BIBLIOMETRIC ANALYSIS EXPLORING REAL EARNINGS MANAGEMENT PRACTICES: A GLOBAL REVIEW

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ABSTRACT. Real Earnings Management (REM) represents a significant area of research within financial studies, having been thoroughly explored over time alongside accrual earnings management techniques as part of the broader issue of intentional financial reporting manipulation. This study analyses 339 articles published in journals indexed by the Web of Science (WOS) database from 2006 to 2024, aiming to provide a comprehensive review of the key findings and emerging research trends in this field. The results reveal that REM is becoming increasingly pertinent, with nearly 40% of the literature on this topic published in the past three years (2022-2024). The United States emerges as the leading contributor to research in this area. We conclude that REM is closely associated with accrual earnings management, corporate governance, and auditing practices. Furthermore, the manipulation of accounting choices in various institutional contexts, particularly in Pakistan, China, and India, has

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gained prominence in recent years. Future research should direct its attention toward REM in emerging markets and family-owned enterprises, as these areas present vital avenues for further exploration.

Keywords: Real earnings management, Bibliometrics analysis, Citation analysis, Keyword analysis, Bibliometrix R

JEL classification: M40, M41

Introduction

Earnings are essential to the process of economic decision-making. Given their significance, the practice of earnings management (EM) may occasionally arise. This phenomenon results from the inherent flexibility within accounting standards (Healy, 1985) and occurs when managers exercise their discretion in the accounting reports to deceive stakeholders about the company's profitability or to affect contractual outcomes in line with the reported figures (Healy and Whalen, 1999). EM is defined as the intentional efforts made within the framework of GAAP to achieve optimal reported earnings (Schipper, 1989). Despite the vast body of literature on EM a more comprehensive understanding of this phenomenon remains essential. EM continues to garner attention from both scholars and practitioners, and ongoing research suggests that it is only partially understood. Manipulative practices can obscure a company's actual economic performance and conceal critical information that stakeholders require for informed decision-making. Consequently, EM represents a significant concern for the global economy (Bui, 2024). EM has increasingly captured the attention of scholars, practitioners, and regulators, primarily due to its potential to erode confidence and transparency in financial markets (Nguyen et al., 2021). Pioneering research, especially by Healy in 1985, played a crucial role in developing methods for measuring EM through discretionary accruals. Subsequent studies, including those by DeAngelo (1986) and Jones (1991), further honed models for identifying EM behavior, establishing a robust foundation in accrual-based earnings management. More recently, the focus of research has shifted towards analyzing real activities as alternative measures of EM (Zang, 2012; Cohen and Zarowin, 2010; Roychowdhury, 2006).

The field of EM is extensive and encompasses a substantial body of literature. Literature reviews hold particular significance in this domain, as they can illuminate emerging trends and systematically organize a diverse range of information. Notable bibliometric studies on EM have been conducted by scholars including Vagner et al. (2021), Teixeira and Rodrigues (2022), Ahmad et al. (2023), Bansal (2023), and, more recently, Bui (2024).

Vagner et al. (2021) conducted an analysis of 1,547 articles on EM sourced from the Web of Science (WoS) database, highlighting significant advancements across four key periods from 1988 to the present. They identified the global financial crisis as a pivotal factor driving the increase in EM research. Teixeira and Rodrigues (2022) analyzed 4,343 papers within the WoS database covering the years 1900 to 2020. They found a strong correlation between EM, corporate governance, and information quality, suggesting that further investigation into Real Earnings Management (hereunder REM) would be a fruitful area for research. Additionally, Ahmad et al. (2023) examined 1,383 papers from the Scopus Core Collection and reported a marked growth in EM publications in 2020, primarily from USA, China, Australia, and the United Kingdom. Their analysis points to a rising interest in EM and underscores the potential for further research, especially in emerging economies.

Bansal (2023) conducted a review comprising 2,775 papers examining EM published from 1992 to 2022, utilizing data from Scopus. The review identified three primary themes: EM constructs operationalization; trade-offs among various EM tools, and influence of corporate governance mechanisms on EM examined in emerging markets. Notable emerging research areas include advancements in technology, cross-cultural research, non-financial indicators used to examine EM and others.

Bui (2024) analyzed 1,981 Scopus-indexed publications from 1993 to 2021, highlighting a significant increase in knowledge regarding EM in recent years. Like Teixeira and Rodrigues (2022), Bui (2024) emphasized REM as a crucial area for future research.

Our paper uses the Web of Science (WoS) database in response to calls from Teixeira and Rodrigues (2022) and Bui (2024) for a greater focus on REM in future research. To identify areas in REM scholarship that need further development, we conducted a bibliometric analysis to uncover existing gaps in the literature. As a result, our research is both timely and relevant.

Our study is motivated by two key factors. First, as emphasized by Teixeira and Rodrigues (2022) and Bui (2024), REM deserves greater research focus due to its resemblance to legitimate business decisions, which complicates detection for auditors and regulators. As managers typically manipulate accruals within a limited range, they may turn to REM to meet their earnings targets,

highlighting the importance of closely examining this practice. Second, while there are several bibliometric studies on EM, none specifically address REM on a global scale, pointing to a significant gap in systematic research in this area. We intend to contribute to the academic community by systematically reviewing the literature on REM and identifying both current and emerging research trends through bibliometric methods. This approach is highly regarded in the fields of business and economics for its effectiveness in analyzing data and assessing the productivity and impact of various publications. Ultimately, our research aims to broaden the existing literature and deepen the understanding of REM.

This paper is categorized as follows: After the introduction, the second section reviews the current state of the art and establishes the research questions. Third section outlines the methodology employed, while the fourth presents the findings. Finally, the last section concludes the paper by discussing research limitations and exploring suggested avenues for future research.

State of the art

Cohen and Zarowin (2010) categorized EM into two primary forms: EM through accrual accounting variables (hereunder AEM) and EM through the manipulation of actual transactions, best known as real earnings management (REM). REM encompasses strategies such as accelerating sales, adjusting shipment schedules or deferring research and development expenditures or maintenance expenditures (Dechow and Skinner, 2000). This method presents a notable alternative to AEM as documented in the studies conducted by Roychowdhury (2006); Cohen et al. (2008) or Zang (2012).

In a study conducted in 2006, Roychowdhury characterized REM as a deviation from standard operational practices, where managers attempt to deceive shareholders into believing that financial targets have been achieved in a conventional manner. This practice may involve actions such as adjusting the timing or structure of transactions (Zang, 2012) to manipulate earnings, which can lead to suboptimal outcomes.

This manipulative strategy adversely affects long-term business value by impacting future cash flows. The study of Bhojraj et al. (2009) documented that firms exceeding short-term earnings targets through discretionary expense cuts tend to underperform compared to those missing targets but maintaining high earnings quality.

Both studies conducted by Gupta et al. (2010) and Gunny (2010) noted the conclusion that REM can lead to poor long-term performance and lower return on assets. Khurana et al. (2018) emphasized that short-term earnings pressures

may result in suboptimal long-term decisions. Despite its negative long-term consequences, REM is commonly used by managers due to market reactions to missed targets and internal pressures, as highlighted by both Dichev et al. (2013) and earlier by Graham et al. (2005) in their review.

Managers often prefer REM over AEM for two main reasons: it generally faces less scrutiny from regulators and offers greater flexibility for achieving desired outcomes. Research, such as Roychowdhury's (2006), indicates that managers engage in REM by inflating short-term sales, cutting discretionary expenses, and overproducing. Dechow and Sloan (1991) found that CEOs also adjust real activities, like reducing research and development spending, as they approach retirement. Additionally, compensation-related incentives further motivate these adjustments (Cheng, 2004). Given these various factors, it is evident why REM has become more important in recent years (Bui et al., 2024).

To analyze trends in REM research, we conducted a bibliometric review of 339 publications indexed in the Web of Science (WoS) between 2006 and 2024. This study addresses a significant gap in the systematic review of REM literature. Through this research, we seek to enhance our cognizance of the intricate REM field and provide valuable insights for researchers, practitioners, and policymakers.

In the light of the findings documented by Vagner et al. (2021), Teixeira and Rodrigues (2022), Ahmad et al. (2023), Bansal (2023), and Bui (2024), this study utilizes various measures and indicators through bibliometric analysis and intends to address four research questions as follows:

Research Question 1: What is the magnitude and publication trend of research on REM?

Research Question 2: Which authors have emerged as the most productive contributors to the REM literature?

Research Question 3: Which papers are the most cited, and which countries and journals have the most significant publications related to REM?

Research Question 4: What are the key themes in REM research, and what future research avenues can be explored?

Methodology

We conducted a bibliometric analysis of REM using Web of Science (WoS) data, one of the largest and most respected scientific citation databases managed by Thomson Reuters. Our analysis involved creating a comprehensive database and applying bibliometric methodologies to map citation patterns, identify frequently used keywords, and trace the main topics related to REM research.

The literature search was conducted in October 2024 and included studies published up to that time. We began by performing a title search in the Web of Science (WoS) database, targeting articles that featured the keywords "Real Activities Manipulation", "Real Earnings Management", "Real Activity Earning Management". This initial search yielded a list of 416 articles.

To refine our selection, we focused on articles published in English and categorized under Business Finance, Economics, and Business and Management from 1900 to 2024. This targeted approach resulted in a final dataset of 339 articles, sourced from 133 journals and conference proceedings, with contributions from a total of 807 authors, as summarized in Table 1. The findings were then exported in BibTeX format. As stated above, we performed a bibliometric analysis using R Studio and the package from Bibliometrix. For enhanced interactive analysis, Shiny package developed by the RStudio Team was used.

Results and Discussions

As stated above, the WoS database comprises a total of 339 articles collected using the keywords "Real Activities Manipulation", "Real Earnings Management" and "Real Activity Earnings Management" classified under the categories of Business Finance, Economics, and Business and Management, spanning from 1900 to 2024.

First table below disclose the descriptive statistics for the REM papers. Remarkably, there were 339 articles on REM in the WoS database between 2006 and 2024, with an average of 40.18 citations per article and an annual growth rate of 23.85%. Among the 807 authors, 39 contributed single-authored works. On average, each author produced 2.86 documents, and the rate of international co-authorship was 39.82%.

Table 1. Descriptive analysis of articles

Description of data	Number
Main information regarding data	
DOCUMENTS (total number of manuscripts)	339
Sources (journals, Books, etc.)	133
Period	2006-2024
Annual Growth Rate	23.85%
References	10074

Description of data	Number
Average citations per doc	40.18
Document Average Age	4.28
Articles keywords and key word plus	
Keywords selected by authors (DE)	846
Key word plus (ID)	631
Information regarding the authors	
Number of authors	807
Number of authors of single-authored documents	39
Information regarding the authors collaboration	
Number of single authored papers	43
Number of co-authors per papers	2.86
International co-authorship %	39.82
Information regarding the document type	
Number of articles	317
Number of articles, book chapters	2
Number of articles, early access	18
Number of articles, proceedings papers	2

Source: Authors' work

Research Question 1: What is the magnitude and publication trend of research on REM?

The number of publications in the field of REM has experienced a significant increase since 2014 (refer to Figure 1). In 2006, there was only one publication, but this figure rose to 47 by 2024. From 2006 to 2015, the total number of REM publications did not surpass 20, suggesting that research in this area was still relatively nascent, with publication counts ranging from just one paper to a maximum of 13 in a single year. Beginning in 2016, the volume of publications began to rise notably, reflecting an increasing interest among scholars in the topic of REM. As illustrated in Figure 1, there is a discernible upward trend in the number of papers published each year. The peak in REM publications has occurred in the last three years (2022-2024), during which nearly 40% of all literature on the subject has been produced.
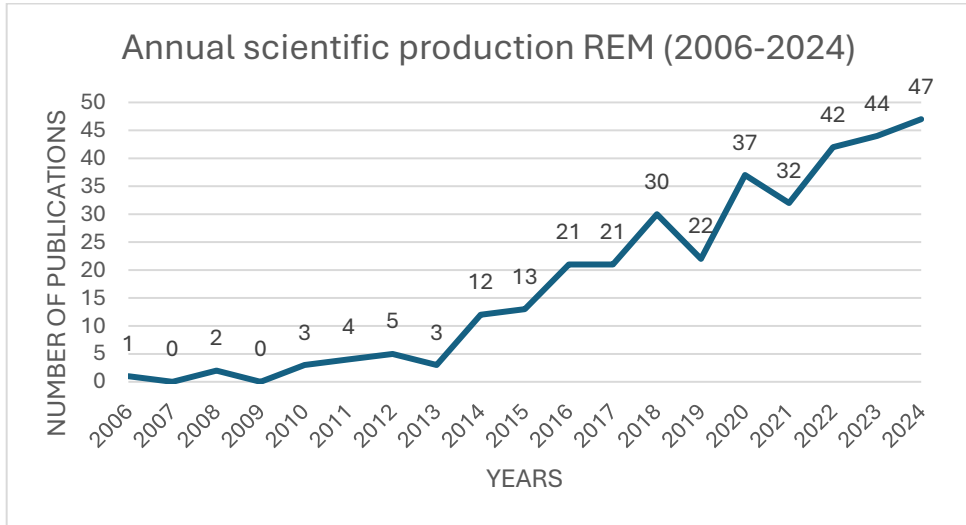
Figure 1. Yearly Trends in the Number of Publications on the REM Topic (2006-2024)

Source: Authors' work

Research Question 2: Which authors have emerged as the most productive contributors to the REM literature?

Table 2 showcases the most productive scholars in the field of REM. A minimum threshold of four documents authored was established for inclusion. Leading the list, Zhang Y has published the most articles, totaling six, followed by Alhadab M with five. Ghaleb M., Li L., Sohn B., Sung H., and Thanh N. each contributed four papers.

Regarding citations, Sohn has achieved the highest total, with 347 citations, while Li follows with 226 citations. In contrast, Sung has received the fewest citations, with only nine for the four papers published.

Table 2. Most Productive Authors on the REM Topic (2006-2024)

Author	Country	No. of papers	Citations	First paper
Zhang Y.	USA	6	179	2012
Alhadab M.	JORDAN	5	179	2015
Ghaleb B.A.A.	MALAYSIA	4	148	2020
Li L.	NEW ZEALAND	4	226	2016
Sohn B.C.	CHINA	4	347	2013
Sung H.C.	TAIWAN	4	9	2012
Thanh Ngo T.N.	USA	4	64	2016

Source: Authors' work

Research Question 3: Which papers are the most cited, and which countries and journals have the most significant publications related to REM?

Table 3 illustrates the top 10 most cited papers, highlighting Roychowdhury's (2006) influential study, which has garnered 2,306 citations for the paper titled "*Earnings Management through Real Activities Manipulation*". In this study, the author delineates various strategies employed by managers to boost sales, including offering price discounts, overproducing to reduce the cost of goods sold, and minimizing expenditures that are discretionary to enhance reported profit margins. In addition to this empirical investigation, the field of EM has increasingly shifted its focus toward REM activities, which are utilized to circumvent the reporting of losses.

Cohen et al. (2008) stands as the second most cited paper, garnering 1,471 citations with their work "*Real and Accrual-Based Earnings Management in the Pre- and Post-Sarbanes-Oxley Periods*" In this study, they highlighted that companies shifted between AEM and REM after the enactment of the Sarbanes-Oxley Act (hereunder SOX). Following closely, the third most cited paper, authored by Cohen and Zarowin (2010), has received 1,119 citations. This research revealed that firms engaging in seasoned equity offerings (SEOs) tend to utilize REM, which can have detrimental long-term effects on the companies. Notably, the decrease in post-SEO performance attributed to real earnings manipulation is more accentuated compared to that resulting from AEM.

Lastly, Zang (2012) published a paper that has accumulated 1,117 citations, documenting how managers employ REM as a substitute for AEM. Zang's findings suggest that the trade-off between these two manipulative practices is influenced by their associated costs, with managers adjusting their use of AEM based on their levels of REM.

The remaining papers received considerably fewer citations compared to those previously mentioned, with citation counts ranging from 663 for Gunny (2010) to 161 for Achleitner et al. (2014). In her paper, "*The Relation Between Earnings Management Using Real Activities Manipulation and Future Performance: Evidence from Meeting Earnings Benchmarks*" Gunny (2010) demonstrated that firms use REM practices to achieve earnings benchmarks. Furthermore, Kothari et al. (2016) noted that managers show a greater propensity for REM during seasoned equity offerings (SEOs), despite the long-term costs associated with such practices.

Cheng et al. (2016) made a significant contribution to the literature on REM by demonstrating that internal governance influences the extent of REM. Their findings indicated that the level of REM diminishes as both influence and horizon of the most important subordinate executives increase. Earlier, Kim and Sohn (2013) revealed that REM adversely affects the quality of earnings

information available to outside investors, prompting the market to demand a higher risk premium for these activities. This additional risk premium is separate from the risk premium associated with AEM.

Chi et al. (2011) investigated whether companies turn to REM once their capability to manage accruals is limited by high-quality auditors. Their research revealed a connection between auditor expertise and higher fees with increased levels of REM. The authors suggested that employing higher-quality auditors may unintentionally prompt firms to adopt more costly REM strategies due to constraints on AEM. Finally, Achleitner et al. (2014) found in their empirical work that family businesses use REM and AEM as substitutes instead of complementary tools for EM.

Table 3. Most Influential Publications by Number of Citations

Authors (year)	Article title/DOI	Source Title	Total citations
Roychowdhury S., (2006)	Earnings management through real activities manipulation	Journal of Accounting and Economics	**2,306**
Cohen, D.A., Dey, A., Lys, T.Z., (2008)	Real and accrual-based earnings management in the pre- and post Sarbanes-Oxley periods	The Accounting Review	**1,471**
Cohen, D.A., Zarowin, P., (2010)	Accrual-based and real earnings management activities around seasoned equity offerings	Journal of Accounting and Economics	**1,119**
Zang, A.Y., (2012)	Evidence on the trade-off between real activities manipulation and accrual-based earnings management	The Accounting Review	**1,117**
Gunny, K.A., (2010)	The relation between earnings management using real activities manipulation and future performance: evidence from meeting earnings benchmarks	Contemporary Accounting Research	**663**
Kothari, S.P., Mizik, N., Roychowdhury, S., (2016)	Managing for the moment: The role of earnings management via real activities versus accruals in SEO valuation	The Accounting Review	**280**
Cheng, Q., Lee, J., Shevlin, T., (2016)	Internal governance and real earnings management	The Accounting Review	**201**

Authors (year)	Article title/DOI	Source Title	Total citations
Kim, J.B., Sohn, B.C., (2013)	Real earnings management and cost of capital	Journal of Accounting and Public Policy	**178**
Chi, W., Lisic, L.L., Pevzner , M., (2011)	Is enhanced audit quality associated with greater real earnings management?	Accounting Horizons	**175**
Achleitner, A.K., Günther, N., Kaserer, C., Siciliano, G., (2014)	Real earnings management and accrual-based earnings management in family firms	European Accounting Review	**161**

Source: Authors' work

The information presented in Table 3 reveals that the most influential papers, as determined by citation frequency, have been published in esteemed accounting journals such as the Journal of Accounting and Economics (Impact factor: 5.82), The Accounting Review (Impact factor: 5.45), and Contemporary Accounting Research (Impact factor: 2.21).

When analyzing the number of publications on Real Earnings Management (REM) by country, the top five are as follows: the USA (293 publications), China (240), the UK (92), Malaysia (42), and Tunisia (35).

In terms of citations in the REM field, the leading three countries remain consistent: the USA (7,873 citations), China (2,240 citations), and the UK (422 citations). The fourth and fifth positions are held by Canada (386 citations) and Singapore (295 citations), respectively.

Research Question 4: What are the key themes in REM research, and what future research avenues can be explored?

As stated by Comerio and Strozzi (2019), the themes of research publications are represented by the authors' keywords. An analysis of these keywords was conducted in our study using Bibliometrix R to identify the most common themes in REM research. Figures 2 and 3 illustrate the frequency of referenced keywords in papers examining REM across the years, respectively a word cloud representation. Notably, the most frequently found keyword is "real earnings management," followed by "earnings management," "management," "corporate governance," "real earnings," and "real activities manipulation," which is a synonym for REM.

The keyword "earnings management" follows "real earnings management" not by coincidence, as the latter is a subset of the former. As previously mentioned, EM practices are grouped into AEM and REM. Since it is managers

who engage in these manipulative practices, the term "management" is frequently associated with such actions in the EM literature, which accounts for its high prevalence. To mitigate manipulative practices, various factors have been identified in the literature, with corporate governance being one of the key elements.

Analyzing the keywords prevalent in the literature on REM, it is clear that the primary focus is on real activities manipulation, which is often explored in conjunction with Accrual Earnings Management (AEM) and corporate governance. The keyword "M41" (Accounting in JEL Code) appears frequently in REM literature, underscoring its importance in examining these manipulative practices. Since many of the most highly cited papers in this field have been published in accounting journals, the significant presence of the keyword "M41" in the literature is readily understandable.

Further, the *word cloud* below is a visual depiction comprising text data. In this representation, the size of each word analyzed is depicted in accordance with its frequency or significance. As such, Figure 3 presents a word cloud in the context of bibliometric analysis of REM research. This word cloud prominently feature terms such as "real earnings management," "earnings management," "real earnings," and "corporate governance." As observed above, these key terms underscore the most important themes and topics that have been widely examined within the REM literature.

Additionally, Figure 4 below illustrates the evolution of the most commonly used keywords within REM literature over time. It is noteworthy that, until 2008, none of the prevalent keywords associated with REM were employed. Beginning in 2008, "real earnings management" was introduced as a keyword in a paper by Cohen et al. (2008). From 2010 onwards, both "real earnings management" and "real activities manipulation" began to appear systematically in REM literature. Although "real activities manipulation", "real earnings management" or "real activity earnings management" all refer to the same underlying concept, "real earnings management" remains the term most frequently utilized in the REM literature.

The advancement of research in the area of REM has been accompanied by a notable increase in related keywords. In the past three years, an important rise in publications within this field compared to the entire analysis period was observed. One of the most compelling associations is between REM, EM, and AEM. This correlation was expected, as both REM and AEM, along with EM practices, have been thoroughly examined in the literature. Managers often implement AEM and REM either in conjunction or as a trade-off, which leads to these practices being frequently discussed together in a considerable number of the reviewed papers. Additionally, corporate governance is closely tied to REM, with its role in mitigating manipulative practices being a topic of extensive discussion.
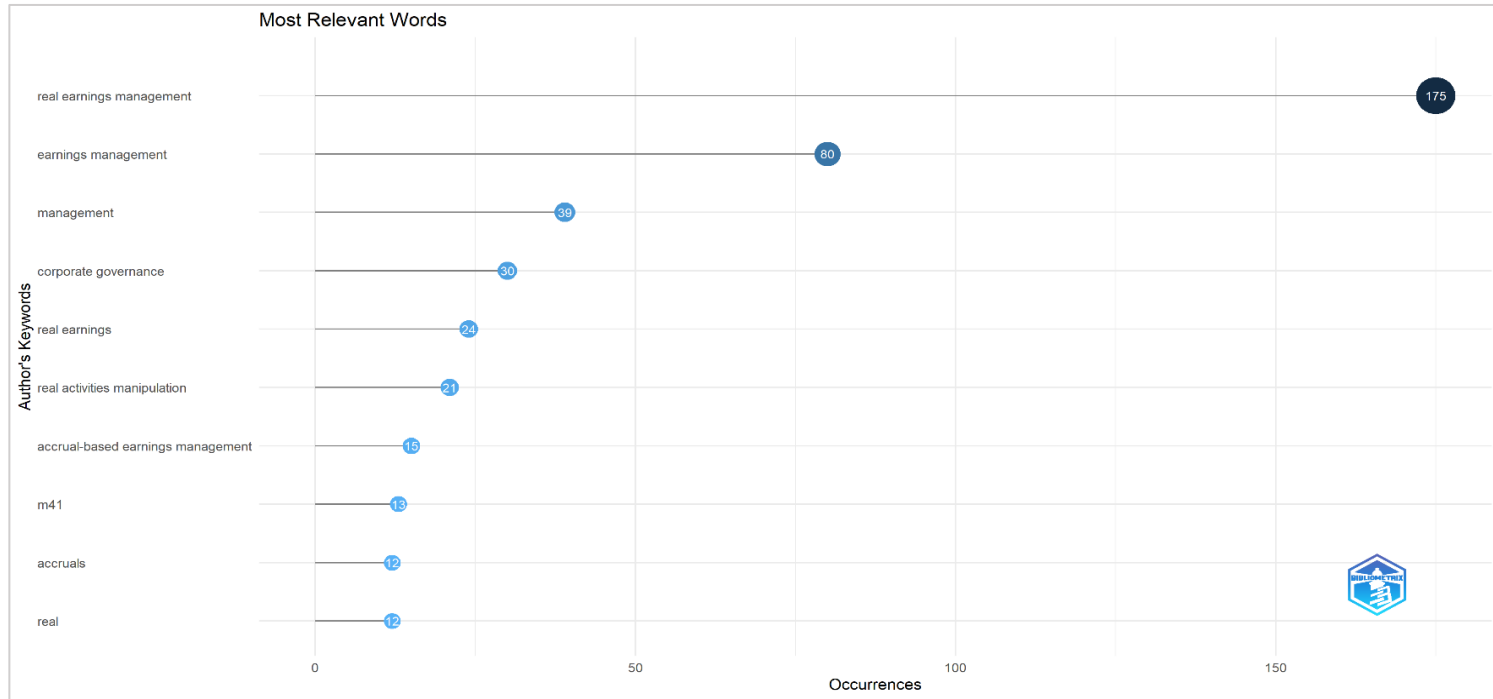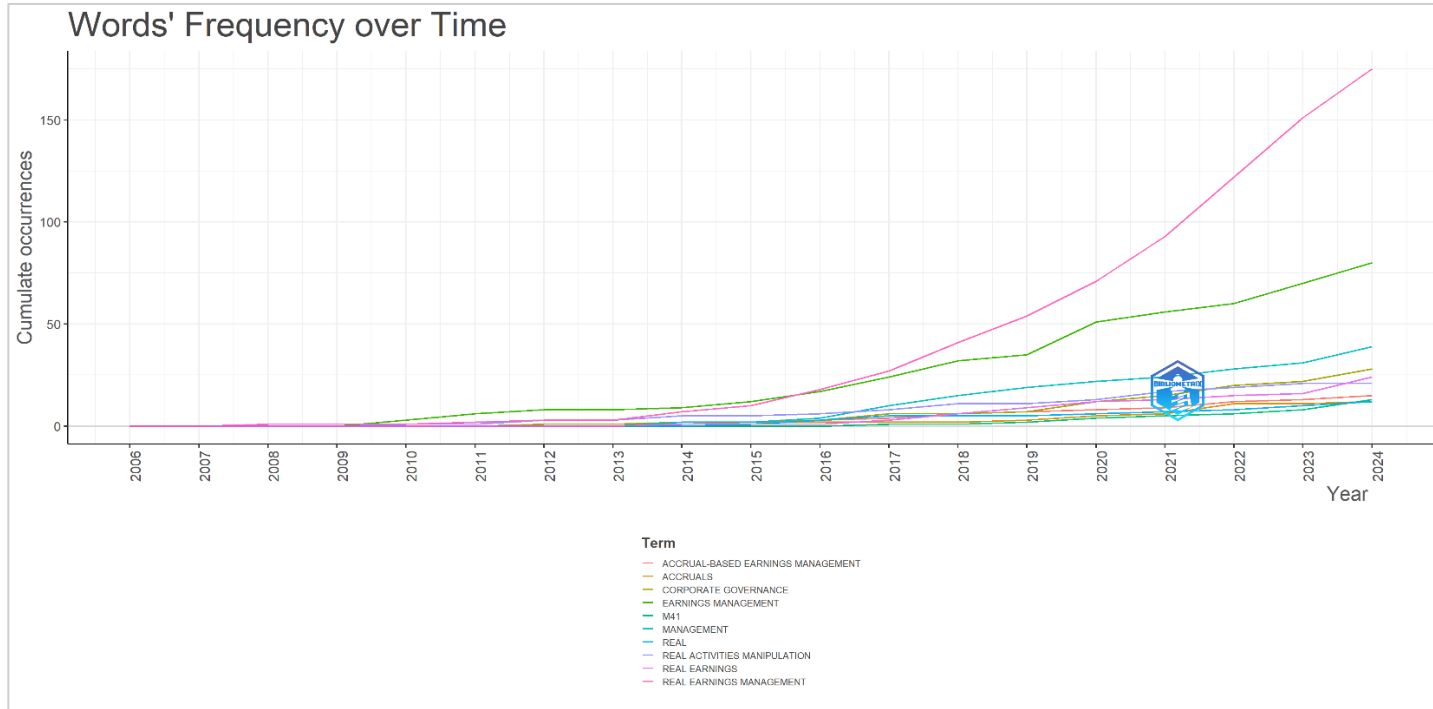
Figure 2. Frequency of Commonly Used Keywords
Source: Authors' work

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Figure 3. Word cloud
Source: Authors' work

Figure 4. Timeline of the most frequently used keywords in REM literature
Source: Authors' work

The analysis of author keyword co-occurrence presented here highlights the key elements of the articles in our database. Keyword co-occurrence refers to the simultaneous appearance of keywords and conveys important meanings to the audience, as it reflects the primary topics of the research (Donthu et al., 2021). This data visualization illustrates the relationships among authors' keywords within a large text corpus. Keywords are shown as nodes, with edges representing their co-occurrence frequency as explained by Linnenluecke et al. (2020). The strength of the edges reflects how often the keywords appear together, their proximity, or the significance of their relationship, while node size indicates each keyword's usage frequency.

Figure 5 presents below the primary keywords in REM research and their interconnections, generated through a keyword co-occurrence analysis using Bibliometrix software. This analysis identified five clusters of frequently used keywords that correspond to significant research topics.

Cluster 1 (highlighted in blue) primarily encompasses a variety of elements, including AEM, accruals, earnings quality, emerging markets, India, China, audit quality and audit fees, market competition, firm performance, information asymmetry, Agency Theory, IFRS, litigation risk, persistence, leverage, management monitoring, and firm value. These elements all center around the keyword "Real earnings management," which is prominently featured in the middle of the map. It is clear that this keyword is strongly connected to the major keywords present across all clusters. REM practices appear often as being connected with accruals and accrual earnings management, indicating that both practices (AEM and REM) are frequently examined together in the literature as methods for detecting earnings management.

Keywords such as "India" and "China" reflects the growing focus on research concerning emerging markets (Bui, 2024) despite the fact that earlier research has primarily targeted developed countries.

Additionally, "audit quality" and "audit fees" are essential aspects to consider in REM research, as auditors must ensure proper handling of financial reports to mitigate REM risks.

The keyword "information asymmetry" is also found connected to REM practices given to the challenges brought within agency theory, where one may possess much more information compared to the other, leading to exploitation (Bansal, 2024). The implementation of International Financial Reporting Standards (IFRS) aims to intensify global consistency and increase the value given to accounting data, facilitating informed decision-making among stakeholders. Research often examines the relationship between IFRS and both AEM and REM — to understand how regulatory changes impact manipulative behaviors. Adopting IFRS is recognized to improve transparency, accountability, and reporting efficiency (Bansal, 2024).

The analysis of corporate debt levels was conducted in relation to REM, taking into account that prior studies have investigated the potential effects of EM on a firm's leverage, yielding inconclusive results (Bui, 2024). Nevertheless, the keywords above provide important insights into the predominant themes and research directions within the REM research field.

Cluster 2, highlighted in red, is strongly connected to Cluster 1 and can be viewed as an extension of it. The keyword "earnings management" is prominently featured at the center of Cluster 2 and is closely associated with terms such as REM, AEM, manipulation, accounting choices, earnings benchmarks, firm performance, institutional ownership, institutional investors, and ownership structure. The presence of the "Earnings Management" keyword at the heart of the second cluster underscores its relationship with REM, indicating the significance of REM in identifying instances of earnings management. EM is closely related to firm performance, indicating that manipulative practices can impact a company's performance and are, in turn, influenced by its ownership structure. In summary, this cluster underscores that EM is thoroughly examined in connection with REM. This suggests the necessity of considering various measurements of EM to reduce earnings manipulations, as highlighted by Bui (2024) in their paper. Moreover, the strong correlation between EM and REM emphasizes the increasing significance of REM as a research topic within the domain of EM, which calls for further investigation in future studies.

The keyword "Management" is most prominently featured in the green cluster (Cluster 3), which is linked to Corporate Social Responsibility (CSR) and AEM. AEM is driven by a range of incentives and CSR can play a crucial role in mitigating these potentially manipulative practices.

Cluster 4 (purple) highlights a significant connection between corporate governance and governance mechanisms. In recent years, research has focused on how these governance mechanisms can effectively reduce REM.

Cluster 5 (yellow) showcases a strong relationship between accounting, financial reporting, and EM. Research has demonstrated that both accounting and financial reporting are impacted by EM.

Summarizing the above, the various clusters underline different aspects related to financial reporting, accruals, corporate governance, auditing, stock markets, and REM. The focus is on corporate governance, accounting quality, discretionary accruals, and REM practices.

Furthermore, by utilizing a network approach, such as a thematic map, we can visually represent scientific papers based on their themes and citations. Figure 6 shows that between 2006 and 2024, the relationship between REM and AEM attracted the most scholarly attention, providing insights into various aspects, including techniques, corporate governance influences, audit quality, and the impact of IFRS on REM practices.

On the other hand, within the niche and emerging or declining themes, emerging markets emerge as a significant trend, as well as family firms' studies and special operations as mergers and acquisitions.

As previously noted, the majority of studies assessing EM have primarily focused on developed countries. However, recent years have indicated a shift in this focus, with scholars increasingly exploring emerging markets as well. Notably, China and India stand out as important institutional settings.

Family businesses are of central concern in the global economy, which is why the extent to which they engage in REM needs to be further investigated (Bui, 2024). Eng et al. (2019) noted that REM levels differ between family and non-family businesses across countries and during different economic periods. Although research on family firms is growing, the impact of earnings management, particularly REM, remains unclear despite the fact that empirical studies documented that REM is affecting the earnings quality in such firms. An example is the empirical study conducted by Alhebri and Al-Duais (2020) that found that family businesses often have lower earnings quality due to both AEM and REM. Additionally, Alhebri et al. (2021) identified a positive link connecting family firms with REM practices, while a higher proportion of independent directors and greater director compensation are associated with reduced REM in these firms.

Special operations, such as mergers and acquisitions, should be examined more closely in future studies regarding potential manipulation. Empirical research shows that these operations can lead managers to engage in manipulative practices. In this regard, Chang and Pan (2020) found that companies engaged in stock-for-stock acquisitions often increase credit sales and overproduction in the quarter before merger announcements.
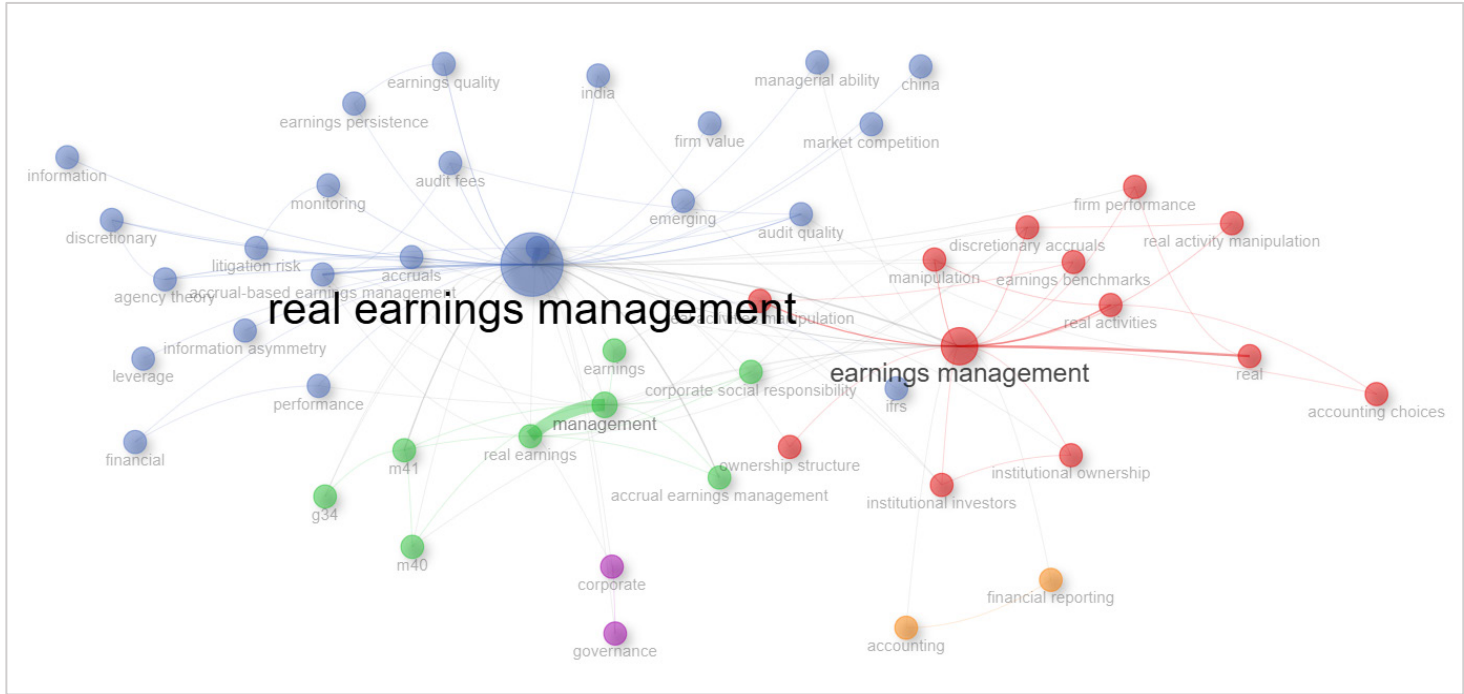
Figure 5. Map of Co-occurring Keywords
Source: Authors' work
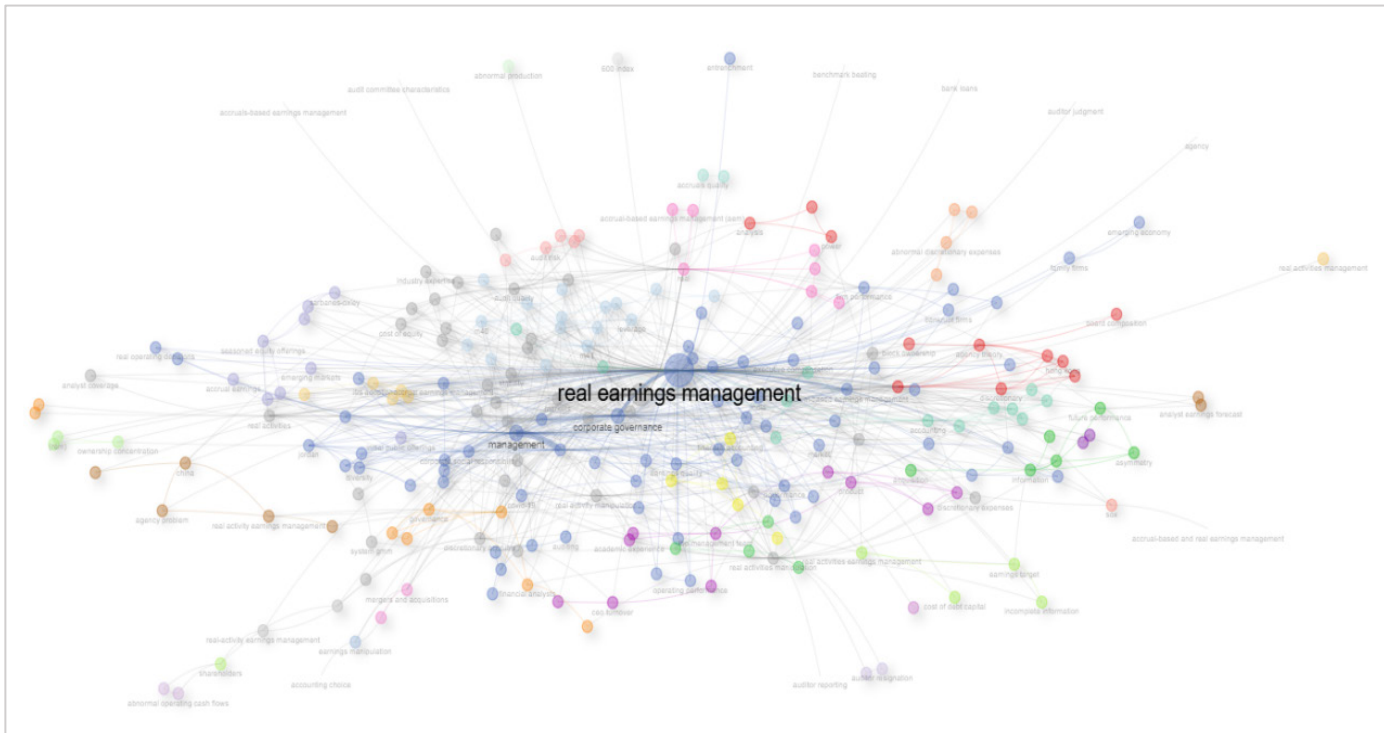
Figure 6. Thematic map
Source: Authors' work

Conclusions

Our study seeks to assess the evolution of the REM research field and to outline future directions for this area of inquiry. It provides a comprehensive overview of 339 articles published in journals indexed by the WOS database from 2006 to 2024.

The main conclusion drawn from the analysis is that REM is emerging as an increasingly significant topic of interest, with scholars actively exploring new methods for measuring EM. The relationship between AEM and REM, as well as the broader interaction between EM and REM, has attracted considerable attention in the reviewed literature, particularly given that these concepts are often used in tandem or involve a trade-off, as indicated by various empirical findings.

The most significant body of research on REM has emerged in the past three years (2022-2024), with nearly 40% of the existing literature produced during this period. The USA stands out as the leading country in terms of the number of papers published within REM literature.

The three most cited authors in the REM field are Roychowdhury (2006), followed by Cohen et al. (2008), and Cohen and Zarowin (2010), all of whom are affiliated with institutions in the United States. Within REM research, the relationship between REM and AEM has garnered considerable scholarly interest, with a large proportion of published papers examining this relationship across various themes such as corporate governance, audit impact, IFRS adoption, emerging markets, and family firms. Furthermore, accounting choices have been investigated in the context of manipulation across different institutional settings, with Pakistan, China, and India being the most frequently cited examples. Agency Theory has been the predominant theoretical framework guiding this research.

A particularly promising avenue for future research is the study of REM in emerging markets and family-owned firms. Additionally, our research has identified the most pertinent keywords related to REM research.

Our research carries important implications for regulators and practitioners, as it clarifies how REM contributes to the emergence of new EM practices, some of which may be harmful to investors. By providing valuable insights into the scholarly work on REM, bibliometric analysis can empower researchers, institutions, and policymakers to make well-informed decisions and formulate effective strategies. Lastly, understanding the current state of this topic is crucial. An analysis of the most cited publications on REM indicates that it has attracted considerable interest from scholars across the years, largely because of the significant impact these manipulative practices have.

This study does have some limitations. Firstly, our analysis relies exclusively on the WOS database. Additionally, we employed bibliometric and network analysis tools, which may have constrained our approach. Moreover, by focusing solely on "articles," we may have overlooked valuable insights from other types of publications. We encourage further research to complement these findings through the use of diverse methodologies for a more comprehensive understanding of the REM topic in a broader academic context. It is essential to take these limitations into account when interpreting the conclusions presented here.

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