ISSN 2237-7662, Florianópolis, SC, v. 23, 1-19, e3458, 2024
https://doi.org/10.16930/2237-7662202434582
Available at http://revista.crcsc.org.br

INDIVIDUAL INVESTORS AND ACCOUNTING INFORMATION DISCLOSURE: THE INCLUSION OF SOCIAL MEDIA AND THE ROLE OF BROKERAGE FIRMS

RAYANE FARIAS DOS SANTOS[1]
Universidade de Brasília
https://orcid.org/0000-0001-6500-1096
rayane.farias10@hotmail.com

CÉSAR AUGUSTO TIBÚRCIO SILVA
Universidade de Brasília
https://orcid.org/0000-0002-5717-9502
cesaraugustotiburciosilva@gmail.com

ABSTRACT

This research aimed to understand the scientific productivity regarding accounting information within the environment of individual investors, focusing on the role of brokerage firms and social media in this informational context. The study conducted a bibliometric analysis that involved collecting international articles published over the last 33 years from the Scopus database. The methodology employed was bibliographic, documentary, descriptive, and quantitative. The final sample included 84 articles published between 1989 and 2021. It was observed that there has been an expansion in the discussion of the topic over the analyzed period, with contributions from researchers in 27 different countries. Co-authorship was primarily dominated by three researchers per article, with most authors contributing only one article in the field. The articles employ various approaches to understand the aspects and determinants affecting decision-making and the financial market. Points such as investor awareness, the role of brokerage firms and use of social media, new standards in financial reporting, wisdom of crowds, and investor attention and protection were discussed. Additionally, the research highlights the landscape, opportunities, and challenges in the field. This study becomes relevant for advancing academic knowledge and enhancing the efficiency and transparency of financial markets. It has the potential to trigger significant impacts on both accounting theory and the practical aspects of the financial industry.

Keywords: Individual Investors. Accounting Information. Social Media. Brokerage Firms.

Edited in Portuguese and English. Original version in Portuguese.

Version of the paper presented at the IV International Conference in Management and Accounting, online, from October 17 to 19, 2022.

[1] **Address for correspondence:** Campus Universitário Darcy Ribeiro | Prédio da FACE | Asa norte | Brasília/DF | Brazil.

Received on 12/28/2023. **Revised on** 04/04/2024**. Accepted on** 05/21/2024 by Prof. Dr. Rogério João Lunkes (Editor-Chefe). **Published on** 07/12/2024.

1 INTRODUCTION

The early 19th century can be described as a period when the search for information in general was rooted in greater difficulty in finding it. Information was not as readily accessible; many relied on newspapers and libraries to obtain desired information. However, with the advent of technology and its rapid integration into everyday life, it can be stated that today the "Information Age" has arrived. Never before have so much information been so easily accessible (Hendricks & Vestergaard, 2019).

The ease and convenience of acquiring information and trading online have attracted individuals to become more active in stock markets (Lerman, 2020). The so-called Small Investors or Individual Investors, who are individuals with brokerage accounts for investing in assets of listed companies on the Stock Exchange, have increasingly occupied a larger space in the financial market (Rajkumar & Kavitha, 2017).

However, it remains unclear how these investors, labeled as non-professionals, make investment decisions (Lerman, 2020), especially considering that the information needs of individual investors differ from those of sophisticated and well-informed investors (Pascual-Ezama et al., 2018). In a 2017 speech, Rick Fleming, Director of the Office of the Investor Advocate at the SEC, emphasized the ongoing need for better understanding of investor decision-making to develop protective recommendations (Lerman, 2020).

Regarding decision-making, Sitinjak et al. (2021) point out that individual investors heavily rely on social media, brokerage firms, and advisory services to obtain investment information, particularly because they attribute little importance to financial statements as a source of information. This is largely due to the lack of knowledge and skills among these users to interpret the information present in financial statements (Lerman, 2020).

Pascual-Ezama et al. (2018) emphasize that professional investors make their investments using methodologies and tools that provide them with technical knowledge and support. They argue that individual investors lack these resources, leading to more speculative and less informed behavior.

In this regard, the optimal format for disclosing accounting information to individual investors remains an open question. Topics for discussion include financial education, accessibility, ease of information interpretation, and regulation (Nicholls, 2020; Krische, 2019).

Brokerage firms can assist investors in selecting the best investment assets through tools that facilitate communication with them. Many of these firms leverage social media to engage with investors, especially individual ones. The mining of social media for signals that can inform investment decisions is an expanding field (Kawa, 2020).

Brokerage firms should provide information to the market independently of corporate interests, as they are considered crucial sources of information and intermediaries between investors and the financial market. However, their extensive presence on social media may not only aim to provide information but also to monetize user attention, securing benefits for themselves or third parties through established partnerships.

It seems like you're discussing Nixon's perspective on the power of attention as a fundamental element for media companies to generate revenue through payments for access to content and informational power, which subsequently influences the market. Agency problems reflect concerns about the exploitation of vulnerabilities of individuals and the choices of agents under these conditions, which cease to be voluntary (Castro & Pham, 2020).

In the attention economy, much like in the real economy, counterfeit businesses and black markets thrive (Franck, 2019). Many information market players employ unethical maneuvers and strategies to capture and harvest attention. After all, when one has people's attention, there is the power to channel it towards another person or product, including oneself, and monetize it (Hendricks & Vestergaard, 2019).

Moreover, due to the greater capacity for information dissemination through various media channels, if previously there was concern about the scarcity of information for investors to make more informed decisions, today the concern is reversed: the excess of data and information, which can potentially be detrimental (Cloarec, 2020).

In this context of a large volume and rapid dissemination of accounting information, informational asymmetry, and increasing monetization of attention, it becomes crucial to understand the field of information available to individual investors and the potential determinants and actors impacting investment decisions.

The identification of several gaps in the literature motivated the elaboration of this article. Firstly, there is a lack of studies investigating how individual investors combine information from social media with traditional sources of accounting data and financial reports (Zhou et al., 2021). Additionally, there is a need for a deeper understanding of how brokerage firms act as intermediaries in disseminating accounting information from various sources (Boulton et al., 2021). The literature also lacks systematic assessments of the accuracy and quality of accounting information disclosed on social networks (Nguyen & Vuong, 2020).

Additionally, more research is needed on how different formats of presenting accounting information affect understanding and utilization by individual investors (Nicholls, 2020). Another significant gap is the lack of longitudinal studies that track how the behavior of individual investors changes over time in response to new forms of accounting information disclosure (Nguyen & Vuong, 2020). Bibliometric research, through analysis of keywords and article titles, can reveal which aspects of accounting information disclosure, social media, and brokerage firms have received more recent attention and which emerging areas still require exploration.

In this way, the objective of the study is to understand the scientific productivity regarding accounting information that permeates the environment of Individual Investors and the involvement of brokerage firms and social media in this informational environment. To achieve this, the study conducted a bibliometric analysis, aiming to capture how the literature has addressed the topic over the years, which authors are most engaged in the field, the journals and countries involved, the literary bases used, the findings made, and possible gaps to be explored as suggestions for future research. This article becomes relevant because a bibliometric study has the ability to facilitate the dissemination of scientific production, supporting the development of future works (Tang et al., 2018). Regarding the research environment, the international market, such as the example of the United States, has a culture of stock market investment, including broad participation by individual investors, as evidenced by Thomson Financial research (Blankespoor et al., 2019).

In this context, observing the current state of research in the field becomes relevant, given the vast number of individual investors internationally. Particularly, the behavior of economic agents is a source of concern for many researchers, due to its influence on the economy and impact on the financial market (Lopez et al., 2021).

The study is structured into five sections, beginning with this introduction, followed by the literature review. The third part comprises the methodological description of the bibliometric research conducted. In the fourth part, descriptive statistics, analyses, and discussions are presented. Finally, the last part outlines the concluding remarks, study limitations, and suggestions for future research.

2 THEORETICAL FRAMEWORK

2.1 Individual Investors and the Informational Field

Individual investors, also known as small investors, are individuals who have brokerage accounts to invest in stocks of companies listed on the stock market (Lerman, 2020). The basic goal of these investors when buying and selling stocks is to achieve good returns on their investments (Rajkumar & Kavitha, 2017).

Often, the small investor is unaware of how the stock market operates and invests money on impulse or based on advice from friends or other investors who have made profits in the stock market. Others rely on brokerage advisors who act as financial intermediaries and advisors. Additionally, some use social media, attracted by users who claim to be knowledgeable about the financial market (Rajkumar, 2021).

The Securities and Exchange Commission (CVM) imposes as a legal requirement the guarantee of equal access to information for all investors, whether individual or institutional. However, much is said about investor relations departments directing their efforts and communications towards large investors, leaving smaller ones at a disadvantage (Blankespoor et al., 2019).

Understanding the market of users as a whole and their financial information needs is complex, as these users form a heterogeneous group with often divergent interests (Sitinjak et al., 2021). Inadequate attention has been shown towards the needs of investors, especially retail ones (Dimpfl & Kleiman, 2019). Reports and disclosures of material facts are an example of the communication failure with individual investors, due to the use of overly technical language (Kadous et al., 2017).

Therefore, it is from this perspective that social media is altering the dynamics. Over the years, these communication channels have increasingly become one of the main sources of information for individual investors who generally lack the time and adequate knowledge to read and analyze reports and disclosures (Blankespoor et al., 2019). Many stakeholders resort to using social media to provide information to their clients and to foster closer engagement.

The SEC, the entity that regulates the world's largest financial market in the United States, along with other regulatory bodies, has been signaling concerns about investors, particularly how retail investors are digesting financial information disseminated on social media. Alerts are issued indicating that while many messages may be true, others have various intentions, requiring consideration of which recommendations presented are truly independent (Kadous et al., 2017).

Ph and Uchil (2020) argue that increasing investor awareness is necessary. This awareness yields long-term positive effects (Boulton et al., 2021), and brokerage firms, as intermediaries in the financial sector, can play a collaborative role in this regard, given the power that social media has acquired over the years.

2.2 Brokerage firms and the flow of information

Brokerage firms are financial companies responsible for facilitating the buying and selling of securities for investors on the Stock Exchange (Rajkumar & Kavitha, 2017). In Brazil, they are authorized to operate by the Central Bank (BC) and the Securities and Exchange Commission (CVM).

The operation dynamics of brokerage firms involve a system where investors submit buy and sell orders for tradable assets, which the brokerage firm then executes. Previously, this process was conducted via phone calls; however, in the new era of technology, online trading platforms, known as home brokers, have gained prominence. These are online systems where investors can directly execute their orders (Barber & Odean, 2001).

After market liberalization and financial deregulation, the scope for stock brokerage firms to trade in various related markets has expanded. The role of brokerage firms is highly unique in the development of capital markets (Zhou et al., 2021). Therefore, they are seen as pivotal for the longevity of the financial sector.

The quality of services provided by brokerage firms, according to Rajkumar and Kavitha (2017), is based, among other factors, on the following four requirements: (i) integrity, which refers to ethics in dealings with investors; (ii) objectivity, meaning maintaining impartiality when dealing with investors; (iii) fairness, based on genuine behavior and attitudes; (iv) competence, measured in terms of their guidelines, advice, and predetermined skills.

With more online trading becoming available, there is concern that markets could become fragile. In this regard, it is emphasized that market efficiency depends on the information investors receive, and brokerage firms act as translators of information to their clients, having the informational duty to provide conditions for investors to understand market mechanisms (Boulton et al., 2021).

Information as a defense tool for investors aligns with the sufficiency of information necessary to invest or divest with awareness and understanding of available information. Therefore, information should be clear, conveying essential aspects relevant to the subject matter, and objective when directly impacting the issue at hand, always based on concrete data (CPC, 2018).

Information should be adequate when provided appropriately, conveniently, and timely, and when it is necessary, indispensable, essential, and sufficient in terms of completeness and comprehensiveness (CPC, 2018). The flow of information should serve as a basis for investors to make decisions independently of the phase in which the relationship between the investor and the securities broker stands (Pascual-Ezama et al., 2018).

It is important to emphasize that information overload has the opposite effect of what is desired because instead of clarifying investors, it tends to obscure their perception. Faced with an abundance of data, investors may struggle to determine the best course of action. Studies like Lerman (2020) seek to understand the changes and disruptions involved in investors' attention to disclosed accounting information, whether there is greater attention to accounting information, and if this increased attention might be associated with better information processing.

2.3 Behavioral finance, Attention economy, and social media

Behavioral Finance constitutes an interdisciplinary field that explores how psychological, emotional, and social factors influence individuals' financial decisions and market functioning. This theory acknowledges that investors often make irrational and suboptimal decisions due to cognitive biases, emotions, and social influences (Silva Brasileiro & Silva, 2017).

With the proliferation of financial information available online and the increasing influence of social media in disseminating this information, investors are exposed to a constant flood of data and opinions about investments (Lerman, 2020). Therefore, Attention Economy and social media play an increasingly significant role in the context of Behavioral Finance.

Attention cannot be stored or retain its value for future use, as the brain decides which information streams among many options it will process (Guo et al., 2015). What information individuals employ their attention on and what they choose to focus on are open points in the literature (Boulton et al., 2021). Viewing attention as a scarce resource forms the basis for studying information as an attention economy.

Huang and Zhang (2020) define attention economy as a system primarily revolving around paying, receiving, and seeking what is inherently limited and irreplaceable by anything else namely, others' attention. Castro and Pham (2020) raise questions about the harmful effects of attention economy, emphasizing that markets may be economically efficient but certainly morally problematic. Agency studies are increasingly concerned with the exploitation of people's vulnerabilities and agents' choices under such conditions (Zhou et al., 2021).

Social media plays an important role as a medium influencing how people behave. When investors use information received through social media for their investment decisions, their decisions are immediately reflected in the market. Therefore, the presence of social media can be used as a tool by investors or stakeholders to disseminate information, triggering a market reaction (Sofyan et al., 2020). The information received by investors can and likely will change the behavior of these agents, who begin to process and digest the information they receive. Whether the information leads to beneficial decision-making depends on the content contained within it (Puspitaningtyas, 2017).

Thus, Behavioral Finance, Attention Economy, and social media are intrinsically related, especially in the context of investor behavior and the functioning of contemporary financial markets. Behavioral Finance, by studying cognitive biases, emotions, and social influences in financial decisions, recognizes that investors often make irrational and suboptimal decisions (Silva Brasileiro & Silva, 2017).

Attention Economy, considering how the scarcity of human attention affects investors' choices amid information overload (Castro & Pham, 2020), especially with the advent of social media and the proliferation of online platforms, where investors are constantly bombarded with a wide range of information, analyses, and investment opinions (Zhou et al., 2021), creates an environment where the competition for investor attention is intense. Investment decisions can be influenced by viral trends, sensational news, and opinions from digital influencers.

Kadous et al. (2017) found that individual investors trust investment advice from social media platforms, even when the advice has little or no predictive value. Additionally, investors who assess the credibility of available information sources before encountering low-quality advice are less likely to trust the low-quality advice compared to those who conduct credibility assessments after seeing the advice.

The uncertainty in the credibility of information provided by social media and the interests of stakeholders such as brokerage firms can create opportunities and challenges for information users seeking to use it in their decision-making (Castro & Pham, 2020). Therefore, regulators interested in reducing investors' reliance on investment advice should enhance knowledge-oriented education with process-oriented interventions (Kadous et al., 2017).

Reducing dependence on unreliable information is challenging; however, it is becoming increasingly important in investment and divestment tasks (Brashier & Marsh, 2020), especially considering the inherent limited attention capacity of individuals. Limited attention capacity and the abundance of rapidly flowing information can lead investors to confusion or to make poor decisions, particularly when relying on unreliable informational bases.

3 METHODOLOGY

The methodology employed in this research is characterized as bibliographic and documentary, enabling the conduct of bibliometric analysis. Moreover, it is considered descriptive and quantitative through the use of descriptive statistics.

Bibliometric research is an essential resource for disseminating scientific production, as it measures the influence of researchers or journals, projects profiles and trends, and demonstrates how thematic areas are being studied. It also provides support for the production of new works (Tang et al., 2018).

For the bibliometric research, the Scopus database was used. No specific search period for articles was set to achieve a comprehensive timeline. However, given the topicality of the theme, the expectation is that the results pertain to recent production. Regarding the areas of study, articles focused on the social sciences were selected from the database, with a focus on subfields including economics, econometrics, and finance; business, management, and accounting; and decision sciences.

The keywords used for searching the articles are:

- individual AND investors AND social AND media AND attention AND economy
- individual AND investors AND attention AND economy
- individual AND investors AND social AND media
- individual AND investors AND accounting AND finances AND information
- individual AND investors AND accounting AND financial AND information

- individual AND investors AND stockbrokers
- retail AND investors AND social AND media
- retail AND investors AND attention AND economy
- retail AND investors AND accounting AND financial AND information
- retail AND investors AND stockbrokers

Careful attention was paid to both singular and plural forms of words to ensure that no articles were missed or excluded due to potential selection errors. Additionally, searches were conducted using both individual investors and retail investors, as they are known interchangeably. Similarly, variations like financial and finances were included. The search terms encompassed abstracts, keywords, and article titles within the database. The search was limited to articles published in journals, excluding books, conferences, and congress proceedings.

The search returned a total of 181 articles, whose abstracts and, if necessary, full texts were read to verify alignment with the study's theme. Out of this total, 82 articles were not aligned with the theme and were discarded, along with 15 articles that were duplicates from compiling searches of each keyword used. This resulted in a final sample of 84 articles.

The returned articles span a timeline of 33 years, from 1989 to 2021. Furthermore, due to the terms used in the search, all articles are in English. The language limitation is because the international environment has a greater maturity regarding individual investors, who are more integrated into the stock market compared to the national context (Blankespoor et al., 2019).

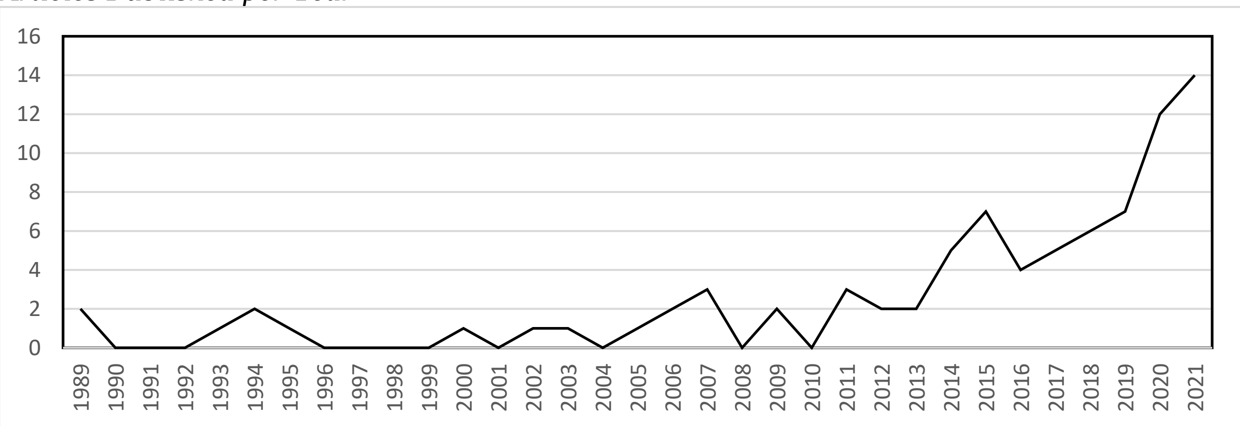
The data collection involved researching the following categories: authors' origin, number of authors, journal, year of publication, theoretical framework, and abstracts. All categories are statistically described and explained, and subsequently analyzed and discussed. The data collection period lasted 6 days, from October 25 to 29 and November 2, 2021. The selected categories were chosen based on previous studies, such as Ahmad and Slots (2021), Nguyen and Vuong (2020), Santos (2015).

4 RESULTS

4.1 Descriptive statistics

The results of the bibliometric analysis are presented in this section. Figure 1 shows the number of articles published per year, from 1989 to 2021.

Figure 1
Articles Published per Year



Source: Data from the research

The present research demonstrated that the earliest articles on Individual Investors and accounting information originated in 1989, authored by: (a) Aram, J. D., with the article titled "Attitudes and behaviors of informal investors toward early-stage investments, technology-based ventures, and coinvestors", published in the Journal of Business Venturing; and (b) the article by Tse, S. titled "Attributes of industry, industry segment and firm-specific information in security valuation", published in the journal Contemporary Accounting Research.

The number of studies on this topic has been increasing over the years, reaching its peak in 2021, with 14 (17%) articles published, followed by 2020, with 12 (14%) articles. Other periods did not exceed 8% of published articles throughout the timeline. In some periods, no research was published, namely: 1990 to 1992, 1996 to 1999, 2001, 2004, 2008, and 2010.

The peak period of articles focused on accounting information and financial investments coincides precisely with the Covid-19 pandemic, which may be related to increased uncertainty among market participants. Consequently, researchers turned their attention to developing studies that highlighted informational vulnerabilities present at that time and cautioned investors. Another possible explanation is the contemporary relevance of the topic.

Just as there has been an increase in research in the area of accounting information and investments in recent years, with the likelihood of continued growth, there is a greater need to pay attention to this topic due to the exponential increase in investors, especially individual investors, that has been observed (Brashier & Marsh, 2020).

In terms of journals, Table 1 presents which journals have had the most articles published aligned with the theme studied.

Table 1
Journals mais prolixos

Journals	**Articles**
Contemporary Accounting Research	4
Qualitative Research in Financial Markets	3
Applied Economics Letters	2
Journal of Financial Reporting and Accounting	2
Accounting, Organizations and Society	2
Actual Problems of Economics	2
Journal of Behavioral and Experimental Finance	2
Journal of Financial Economics	2
Journal of business ethics	2

Source: Data from the research

According to Table 1, Contemporary Accounting Research was the journal with the highest number of article publications in the field, totaling four articles. It is an academic journal covering research on all aspects of the role of accounting within organizations, markets, or society. The journal is published by Wiley on behalf of the Canadian Academic Accounting Association. The editor-in-chief is Alan Webb (University of Waterloo). According to journal citation reports, it had an impact factor of 3.543 in 2020.

Qualitative Research in Financial Markets ranks second in the study, with three articles in the field. It is a journal dedicated to publishing research employing qualitative methods and tools to explore contemporary issues in corporate finance and financial market behavior worldwide. The current editor is Bruce M. Burton from the University of Dundee, United Kingdom.

Following are the journals Applied Economics Letters, Journal of Financial Reporting and Accounting, Accounting, Organizations and Society, Actual Problems of Economics, Journal of Behavioral and Experimental Finance, Journal of Financial Economics, and Journal of Business

Ethics, all featuring two published articles regarding the relationship of individual investors with accounting information. Tables 2, 3, and 4, as well as Figure 2, demonstrate the number of authors, their origins, and the most prolific authors on this topic.

Table 2
Number of authors

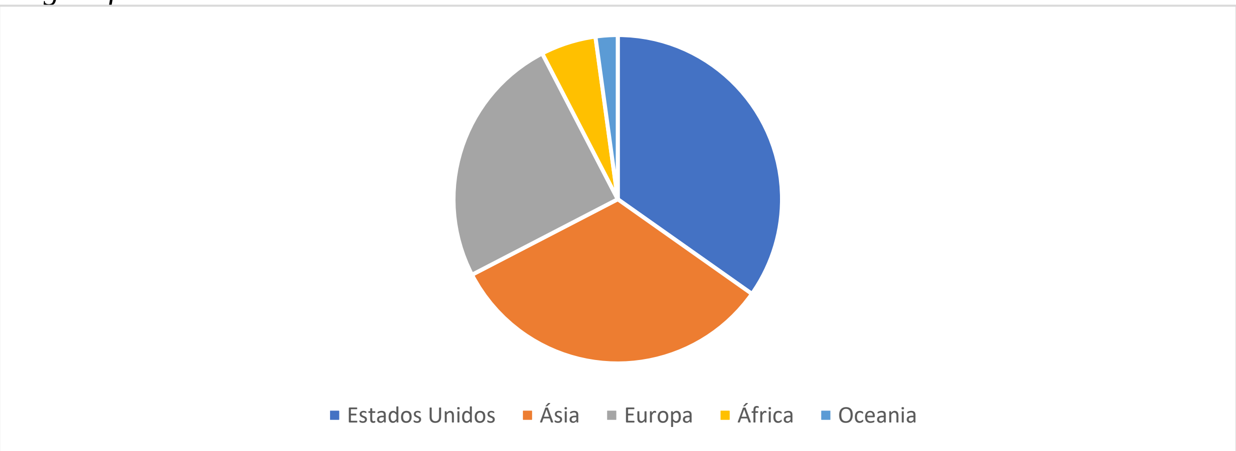
	One autor	Two authors	Three authors	Four authors	Five authors	Total
Articles	21	26	27	8	2	84
	25%	31%	32%	10%	2%	100%

Source: Data from the research

Table 2 demonstrates that writing in groups of three authors was the most common over the 33 years of analyzed research, appearing in 27 articles, representing 32% of the total. This was followed by dual-authored research, which accounted for 26 articles (31%), and single-authored articles, which reached 21 articles (25%). Collaborating with four or five authors was less common in the field, encompassing 8 and 2 articles (10% and 2%), respectively.

This result contrasts with the findings of Santos (2015), who highlighted a greater number of articles developed by groups of five authors. The difference in results may be due to the specificity of each study's topic. No bibliometric study was found in the area that could serve as a direct comparison. It was also noted that the trend of writing in groups of four or five authors, at least in this field, has been occurring over the last five years. Figure 2 and Table 3 depict the authors' origins.

Figure 2
Origin of the authors



Source: Data from the research

In Figure 2, the authors' locations are visualized more comprehensively. They are grouped by continent, with the exception of the United States due to its representativeness, in order to provide an overall view of the field. The United States contributes to 35% of the published articles, followed by Asia at 33%, and Europe at 25%. Together, these three continents account for 93% of the research involving individual investors and the disclosure of accounting information.

This result clearly illustrates the influence that the United States holds in financial investment topics, considering its significant role in the global economy. The U.S. markets play a pivotal role in transactions between providers and users of capital (Bijlsma & Zwart, 2013).

Table 3
Origin of the authors

Countries	Quantity	Frequency	Countries	Quantity	Frequency
United States	64	34%	Tunisia	3	2%
China	20	11%	Belgium	3	2%
India	14	7%	Canada	3	2%
Spain	12	6%	Qatar	2	1%
United Kingdom	10	5%	Finland	2	1%
Germany	8	4%	Saudi Arabia	1	1%
Malaysia	7	4%	Czech Republic	1	1%
Indonesia	6	3%	Egypt	1	1%
South Africa	6	3%	Kenya	1	1%
Pakistan	6	3%	Turkey	1	1%
France	5	3%	New Zealand	1	1%
Netherlands	4	2%	Lithuania	1	1%
South Korea	3	2%	Bahrain	1	1%
Australia	3	2%	**Total**	**189**	**100%**

Source: Data from the research

Table 3 demonstrates the production by country. The top five countries in the ranking were the United States with 34% of publications, followed by China with 11%, India with 7%, Spain with 6%, and the United Kingdom with 5%. Other countries accounted for less than 5% of the research conducted. A total of 189 authors were involved in this study, originating from 27 different countries, where the American context, particularly the United States, stood out with publications in the field.

The global significance of the topic is evident, spanning 27 countries across different continents. The United States and China, as two major economic and global trading hubs, stand out in matters concerning investments and accounting information. Any impact on the economic market of these two countries significantly influences market sentiment, corporate dynamics, and global supply chains (Bijlsma & Zwart, 2013). This could explain the heightened focus on financial research in these environments.

Table 4
Most prolific authors

Most prolific authors	Articles
P. H. Haritha	2
Rashmi Uchil	2
Susan D. Krische	2
Mark W. Nelson	2
Robert J. Bloomfield	2
Zaheer Ahmed	2
Umara Noreen	2

Source: Data from the research

Table 4 shows the names of authors who developed more than one article on the topic, out of the 189 who participated in the analysis. Four of the most prolific authors are female, and three are male. Authors Haritha and Uchil are from India, author Krische and authors Nelson and Bloomfield are from the United States, Ahmed is from Pakistan, and author Noreen is from Saudi

Arabia. The other authors, not listed in the Table, were responsible for only one article each on the topic.

Haritha works at the School of Business Studies at the Central University of Kerala. Uchil is an assistant professor at the National Institute of Technology Karnataka. Krische is an associate professor in the Department of Accounting and Taxation at the Kogod School of Business, American University. Nelson is a professor of Accounting at the Samuel Curtis Johnson Graduate School of Management at Cornell University's SC Johnson College of Business. Bloomfield serves as a faculty director at the Johnson School, where he uses laboratory experiments to study financial markets and investor behavior. Ahmed is an assistant professor at the Institute of Molecular Biology and Biotechnology at the University of Lahore. Noreen is affiliated with Prince Sultan University.

The data shows that among the researched articles, there isn't a standout author with a large number of articles, nor is there a dominant gender. It's an area of interest for both genders and researched by various authors. However, it is notable that of the seven highlighted authors, three are from the United States.

Table 5

Teorias envoltas nos Articles

Literature bases	Articles	Frequency	Literature bases	Articles	Frequency
Behavioral Finance	15	18%	Historical Approach to Accounting	3	4%
Standards, Regulation	7	8%	Corporate Social Responsibility	2	2%
Network Theory	6	7%	Agency Theory	2	2%
Investor Sentiment	6	7%	Modern Portfolio Theory	2	2%
Mandatory Disclosure	4	5%	Investment Strategy	2	2%
Market Efficiency	4	5%	Voluntary Disclosure	2	2%
Financial Literacy	4	5%	Cognitive Dissonance Theory	2	2%
Information Asymmetry	3	4%	Other Approaches	17	21%
Attention Economy	3	4%	**Total**	**84**	**100%**

Source: Data from the research

Table 5 presents the most used theories and literary currents in the Articles that composed the research. The approach of Behavioral Finance, which emerges in opposition to the Efficient Market hypothesis, was the most prominent theoretical basis, present in 18 out of 84 (18%) Articles included in the study. Increasingly recent evidence on behavioral finance (Da, Engelberg & Gao, 2011; Vozlyublennaia, 2014) suggests that investor attention affects market returns and further challenges the efficiency of the market.

Following that, Standards/Regulation appeared in 8% of the articles, while Investor Sentiment Theory and Network Theory were present in 7% of the observed articles. The remaining theories were present in 5% or less of the sample Articles.

Indeed, the most cited article (486 citations), titled "Experimental research in financial accounting," published in 2002 by researchers Nelson and Bloomfield, who were also noted as prolific authors, uses Behavioral Finance as a basis for its development.

4.2 Analysis and discussion

4.2.1 Overview of the field

When analyzing the timeline of studies focused on the field of accounting information provided to Individual Investors, the role of Brokerage Firms, and the use of social media as an interaction channel, it is evident how the initiation and dynamics of research have been evolving over time.

The number of studies in this area has been growing, as evidenced by Figure 2, likely due to technological advancements, easier access to information, and the integration of social networks into the lives of users of accounting information. This has spurred increased investor activity in trading, as discussed by Lerman (2020), necessitating a deeper understanding of the field.

The dynamics of collaborative writing have also been changing. While it was previously uncommon to develop articles in partnership with three or four researchers, in recent years, this methodology has become more adopted by authors in the field. Yet, a standout author in this line hasn't been observed. The data shows many authors writing on the subject, but each author was responsible for one or, at most, two of the 84 collected Articles.

Authors from various countries have been focusing attention on the subject. As Table 3 demonstrates, authors from 27 different countries have been involved in seeking a deeper understanding of this field of study, employing a variety of approaches (Table 5), indicating diverse research directions.

Farrell et al. (2022) point out that some research trends are growing in understanding information provision and investor decisions. A primary strand of research in online financial communities has been observing message boards, focusing on whether the volume and/or sentiment of board activity correlate with trading behavior.

Online investment communities have become popular venues for individual investors to interact with each other, leading to emerging studies (Hong et al., 2020) aimed at predicting future events and observing the impact of crowd characteristics on crowd performance through analysis of these online communities. Platforms like Reddit's r/wallstreetbets and other specific forums have attracted millions of active members. In 2021, r/wallstreetbets surpassed 10 million members (Farrell et al., 2022).

Hong et al. (2020) assert that many factors can influence crowd performance and thus deserve study. There is ample room for research focused on understanding the fragility and vulnerability of investors under the influence of a crowd, which can translate into overall market fragility manifested in pricing. The study "Herd Behavior in Financial Markets: A Review" by Bikhchandani e Sharma (2000) reviewed existing literature on herd behavior in financial markets, exploring how investment decisions are influenced by other investors' behavior and how this can lead to speculative bubbles and financial crises.

A second stream of literature (e.g., Bence et al., 1995; Lerman, 2020) focuses on how investors utilize information. There is a growing concern about the foundations these information users rely on for decision-making. Indeed, viewing and analyzing low-quality advice is at best a waste of investors' time and at worst can lead to significant financial losses (Kadous et al., 2017). As noted by Lerman (2020), the literature still lacks a clear understanding of how individual investors make investment decisions, highlighting the need for further research in the field.

A third stream (e.g., Barber & Odean, 2001; Dimpfl & Kleiman, 2019) examines investor behavior regarding internet information, emphasizing the strong links between investor attention and stock market effects. With the increasingly rapid and abundant dissemination of financial information, there is concern about how this information is processed and whether investors make decisions based on events that gain more prominence, given individuals' limited attention capacity.

In this research strand, there are gaps in understanding and clarifying investors' choices and in comprehending market efficiency in an environment of rapid technological advancements and vast information dissemination. The effect of limited attention on decision-making remains an unresolved issue (Pascual-Ezama et al., 2018). Are individual investors more likely to buy or sell stocks that capture their attention, and does this attention result in positive or negative returns? Does the impact of attention on decision-making vary between developed and emerging markets?

A shift has also been observed concerning the individual investors studied. Earlier studies sought to understand investors directly involved in corporate investments and how they made decisions to invest in chosen companies. With increased trading activity on stock exchanges, research has become more focused on stock market investors. Analyzing changes in investment methods and their impact on the financial market are also crucial points in the field.

As an overview of the field, it can be observed that research on investments and disclosure of accounting information is gradually consolidating the understanding that investors are influenced by both internal and external factors in their decision-making processes.

Regarding internal factors, cognitive effects (such as limited attention and heuristics) and emotional factors (such as investor sentiment) surround the field of investment decisions and need to be better understood, especially to provide a basis for inexperienced or novice investors to guide their decisions.

In terms of external factors, attention monetization policies using social media to capture users require better understanding and regulation. They can also provide support, shifting from more complex and standard financial report types to online communities and virtual information exchange and experiences. There is also increasing engagement of financial advisors through these virtual channels.

There is much research to be done on the virtual environment, its benefits, and challenges. Despite existing research in this direction, the analysis clearly shows gaps and inconclusive results, but rather various points of attention and different paradigms that deserve further exploration.

As opportunities in the field, the field of Information Economics is gaining prominence in academic discussions, emphasizing that the world is in the Information Age and understanding how this information is being made available and absorbed by users is crucial. Studies aiming to analyze investor behavior and the bases used for decision-making, as well as which events capture their attention, are all areas to be explored further.

4.2.2 Reflections on the content

Through the readings conducted and the relevant points presented regarding the content of the articles, it becomes apparent that the field has not yet reached a consolidated approach. Points from distinct perspectives and employing interdisciplinarity (such as market efficiency analysis combined with behavioral studies, the use of marketing and information dissemination channels to capture user attention, increased technological use, and attention-grabbing events) are being studied. When dealing with networks of individuals, each with their own intentions, reaching a conclusive answer becomes challenging.

In addressing accounting information, some studies (Kadous et al., 2017; Blankespoor et al., 2019) seek to understand the relevance of traditional financial reports in relation to users' comprehension abilities. In this context, there is greater concern regarding individual investors, given their limitations in understanding and absorbing these contents, especially with the increasing presence of inexperienced investors or speculators in the market.

Studies propose new formats of reports (Pascual-Ezama et al., 2018) aiming to facilitate decision-making, as well as the need for financial education (Krische, 2019; Prasad et al., 2021), increased regulation by regulatory bodies, and awareness among stakeholders in the stock market through ethical and moral principles (Zwick et al., 2007).

Regarding the integration of social media, some view them as facilitators of information acquisition, especially considering the wisdom of crowds context, which relies on aggregating information in groups, resulting in decisions that can be better than those made individually (Nofer, 2015; Farrell et al., 2022). Others see social media as serving more the producers of information, as a means to capture users' attention and monetize it in order to generate profit for themselves or others, as explained by Attention Economy (Huang & Zhang, 2020).

Therefore, examining the awareness of individual investors and their aspirations has never been more crucial, especially considering their increasing presence in the financial market. In this regard, Rajkumar's study (2021) is one of the few found that directly addresses the relationship between individual investors and brokerage firms, demonstrating a moderate level of dependence of stock investors on brokers for their investment decisions in the market.

In the 1990s, scholars like Bence et al. (1995) pointed out significant differences between investment analysts working for brokerage firms and those working for institutional investors, each attributing advantages to their respective audiences. In this regard, one must inquire about the situation of the individual investor who lacks professional representation.

Furthermore, Nofer (2015) highlighted the wisdom of crowds as superior to the advice of analysts and consultants, presenting it as an expanding alternative. The author raised questions about the changing informational dependence of investors on brokers, and whether brokers and other financial advisors are losing ground in the new informational era or are adapting by leveraging new technologies, engaging in online communities, and using social media for interaction. These and other points regarding investor protection warrant further understanding.

5 CONCLUSIONS

The present study aimed to understand the scientific productivity concerning accounting information within the context of Individual Investors, and the roles of brokerage firms and social media in this informational environment. To achieve this, a bibliometric analysis was conducted on international Articles published in the past 33 years, sourced from the Scopus database.

It was observed that the discussion on this topic has grown over the analyzed period, with participation from researchers from 27 different countries. There was a prevalence of research teams consisting of three researchers collaborating on Articles, and most teams produced only one Article in the field. Authors employed a variety of approaches in their studies, aiming to understand multiple angles and determinants affecting decision-making and the financial market.

There has been an expansion in understanding beyond traditional financial reports being the sole source of accounting information. There is now a new focus on social media and its influence on investor behavior and decisions, as well as its role in shaping the decision models of individual investors and other stakeholders. With the advancement of technology and the emergence of online trading platforms, brokerage firms have become a primary source of access to a wide range of financial and accounting information. Many brokerages offer robust trading platforms that include technical and fundamental analysis tools, interactive charts, and real-time news feeds, allowing investors to monitor company performance and conduct detailed financial analyses.

Therefore, awareness among investors about brokerage firms is crucial, as well as awareness among other stakeholders. Filtering information is necessary to direct attention towards the best investment paths. Mechanisms ensuring investor protection are essential, along with ethical and moral policies for trading and disseminating information. After all, obtaining a wide range of information does not necessarily mean obtaining quality information or knowing how to make good use of it, including potential difficulties in interpreting data; these are challenging points for individual investors.

It can be observed that research on investments and the disclosure of accounting information is gradually solidifying the understanding that investors are influenced by both internal and external factors in their decision-making processes. There is much to be explored about the virtual environment, its benefits, and challenges. Despite existing research in this area, the analysis shows clear gaps where studies do not offer conclusive and definitive results, but rather highlight various points of attention and different paradigms that deserve further exploration.

In terms of opportunities in this field, the field of Information Economics is gaining ground in academic discussions, emphasizing the crucial aspect of how information is made available and absorbed by users. Studies analyzing investor behavior, the bases used for decision-making, and identifying which events capture investor attention are all areas ripe for exploration and further study.

A limitation found in the analyzed studies is the inability to capture the opinion of information users; few studies manage to obtain real investor bases to be contacted and analyzed. There is also a lack of research focused on developing countries where economic and investment regulations are still emerging, as well as consolidating findings in the field, as many perspectives are demonstrated and conflicting findings arise.

The research is limited by the subjectivity involved in data collection instrumentation, including the elimination of articles judged outside the theme, as well as the use of keywords to search for articles, which must be present in the title, abstract, or keywords of the articles. Furthermore, the study only used an international scenario, thus not allowing for a comparison with the national context.

The use of the Scopus database also limits the scope of articles developed on the subject, as some may not be included in the database used, especially considering it is a private database that requires financial investment by researchers to use it.

For future research, it is suggested to use more than one database to expand the research scope, as well as employ more keywords and compare with the national context. Empirical research with individual investors and brokerage firms also becomes interesting for a better understanding of how these users are dealing with rapid technological advancements and the increasing flow of information.

REFERENCES

Ahmad, P., & Slots, J. (2021). A bibliometric analysis of periodontology. *Periodontology 2000*, *85*(1), 237-240. https://doi.org/10.1111/prd.12376

Barber, B. M., & Odean, T. (2001). The internet and the investor. *Journal of Economic Perspectives*, *15*(1), 41-54. https://doi.org/10.1257/jep.15.1.41

Bence, D., Hapeshi, K., & Hussey, R. (1995). Examining investment information sources for sophisticated investors using cluster analysis. *Accounting and Business Research*, *26*(1), 19-26. https://doi.org/10.1080/00014788.1995.9729496

Blankespoor, E., Dehaan, E., Wertz, J., & Zhu, C. (2019). Why do individual investors disregard accounting information? The roles of information awareness and acquisition costs. *Journal of Accounting Research*, *57*(1), 53-84. https://doi.org/10.1111/1475-679X.12248

Bijlsma, M. J., & Zwart, G. T. (2013). *The changing landscape of financial markets in Europe, the United States and Japan* (No. 2013/02). Bruegel working paper. https://hdl.handle.net/10419/78013

Bikhchandani, S., & Sharma, S. (2000). Herd behavior in financial markets. *IMF Staff papers*, 47(3), 279-310.

Boulton, T., Francis, B. B., Shohfi, T., & Xin, D. (2021). Investor awareness or information asymmetry? Wikipedia and IPO underpricing. *Financial Review*, *56*(3), 535-561. https://doi.org/10.1111/fire.12276

Brashier, N. M., & Marsh, E. J. (2020). Judging truth. *Annual review of psychology*, *71*, 499-515. https://doi.org/10.1146/annurev-psych-010419-050807

Castro, C., & Pham, A. K. (2020). Is the attention economy noxious?. *Philosophers' Imprint*, *20*(17), 1-13. http://hdl.handle.net/2027/spo.3521354.0020.017

Cloarec, J. (2020). The personalization–privacy paradox in the attention economy. *Technological Forecasting and Social Change*, *161*, 120299. https://doi.org/10.1016/j.techfore.2020.120299

Comissão de Pronunciamentos Contábeis. (2018). CPC (00 - R2) - Estrutura Conceitual para Relatório Financeiro. http://www.cpc.org.br/CPC/Documentos-Emitidos/Pronunciamentos/Pronunciamento?Id=80

Da, Z., Engelberg, J., & Gao, P. (2011). In search of attention. *The journal of finance*, *66*(5), 1461-1499. https://doi.org/10.1111/j.1540-6261.2011.01679.x

Dimpfl, T., & Kleiman, V. (2019). Investor pessimism and the German stock market: Exploring Google search queries. *German Economic Review*, *20*(1), 1-28. https://doi.org/10.1111/geer.12137

Farrell, M., Green, T. C., Jame, R., & Markov, S. (2022). The democratization of investment research and the informativeness of retail investor trading. *Journal of Financial Economics*, *145*(2), 616-641. https://doi.org/10.1016/j.jfineco.2021.07.018

Franck, G. (2019). The economy of attention. *Journal of sociology*, *55*(1), 8-19. https://doi.org/10.1177/1440783318811778

Guo, T., Finke, M., & Mulholland, B. (2015). Investor attention and advisor social media interaction. *Applied Economics Letters*, *22*(4), 261-265. https://doi.org/10.1080/13504851.2014.937030

PH, H., & Uchil, R. (2020). Impact of investor sentiment on decision-making in Indian stock market: An empirical analysis. *Journal of Advances in Management Research*, *17*(1), 66-83. https://doi.org/10.1108/JAMR-03-2019-0041

Hendricks, V. F., & Vestergaard, M. (2019). *Reality lost: Markets of attention, misinformation and manipulation*. Springer Nature. https://doi.org/10.1007/978-3-030-00813-0

Hong, H., Ye, Q., Du, Q., Wang, G. A., & Fan, W. (2020). Crowd characteristics and crowd wisdom: Evidence from an online investment community. *Journal of the Association for Information Science and Technology*, *71*(4), 423-435. https://doi.org/10.1002/asi.24255

Huang, Y., & Zhang, H. (2020). Does individual investors' attention influence underwriters' IPO pricing?. *Applied Economics*, *52*(34), 3680-3687. https://doi.org/10.1080/00036846.2020.1720904

Kadous, K., Mercer, M., & Zhou, Y. (2017). Undue influence? The effect of social media advice on investment decisions. https://doi.org/10.2139/ssrn.2968407

Kawa, L. (2020). Reddit's profane, greedy traders are shaking up the stock market. *Bloomberg Businessweek*. https://www.bloomberg.com/news/articles/2020-02-26/reddit-s-profane-greedy-tradersare-shaking-up-the-stock-market

Krische, S. D. (2019). Investment experience, financial literacy, and investment-related judgments. *Contemporary Accounting Research*, *36*(3), 1634-1668. https://doi.org/10.1111/1911-3846.12469

Lerman, A. (2020). Individual investors' attention to accounting information: evidence from online financial communities. *Contemporary Accounting Research*, *37*(4), 2020-2057. https://doi.org/10.1111/1911-3846.12603

Lopez, F. H., Prates, W. R., Valcanover, V. M., & Costa Jr, N. C. A. D. (2021). Efeito disposição em investimentos: investidores individuais e institucionais agem de maneira diferente?. *REAd. Revista Eletrônica de Administração (Porto Alegre)*, *27*, 210-231. https://doi.org/10.1590/1413-2311.316.101702

Nguyen, M. H., & Vuong, Q. H. (2020). In search of a new cultural value: The second finding from a bibliometric analysis on biodiversity. https://doi.org/10.31219/osf.io/gzkfj

Nicholls, J. A. (2020). Integrating financial, social and environmental accounting. *Sustainability Accounting, Management and Policy Journal*, *11*(4), 745-769. https://doi.org/10.1108/SAMPJ-01-2019-0030

Nixon, B. (2017). COMPASS| Critical Communication Policy Research and the Attention Economy: From Digital Labor Theory to Digital Class Struggle. *International Journal of Communication*, *11*, 13.

Nofer, M. (2015). *The value of social media for predicting stock returns: preconditions, instruments and performance analysis*. Springer. https://doi.org/10.1007/978-3-658-09508-6

Pascual-Ezama, D., Paredes, M. R., & de Liaño, B. G. G. (2018). Shorter and easier is more useful: A longitudinal analysis of how financial report enforcement affects individual investors. *Journal of Behavioral and Experimental Economics*, *74*, 29-37. https://doi.org/10.1016/j.socec.2018.03.002

Prasad, S., Kiran, R., & Sharma, R. K. (2021). Influence of financial literacy on retail investors' decisions in relation to return, risk and market analysis. *International Journal of Finance & Economics*, *26*(2), 2548-2559. https://doi.org/10.1002/ijfe.1920

Puspitaningtyas, Z. (2017). Estimating systematic risk for the best investment decisions on manufacturing company in Indonesia. *Investment management and financial innovations*, *14*(1), 46-54. https://doi.org/10.21511/imfi.14(1).2017.05

Rajkumar, K. P., & Kavitha, N. L. (2017). A Study on the Influence of Stock Broker on Investor's Decision Making with Special Reference to Bombay Stock Exchange. *Indian Journal of Research in Capital Markets*, 25. https://doi.org/10.17010/ijrcm/2017/v4/i2/116086

Rajkumar, K. P. (2021). The evaluation pattern of Indian investors on role of stockbrokers to determination of investment decision. *International Journal of Intelligent Enterprise*, *8*(1), 18-28. https://doi.org/10.1504/IJIE.2021.112325

Santos, G. C. (2015). Análise bibliométrica dos artigos publicados como estudos bibliométricos na história do Congresso Brasileiro de Custos. *Pensar Contábil*, *17*(62).

Silva Brasileiro, S. H., & Silva, A. V. (2017). O processo de tomada de decisão em cenários financeiros: uma revisão teórica. *Blucher Education Proceedings*, *2*(1), 220-228. https://doi.org/10.5151/sma2016-020

Sitinjak, E. L. M., Haryanti, K., Sasmito, Y. W. D., & Kurniasari, W. (2021, July). Investor style in stock investment decisions. In *2021 International Conference on Computer & Information Sciences (ICCOINS)* (pp. 252-257). IEEE. https://doi.org/10.1109/ICCOINS49721.2021.9497231

Sofyan, R., Putra, D. G., & Aprayuda, R. (2020, November). Does the Information on the Internet Media Respond to the Stock Market?. In *The fifth Padang international conference on economics education, economics, business and management, accounting and entrepreneurship (PICEEBA-5 2020)* (pp. 510-520). Atlantis Press. https://doi.org/10.2991/aebmr.k.201126.057

Tang, M., Liao, H., Wan, Z., Herrera-Viedma, E., & Rosen, M. A. (2018). Ten years of sustainability (2009 to 2018): A bibliometric overview. *Sustainability*, *10*(5), 1655. https://doi.org/10.3390/su10051655

Vozlyublennaia, N. (2014). Investor attention, index performance, and return predictability. *Journal of Banking & Finance*, *41*, 17-35. https://doi.org/10.1016/j.jbankfin.2013.12.010

Zhou, J., Ye, S., Lan, W., & Jiang, Y. (2021). The effect of social media on corporate violations: Evidence from Weibo posts in China. *International Review of Finance*, *21*(3), 966-988. https://doi.org/10.1111/irfi.12309

Zwick, D., Denegri-Knott, J., & Schroeder, J. E. (2007). The social pedagogy of Wall Street: Stock trading as political activism?. *Journal of Consumer Policy*, *30*, 177-199. https://doi.org/10.1007/s10603-007-9037-2

CONFLICT OF INTEREST

The authors assert that there is no conflict of interest related to this submitted work.

AUTHOR CONTRIBUTIONS

Roles	1st author	2nd author
Conceptualization	♦	
Data curation	♦	
Formal analysis	♦	
Funding acquisition		
Investigation	♦	♦
Methodology	♦	
Project administration		♦
Resources		
Software		
Supervision		♦
Validation		
Visualization	♦	♦
Writing – original draft	♦	
Writing – review & editing		♦