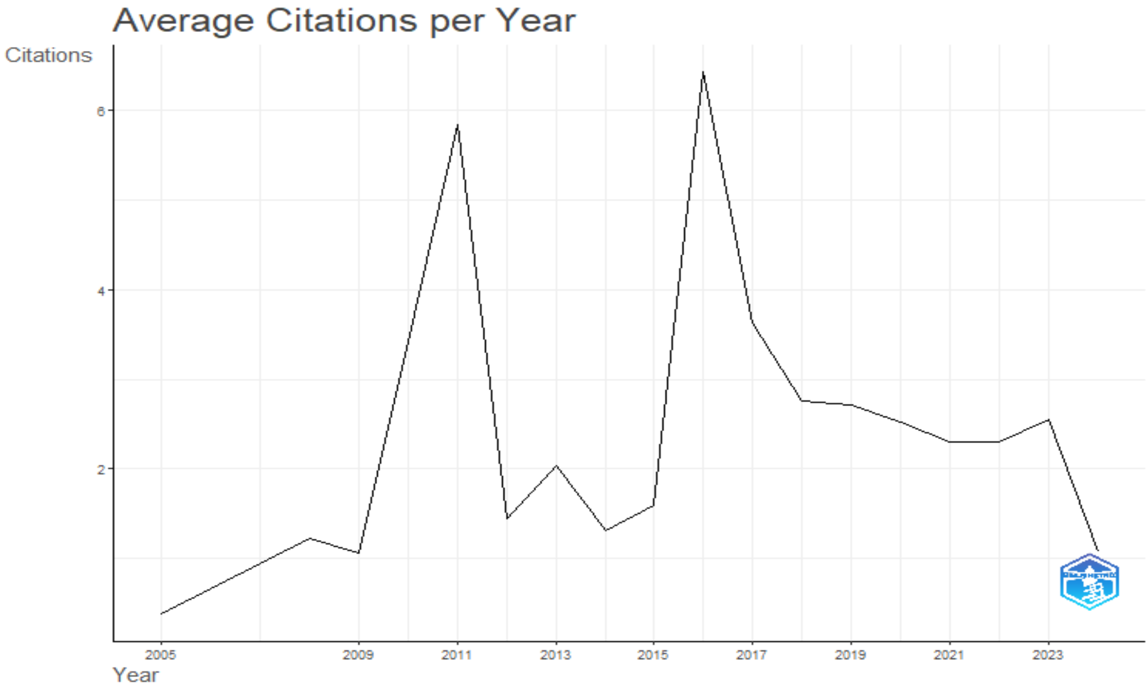

Fig. 3. Average Article Citations Per Year

3.3 SOURCES

3.3.1 TOP CITED SOURCES

Table 3 highlights the top ten most influential sources in the field, with the Journal of Accounting in Emerging Economies standing out as emerging as the leading journal. Since its establishment in 2012, it has released 17 articles focused on earnings management within MENA region, accumulating an h-index of 17 and garnering a total of 717 citations. The Journal of Financial Reporting & Accounting and Cogent Business & Management also stand out, with h-indexes of 7 and 6, respectively, indicating their impactful and widely recognized academic contributions. On the other hand, the remaining ten top journals ranging from the International Journal of Accounting and Financial Reporting to the Review of Quantitative Finance and Accounting show a lower total citation count compared to the leading publications in the field, reflecting a comparatively smaller influence on research within this area.

3.3.2 SOURCE IMPACT

Fig. 4 illustrates the ten leading scholarly journals, ranked according to their h-index scores. The Journal of Accounting in Emerging Economies and The Journal of Financial Reporting & Accounting hold the highest h-index rankings, reflecting their significant academic influence and research impact within the field of earnings management. The Journal of Accounting in Emerging Economies, with its publication of 17 articles, stands as a leading contributor to the field, showcasing substantial impact through both the volume of publications and citation metrics. Meanwhile, the Journal of Financial Reporting & Accounting and the Journal of Cogent Business & Management emerge as notable contenders, emphasizing the critical relevance of earnings management in contemporary academic research. Based on these indices, these journals have published notable articles on earnings management in MENA countries and have garnered a substantial number of citations. Overall, **Fig. 4** illustrates the rising significance of earnings management as a primary topic in leading accounting and finance research journals. This trend tends to occur in developing countries, with an emphasis on MENA nations.

3.3.3 BRADFORD'S LAW

Bradford's Law is applied alongside top data sources to analyze the distribution of publications across a scientific field. This law suggests that when publications on a specific topic are distributed across several journals, they exhibit a distinct pattern. The shaded area in **Fig. 5** represents the core zone, or primary sources, which include the most significant and impactful studies on the topic. It is important to highlight these core sources when producing publications on earnings management. The journals included in this zone are listed as follows: in Emerging Economies, Journal of Financial Reporting & Accounting, Afro-Asian Journal of Finance and Accounting, Corporate Ownership and Control, International Journal of Accounting Auditing and Performance Evaluation, Investment Management and Financial Innovations, Cogent Business & Management International Business Research, International Journal of Academic Research in Business and Social Sciences, International Journal of Accounting and Financial Reporting, International Journal of Business and Management, International Journal of Managerial and Financial Accounting, Asian Social Science, and Future Business Journal. These journals play an essential role in advancing research and providing innovative perspectives on earnings management in MENA countries.

3.4 AUTHORS

3.4.1 TOP AUTHORS

The most influential authors provide significant insights into the development of research in earnings management and the quality of financial reporting, encompassing their productivity, collaboration trends, and the impact of their research. The top ten authors in the field are highlighted in **Table 4**. Anis, J. has an h-index of 5, which means that at least ten of his works have been referenced ten or more times. Meanwhile, Yasser Barghathi stands out with an extraordinary g-index of 7, indicating the significant impact of their most-cited articles. Moreover, Ebraheem Saleem Salem Alzoubi has the highest overall citation count across their publications, demonstrating widespread recognition of their contributions in the academic community.

Table 2. Top 10 Globally Cited Documents

Title	Author(s)	Year	Source	GC	LC	LC/GC%	TCPY	NTC	DOI
Corporate Governance and Earnings Management: Jordanian Evidence	Suzan, A.; Ali, A.; Mishiel, S.	2011	International Business Research	147	18	12	21.60	3.37	10.5539/ibr.v5n1p216
Corporate Governance Quality and Earnings Management: Evidence from Jordan	Abbadi, S. S.; Hijazi, Q. F.; Al-Rahahleh, A. S.	2016	Australasian Accounting, Business and Finance Journal	153	15	10	21.44	5.93	10.14453/aabfj.v10i2.4
Ownership structure and earnings management: evidence from Jordan	Ebraheem, S. S. A.	2016	International Journal of Accounting and Information Management	216	14	6	15.80	2.46	10.1108/ijaim-06-2015-0031
Audit quality, debt financing, and earnings management: Evidence from Jordan	Ebraheem, S. S. A.	2017	Journal of International Accounting, Auditing and Taxation	193	14	7	15.30	2.38	10.1016/j.intaccaudtax.2017.12.001
Audit	Murya,	20	Journal	11	1	13	9.80	1.6	10.1007/s10997-016-

quality and earnings management in less developed economies: the case of Saudi Arabia	H.; Salim, A.	16	of Management & Governance	0	4			8	9347-3
Assessing the perceptions of the quality of reported earnings in Egypt	Hany, K.; Said, E.	2009	Managerial Auditing Journal	36	14	39	16.11	4.45	10.1108/02686901011007298
Audit quality and earnings management: evidence from Jordan	Ebraheem, S. S. A.	2016	Journal of Applied Accounting Research	158	13	8	12.20	1.90	10.1108/jaar-09-2014-0089
The impact of corporate governance mechanisms on real and accrual earnings management practices: evidence from Jordan	Lara, A.; Mark, W.	2019	Corporate Governance	119	13	11	17.00	6.25	10.1108/cg-05-2018-0183

The effect of the CEO's characteristics on EM: evidence from Jordan	Rateb, M. A.; Zakaria. A. A.; Thankom, A.	2017	International Journal of Accounting and Information Management	60	12	20	11.00	1.71	10.1108/ijaim-10-2016-0099
Earnings Management Practices from the Perspective of External and Internal Auditors: Evidence from Jordan	Ahmed, A.; Ali, A. A.T.	2008	Managerial Auditing Journal	42	12	29	11.00	1.71	10.1108/02686900910919901

Table 3.Top 10 Sources

Source	h-index	g- index	m-index	TC	NP	PY_start
Journal of Accounting in Emerging Economies	14	17	1.000	707	17	2012
International Journal of Accounting and Information Management	7	10	0.778	195	10	2017
Journal of Applied Accounting Research	6	6	0.667	106	6	2017
Australasian Accounting Business and Finance Journal	4	5	0.364	30	9	2015
Journal of Financial Reporting & Accounting	4	5	0.222	37	9	2008
Journal of International Accounting Auditing and Taxation	4	5	0.267	188	5	2011
Corporate Governance	4	5	0.286	149	5	2012
International Business Research	4	4	0.250	348	4	2010
International Journal of Accounting and Financial Reporting	4	6	0.190	45	9	2005
Review of Quantitative Finance and Accounting	4	5	0.333	51	5	2014

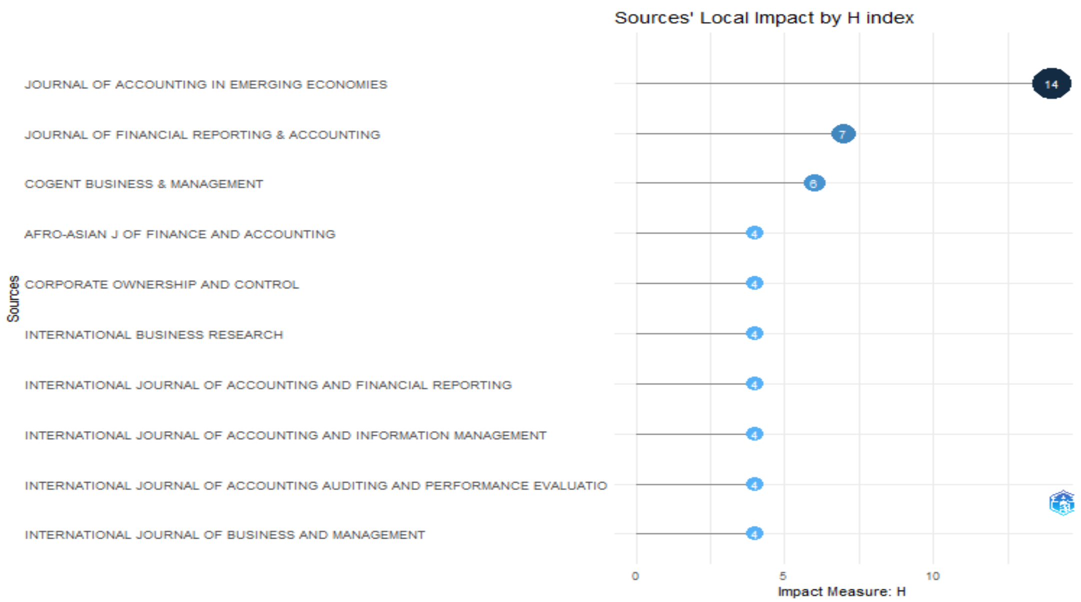

Fig. 4. Impact Factor - H Index

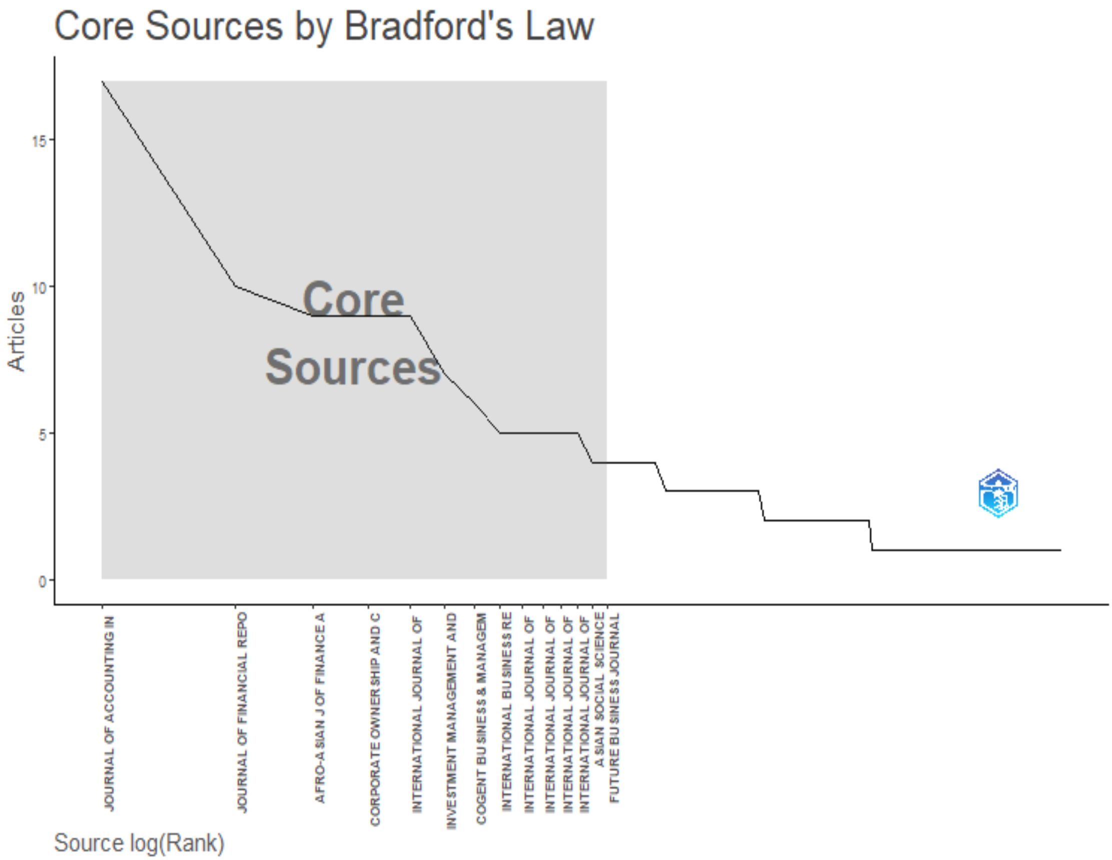

Fig. 5.Bradford's Law

Table 4. Top Ten Contributing Authors

Author	h_index	g_index	m_index	TC	NP	PY_start
Anis, J.	5	5	0.417	105	5	2014
Ebraheem, S. S. A.	5	5	0.500	713	5	2016
Isam, S.	5	5	0.556	140	5	2017
Malik, A. A.	5	6	0.833	153	6	2020
Yasser, B.	5	7	0.556	51	7	2017
DEA, A. O. A.	4	4	0.400	59	4	2016
Eman, F. A.	4	4	1.000	50	4	2022
Hany, K.	4	4	0.235	118	4	2009
Khaled, H.	4	4	0.444	144	4	2017
Mohammad, A.	4	5	0.444	99	5	2017

3.4.2 MOST RELEVANT AUTHORS

Fig. 6 highlights the top 10 most relevant authors based on the number of articles published on the topic of earnings management in MENA countries. As shown in **Fig. 6**, Bilal K. is the most prolific author, with eight articles, followed by Amina Z. and Yasser B., each contributing seven articles. Several others, including Hassouna F., Malik A. A., and Mohammed I., have each produced six articles. Meanwhile, Anis J., Ebraheem S. S. A., Isam S. and Mohammad A. have each contributed five articles.

4.4.3 LOTKA'S LAW

Lotka's law argues that there is a negative relationship between the quantity of articles published and the number of authors who produce that specific quantity. In other words, as the number of articles increases, the number of authors who have published that many articles decrease. Lotka's Law is an available tool in bibliometric analysis, providing valuable insights into publication trends within a given topic and supporting scholars in developing more effective methodologies and research policies.

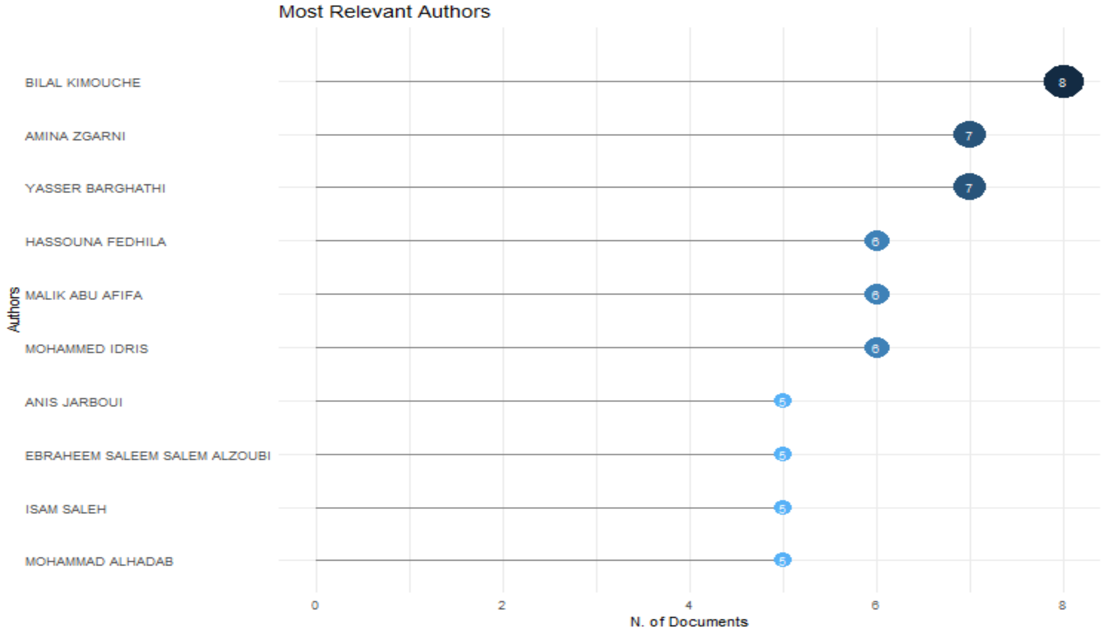

Fig. 6. Top Ten Authors with the Highest Production

As shown in **Fig. 7**, the majority of articles are produced by a small number of authors and as the number of authors participating in authoring each document increases, the overall number of articles decreases dramatically. In essence, a small number of authors account for a substantial number of publications, whereas the majority produce fewer articles. Based on the data, a total of 345 authors has contributed a single work on earnings management, whereas just one author stands out with 8 published articles.

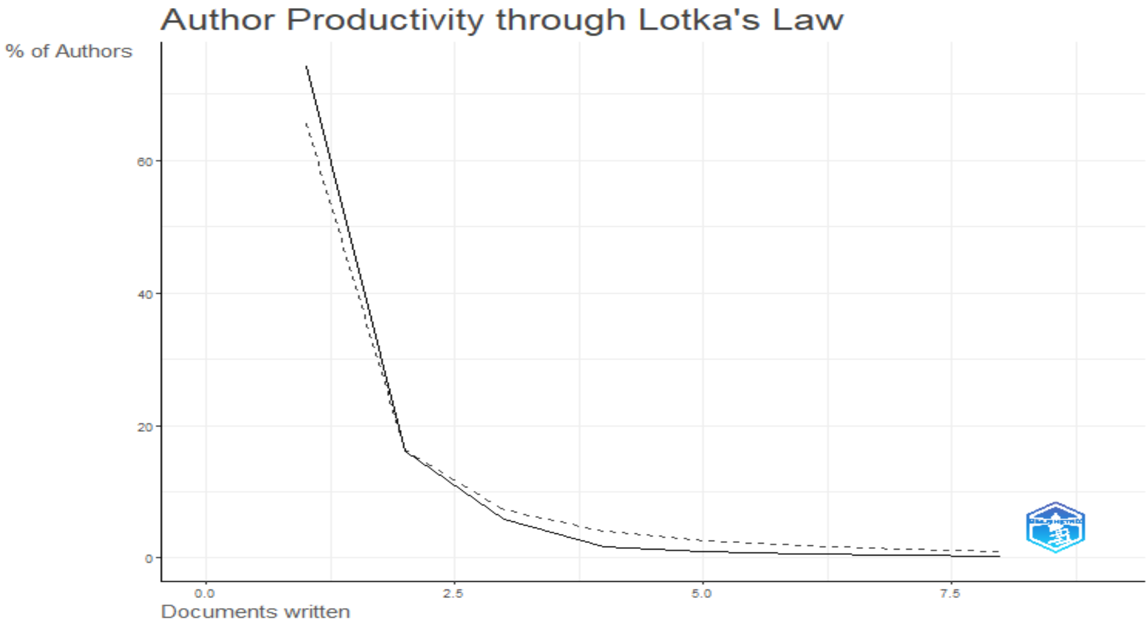

Fig. 7. Lotka's Law

3.4 COUNTRIES

The number of scientific publications sorted by country is shown in **Table 5**. Egypt has published the most articles on earnings management, with 23, followed by Jordan and Saudi Arabia, with 20 and 13, respectively. Countries such as Malaysia, UAE, each produced 8 publications, whereas Tunisia and Algeria made more modest contributions with 5 and 4 publications, respectively. Overall, Egypt leads in both research output and citation impact, with significant contributions from other MENA countries.

Table 5. Top Ten Countries' Production

Country	Articles	TC	Average Article Citation

Egypt	23	602	26.200
Jordan	20	307	15.300
Saudi Arabia	13	229	17.600
Malaysia	8	464	58.000
UAE	8	62	7.800
Tunisia	5	85	17.000
Algeria	4	10	2.500
Bahrain	4	199	49.800
Australia	2	295	147.500
Kuwait	2	35	17.500

Fig. 8 illustrates the trends in earnings management among major countries. Egypt, which published its first article in 2010, has been the most active contributor during the past 20 years, with 23 articles. Jordan became the second country to publish its first article in 2008. Saudi Arabia, on the other hand, surpassed Malaysia in 2024, with 13 articles to Malaysia's 8, followed by the United Arab Emirates and Tunisia.

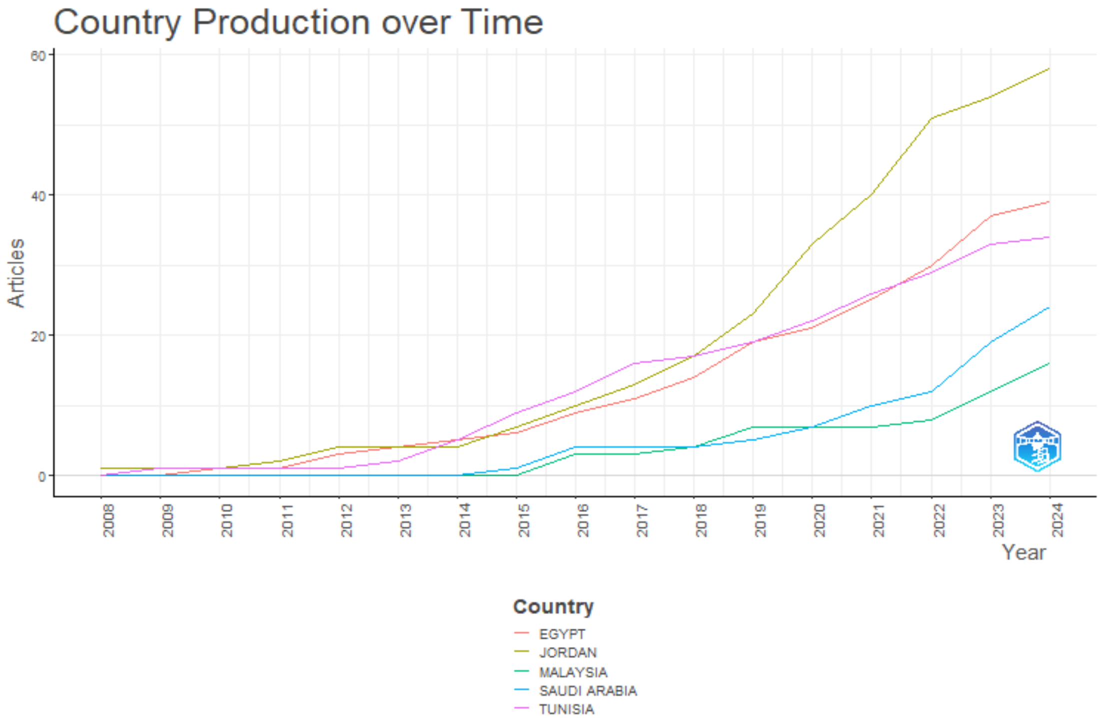

Fig. 8. Top Five Countries' Production Over Time

3.5 AFFILIATIONS

Support from organizations connected to authors significantly influences their contributions to the specific field. **Fig. 9** illustrates the prominent affiliations in the field of earnings management. As depicted in **Fig. 9**, Applied Science Private University holds a prominent position in earnings management research across MENA countries, contributing extensively through a considerable volume of publications. Leading institutions identified include Al-Zaytoonah University of Jordan (n=30), Cairo University (n=21), University of Sultan Zainal Abidin, University of Dundee (n=18), Yarmouk University (n=17), University of Bahrain (n=13), Al-Balqa Applied University (n=12), University of Utara Malaysia (n=11), and the University of Jordan (n=10).

3.6 KEYWORDS

This section presented keywords used in research on earnings management in the MENA region. Statistical analysis of keywords can provide clues or research directions to explore the development of scientific research. **Fig. 10** and **Fig. 11** illustrate the most frequently used terms in earnings management studies in MENA countries. The four common keywords are earnings management, earnings quality, management evidence, and audit quality. This highlights that earnings management remains the most frequently referenced term within the scope of accounting and the business environment. These keywords underscore a rising focus on exploring how companies adjust their reported earnings and financial statements. In addition, these keywords reflect the dynamic nature of earnings management research, which has seen numerous advancements from traditional financial analysis to efforts to incorporate complex methodologies based on data, quantitative, statistical, and mathematical techniques to effectively combat earnings management practice.

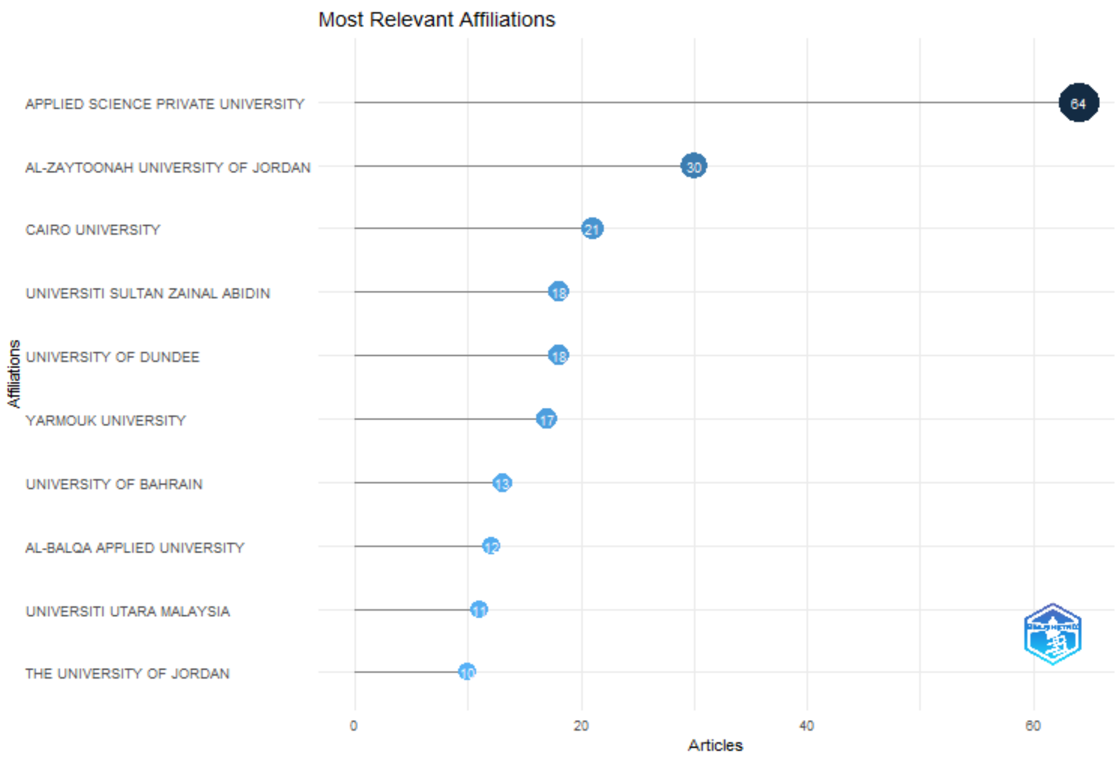

Fig. 9. Top Ten Affiliations

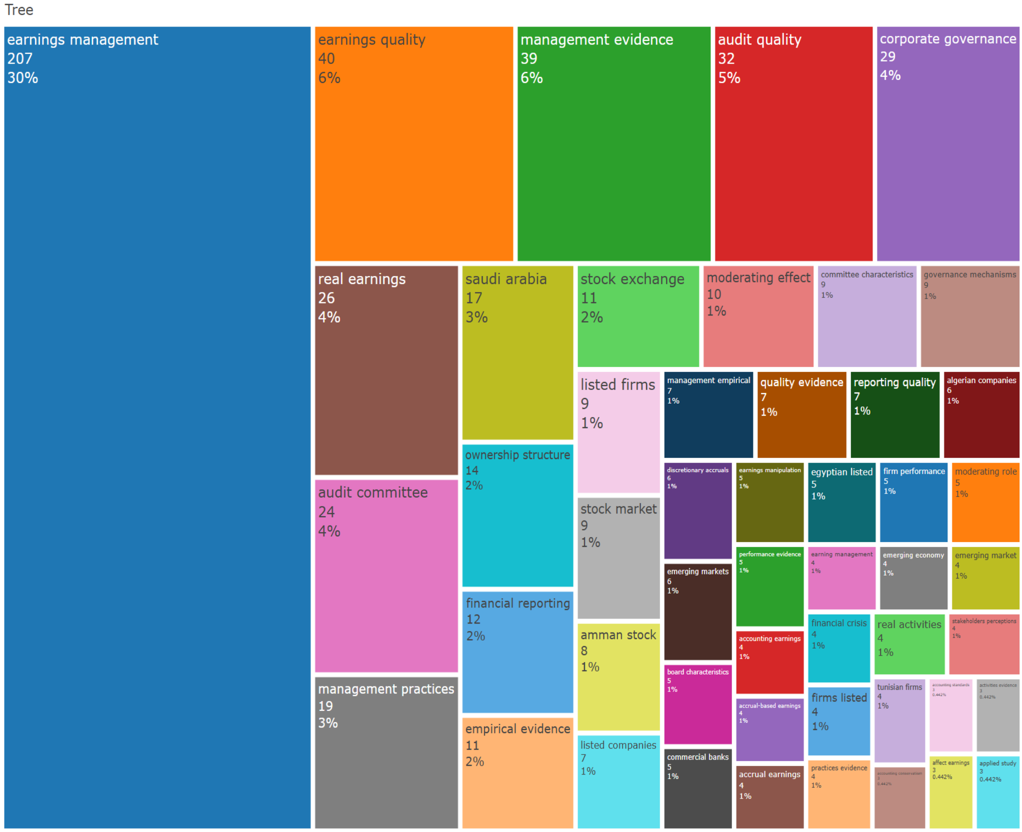

Fig. 10. Words TreeMap

Fig. 11. Word Cloud

3.7 DATA VISUALIZATION

3.7.1 CO-OCCURRENCE ANALYSIS

The structure of relationships across articles, journals, or authors can be identified and visualized through co-occurrence analysis, as it determines the most common connections. **Fig. 12** illustrates a co-occurrence network of keywords in earnings management publications based on (Author Keywords), providing a visual illustration of the links of terms across different research studies. As shown in **Fig. 12**, the network analysis identified four distinct clusters, represented in green, red, blue, and yellow. The size of each node reflects its frequency of occurrence, with "earnings management" standing out as the largest and most central node. The green cluster focuses on the importance of corporate governance in preventing earnings management, whereas the red cluster highlights the role of auditing in identifying earnings management in accounting records and financial statements. Blue Cluster focuses on distinct methods and indicators employed in detecting earnings management such as computer science and accounting information system. The yellow cluster focuses on how earnings management impacts financial ratios, including “earnings per share”, “return on assets”, and “debt”. The proximity between nodes reflects their relatedness, with closely positioned terms suggesting a stronger conceptual connection.

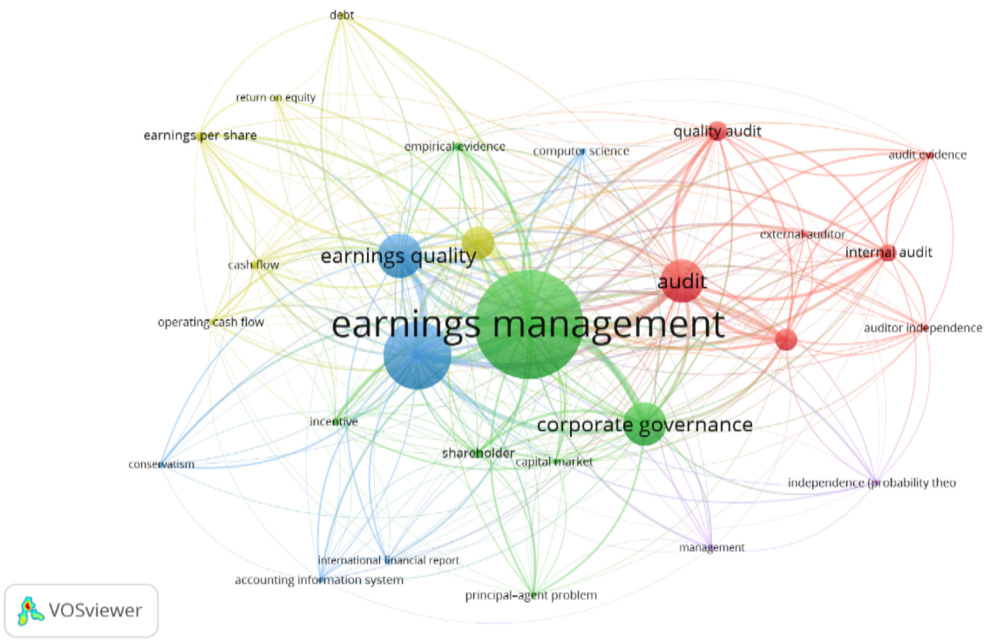

Fig. 12. Co-Occurrence Network Analysis

3.7.2 SOCIAL STRUCTURE

The social structure is analyzed through co-authorship networks and collaborative relationships among countries. **Fig. 13** illustrates the collaborative network among authors, highlighting the complex interconnections within the topic of earnings management in MENA countries. The analysis identifies fourteen distinct clusters, with four standing out prominently. The first significant cluster contains scholars such Amina Z and Hassouna F, who represent a group of highly productive authors that have maintained consistent collaboration throughout the study period. The second significant cluster highlights the collaboration between Yasser B, David C, and Louise C. Malik A A, Isam S, Adel A, Al-deen O, Mohammed M Y, and Adel S form part of the third and most prominent cluster. Over the analyzed period, they have built numerous collaborative connections, positioning themselves as key contributors within the scientific research landscape.

Fig. 14 presents a map illustrating global collaboration in earnings management in MENA countries research, where red lines depict the connections between different countries. The eight countries leading in collaboration are Jordan, Malaysia, Bahrain, Egypt, Malaysia, Saudi

Arabia, Tunisia, and United Arab Emirates. These countries are vital to the social structure of earnings management research, performing an important role in establishing international collaborations and making significant contributions to this field.

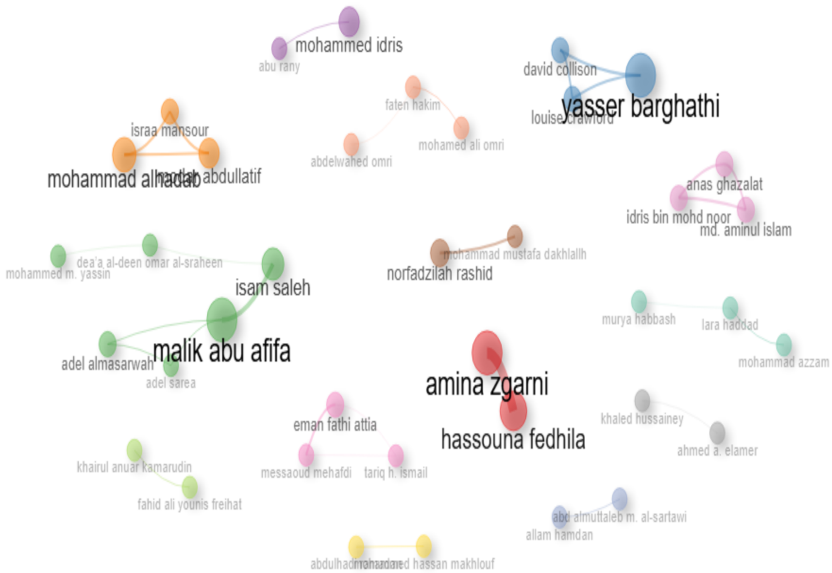

Fig. 13. Collaboration Network

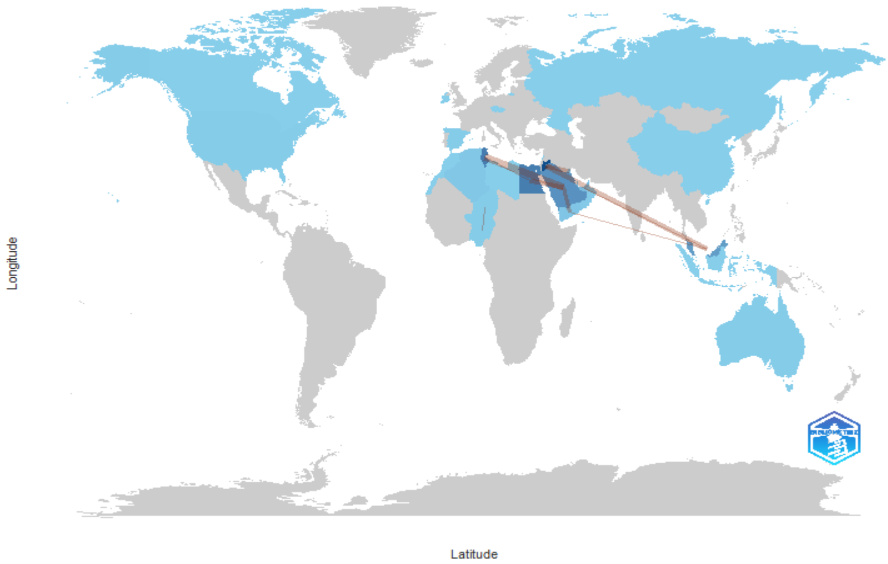

Fig. 14. Country Collaboration Map

4. CONCLUSION

Earnings management is becoming more focused topic worldwide, so it is critical to concentrate on its identification and investigation. To gain a better understanding of the progression of earnings management research in developing countries, the current study conducted a bibliometric analysis of earnings management literature in MENA nations from 2005 to 2024. The bibliometric analysis of earnings management in MENA countries is conducted using the R bibliometric tool and VOSviewer. Based on the results and discussion, it may be concluded that there is significant growth in earnings management research within the MENA region, with expectations indicating that this growing trend is more likely to continue. It is also obvious from the bibliometric analysis that the research trend on the topic fluctuates over the years and reaches the highest publication peak in 2024 with 37 publish articles. In addition, the research trend in accordance with the most referenced articles, it is possible to consider that the study by Suzan et al. (2012) is the most frequently cited article on the topic of earnings management in MENA region with a total of 216 citations. Next, Bilal K is the most productive author with eight publications, followed by Yasser B. and Amina Z. with seven papers each. On the basis of Bradford's law of document dissemination, it is feasible to consider that the Journal of Accounting in Emerging Economies is considered as one of the most productive sources on a given topic. It is also obvious from the statistics that Egypt has published 23 articles in total over the past twenty years. Moreover, the statistics clearly show that Applied Science Private University has achieved a remarkable output, producing a total of 64 publications over the recent two decades. Furthermore, "earnings management" is the author's keyword that appears most often and is the main keyword of research on earnings management in MENA countries.

The findings of this study provide implications for academics and practitioners in identifying developments in earnings management in MENA countries. In addition, these findings create opportunities to stimulate collaboration between researchers from different countries with a research focus through themes that have been mapped out from this study. Moreover, the findings can also be the foundation of initiatives that support the growth of international collaboration to improve the research of earnings management globally. However, the limitation of the current study is that it only included data collected from Dimensions database and focused on the MENA region. Thus, suggestions for future research can expand the scope by combining data from various quality databases.

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