

# Economic Fraud and Associated Risks: An Integrated Bibliometric Analysis Approach

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**Abstract:** This study offers a comprehensive insight into the realms of economic fraud and risk management, underscoring the necessity of adaptability to evolving technologies and shifts in financial market dynamics. Through the application of bibliometric methodologies, this study meticulously maps the relevant literature, delineating influential works, notable authors, collaborative networks, and emerging trends. It reviews key research contributions within the field, alongside reputable journals and institutions engaged in academic research. The examination highlights the logical, conceptual, and social interconnections that define the landscape of economic fraud and associated risks, elucidating how these findings inform the understanding, mitigating, and combating of the risk of fraud. Our bibliometric analysis methodology is grounded in the utilization of the Scopus database, employing rigorous filtering and extraction processes to obtain a substantial corpus of pertinent articles. Through a fusion of performance analysis and science mapping, our investigation elucidates central themes and visually represents the interrelationships between studies. Our research outcomes underscore the frequency of paper publications across diverse regions, with particular emphasis on the predominant scientific output from the US and China. Additionally, trends in academic citations are identified, indicative of the significant impact of papers on academic research and the formulation of public policies. By means of bibliometric analysis, this study not only consolidates existing knowledge but also catalyzes the exploration of future research trajectories, emphasizing the imperative of addressing these issues with heightened scientific rigor.

**Keywords:** economic fraud; risks; financial crisis; stock market; company risk; bibliometric analysis



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## 1. Introduction

Bibliometric analysis concerning economic fraud and its correlated risks holds significant relevance for both academia and financial professionals. Considering the ever-evolving nature of economic fraud, adaptation to emerging technologies, legal amendments, and the fluidity of global financial environments is imperative. Within this dynamic landscape, a comprehensive grasp of current research is indispensable for formulating efficacious strategies aimed at the deterrence and mitigation of fraudulent activities.

The novelty of this bibliometric investigation stems from its exhaustive methodology and utilization of sophisticated techniques to deconstruct and scrutinize extensive scholarly literature. Through the application of bibliometric methodologies, the research endeavors to construct a meticulous academic landscape, elucidating not only the prominent papers and authors but also unveiling interdisciplinary collaborative connections and nascent trends within the domain.

Furthermore, the examination enhances its significance by pinpointing areas of knowledge deficiency, thereby establishing the groundwork for prospective research trajectories. Thus, our investigation facilitates a more systematic academic discourse geared towards

formulating practical resolutions to the present and foreseeable intricacies of economic fraud. Additionally, the findings have potential implications for public policy formulation and offer guidance for organizations seeking to fortify their internal control mechanisms and compliance frameworks. Hence, the significance of this bibliometric investigation encompasses dual features: furnishing a robust informational foundation for practitioners within the domain, while concurrently delineating a blueprint for innovation and the formulation of novel methodologies for combating economic fraud and enhancing risk management practices.

The intense scholarly attention towards this subject is evidenced by the substantial volume of research devoted to delineating, comprehending, and mitigating this multifaceted phenomenon. Consequently, conducting a meticulous bibliometric examination at this juncture proves timely, furnishing a lucid portrayal of the existing knowledge landscape and steering forthcoming research endeavors through the identification of prevailing trends and untapped realms. The primary objective of this bibliometric investigation is to address two pivotal research inquiries, which will serve as guiding principles in the review of the extant literature:

**RQ1:** What are the primary contributors in terms of research, authors, journals, and countries within this field?

**RQ2:** What are the key topics and conceptual, intellectual, and social frameworks associated with economic fraud and risk?

This article aims to delineate the academic literature and to uncover the key trends of research within the domain of economic fraud and risk, discern the seminal papers and authors, and pinpoint the highly cited studies and esteemed journals that are pivotal in the progression and diffusion of knowledge. Moreover, the analysis will illuminate the rational, conceptual, and communal interrelations characterizing the field, accentuating the collaborative networks and entities instrumental in advancing the comprehension of economic fraud.

Essentially, via the exploration of these research inquiries, our bibliometric inquiry will not merely investigate the networks of current knowledge but also open avenues for prospective research, underscored by the imperative to approach this subject matter with heightened scientific and professional concern.

## 2. Literature Review

This section, designed to investigate prevalent schools of thought and significant discoveries within the realm of economic fraud, is organized into four 'state-of-the-art' segments. The state-of-the-art segment 1 will delineate the evolving nature and diverse definitions of fraud, emphasizing its intricate nature and underlying deceptive intent, which distinguishes it from inadvertent errors. The state-of-the-art segment 2 will expound upon the dynamics of economic illicit activities, illustrating the spectrum of behaviors and the involvement of multiple entities. The state-of-the-art segment 3 will particularly focus on the significance of whistleblowing and the efficacy of preventative and detective mechanisms, acknowledging whistleblowing as an indicator of organizational ethics and transparency. In state-of-the-art segment 4, we delve into the ramifications and mitigation of fraud risk, spotlighting the broader implications of financial fraud and the anti-fraud strategies serving as the frontline defense against this pervasive risk. This framework will contextualize our discourse within a comprehensive examination of contemporary literature, elucidating the perceptions, approaches, and preventative measures surrounding economic fraud in its diverse manifestations.

**State-of-the-Art Segment 1.** *Economic fraud, historically resilient, demonstrates adaptability and manifests through a multitude of definitions and interpretations, underscoring its complexity across diverse social and economic landscapes. Unlike inadvertent errors, fraud is discerned by its deliberate intent to deceive or mislead.*

Throughout history, instances of fraud can be traced as early as 300 BC, exemplified by the case of a Greek merchant named Hegestratos, who obtained a substantial insurance policy called bottomry and intentionally defaulted on it (Desai 2020). Subsequently, a succession of significant financial scandals in recent decades further illustrates the historical trajectory of fraudulent activities (Petra and Spieler 2020). Rustiarini et al. (2019) examine the determinants of fraud in public procurement, emphasizing individuals' fraudulent behavior through the lens of the fraud diamond theory, encompassing pressure, opportunity, rationalization, and capability. In another research vein, Buchholz et al. (2020) present evidence, from the private sector, of both income-increasing and income-decreasing Earnings Management (ABEM) by highly narcissistic CEOs, suggesting their focus on influencing stakeholders' perception of current and future earnings, which is indicative of self-serving behavior rather than informative accounting choices.

Indeed, while there exist diverse and noteworthy perspectives on the definition of fraud, the concept of fraud inherently carries a sense of disorder (Dupont and Karpoff 2020). According to Usman (2023), criminologists commonly concur that fraud results from three key factors: the intention to commit fraud, the opportunity to perpetrate it, and the ability to evade legal repercussions or penalties. Through meticulous investigation during the performance of their duties, the auditor encounters a spectrum of errors and fraudulent activities. Utilizing audit evidence, they discern whether the observed mistake stemmed from fraud or error, thereby distinguishing between intentional deception and unintentional inaccuracies within the audited processes (Abdumannonovna and Qizi 2024).

Throughout human history, economic crime has been a persistent phenomenon and is likely to remain so in the foreseeable future. These crimes stem from various factors, some more prevalent than others, and their occurrence is surpassed only by the multitude of potential motives behind them. A broad spectrum of offenses falls under the purview of economic crimes, encompassing fraud, corruption, and tax-related transgressions such as tax evasion and tax fraud, among others. Shonhadji and Maulidi (2022) posit a general assertion that perpetrators of white-collar crimes exhibit elevated levels of intelligence, determination, and ambition in their illicit endeavors. Additionally, there is evidence suggesting that they possess heightened levels of energy, creativity, adept problem-solving abilities, and assertiveness. Such entrepreneurial and leadership qualities are commonly associated with successful business proprietors as a prevailing norm. Scholars emphasize the pivotal role of control systems in aligning employee capabilities, activities, and performance with organizational goals (Munteanu 2018), with risk assessment and monitoring identified as effective measures to diagnose potential fraud risks, thereby deterring threats to organizational aims (Shonhadji and Maulidi 2022; Amjad et al. 2022).

Fraud constitutes a subset of the broader category termed irregularities, which encompasses infractions against legality, regularity, or conformity. An irregularity denotes a deviation from the prescribed norms, standards, or regulations, and is synonymous with a breach thereof. Deficiencies, inaccuracies, and oversights exemplify instances of defects, deviations, and malfunctions, each representing a breach from the regulatory framework or procedural code, hence constituting unintentional errors, omissions, or mistakes within a process.

Fundamentally, fraud entails a deliberate act aimed at deceit for financial gain, encompassing irregularities and unlawful behaviors. It entails violating a specific obligation and/or misappropriating funds from their intended use, and it may also involve the failure to disclose pertinent information. However, fraud encompasses a range of definitions, with the most inclusive being that it can be perpetrated by any individual seeking to attain personal benefits, inflict harm, or subject others to unjust or deceitful risk.

Fraud can also be delineated as providing false testimony within a legal context. It may involve withholding information that a third party is entitled to possess, particularly if it holds special significance necessitating disclosure. Additionally, fraud could encompass the misuse of authority, where individuals fail to ensure that their actions align with safeguarding the financial interests of others, thereby exploiting their position. Due to

legislative stipulations and the potential for interpretation, instances have arisen where internal auditors have uncovered such scenarios (Batrancea et al. 2020). However, adherence to professional ethical standards, including the principle of confidentiality, has in practice prevented these discoveries from being included in audit opinions. Consequently, the identification of such acts could not be incorporated into audit evaluations due to the inherent subjectivity introduced by ethical considerations. From a business standpoint, fraud pertains to the misappropriation of resources through deceptive practices, suppression of information, or falsification of financial records.

These definitions illustrate that fraudulent behavior can be identified either through interdisciplinary inquiries conducted internally, as part of organizational measures, through legal proceedings in civil litigation, or through law enforcement investigations as part of criminal inquiries. Other criminal activities, such as extortion and money laundering, which may occur externally to the organization, could also be associated with fraud. In practice, it has been observed that all aspects related to irregularities or fraud carry significant importance and pose challenges for both internal auditors and management personnel.

At the level outlined by the Association of Certified Fraud Examiners (ACFE), fraud is broadly categorized into three primary classifications: fraudulent misrepresentation, misappropriation of assets, and corruption. Hashim et al. (2020) exposes a heightened fraud risk in state-controlled companies engaging with multiple stakeholders, despite adherence to standard procedures and regulations, attributed to a combination of opportunities, incentives, and rationalizations for fraudulent behavior. Fraudulent misrepresentation pertains to deceitful acts involving internal documentation. Misappropriation of assets involves fraudulent activities concerning cash, cash equivalents, stocks, and inventory items, while corruption encompasses conflicts of interest, bribery, illegal gratuities, and economic extortion (Ang 2020).

Considering the aforementioned insights, it is imperative to underscore the elements posing a risk of fraud. The following scenarios warrant consideration when evaluating fraud risk: managerial misconduct, collusion among employees, inadequate segregation of duties, unauthorized resource utilization, conflicts of interest, and improper handling of confidential documents or data (Petra and Spieler 2020). To effectively probe potential instances of fraud and error during an audit engagement, protocols and guidelines delineating the auditor's responsibilities must be established. Moreover, the auditor should factor in the likelihood of significant misstatements in the financial statements stemming from fraud or error when strategizing and executing audit procedures, analyzing the findings, and formulating ensuing reports (Mironiuc et al. 2012). Consequently, fraud can also encompass inadvertent actions by one or more individuals within an organization's management, its personnel, or external parties.

**State-of-the-Art Segment 2.** *Economic crime encompasses an extensive array of illicit activities, spanning from tax evasion to corruption, indicative of a diverse spectrum of unlawful conduct. The perpetrators of such crimes exhibit a varied profile, underscoring the necessity for flexible and clearly articulated anti-fraud strategies.*

Tax evasion stands as the primary economic transgression to be delineated. As articulated by Savić et al. (2022) or Vanhoeyveld et al. (2020), tax evasion involves deliberate engagement in illicit practices to evade tax obligations. The characterization of a company's behavior as fraudulent or legitimate can vary, depending on the particular sector in which it operates. For instance, the omission of income from an annual tax declaration exemplifies a straightforward form of tax evasion. Distinct tax regulations and practices are evident across sectors due to differing market conditions and legal requirements (Pérez López et al. 2019). The term 'tax evasion' denotes the fraudulent concealment or manipulation of income to diminish one's tax responsibility, such as falsifying financial records, suppressing income, or submitting falsified tax filings. According to Murorunkwere et al. (2022), the analysis showcases the efficacy of artificial neural networks in detecting tax fraud, emphasizing the relevance of business type, duration, and size for income tax fraud detection.

Tax fraud necessitates either deliberate actions or concrete awareness of wrongdoing (Warren and Schweitzer 2021). For instance, a taxpayer may knowingly transfer assets to a foreign trust, fully cognizant that, if taxed, they can argue inability to pay taxes by virtue of the assets being held in the trust. Consequently, the taxpayer acknowledges the possibility of resolving the issue through negotiation with the tax authorities. The essence of the issue revolves around discerning whether such conduct could be classified as tax fraud, as it pertains to minimizing tax obligations below the standard amount owed. Should such conduct be deemed fraudulent when perpetrated against a non-governmental entity, it must equally be considered fraudulent and criminal when perpetrated against a governmental entity (Bodó and Janssen 2022). According to the study of Ratmono and Frendy (2022), developed in the Indonesian context, occupational fraud in Rural Development Banks (RDBs) correlates with opportunity and pressure, while a robust ethical culture can attenuate this association. It suggests that investing in ethical culture could mitigate two key fraud risk factors, contributing to the advancement of the fraud diamond theory in the rapidly growing banking industry of a developing economy.

Drawing from the International Standard on Auditing 240 (ISA) (2010), fraud is characterized as an intentional act perpetrated by one or more individuals within management, those entrusted with governance responsibilities, employees, or third parties, with the deliberate use of deceit to secure an unfair or unlawful advantage. This deception is employed for illicit gains. Fraud poses significant financial risks and reputational damage to businesses, with all firms susceptible to economic crime. Rosnidah et al.'s (2022) study investigates auditors' utilization of big data analytics for fraud detection and prevention, analyzing benefits, barriers, and methodological approaches through a comprehensive literature review from various sources and databases. Software developers face challenges in adapting systems to combat evolving fraud types, underscoring the indispensability of human auditing skills. Technology usage variations between private and public sectors' fraud protection measures have the potential to influence or incur fraudulent incentives on revenue, reputation, and customer trust. Insights into fraud motivations, protection protocols, and their effects on firm performance offer valuable contributions to shaping best practices and strategies for preventing, detecting, and managing accounting fraud (Yaqoub et al. 2023).

Vona (2012) presents a comprehensive definition of financial fraud, which encompasses several key elements. It involves actions conducted in the name of, by, or on behalf of an organization, constituting deliberate and covert acts perpetrated by internal or external actors. Typically involving illicit behaviors or indicating malfeasance, such as financial misrepresentations, policy violations, ethical breaches, or matters related to perception, these actions result in financial loss, diminished company value, reputational harm, or the unauthorized acquisition of benefits, either for personal gain or by other parties (Demetriades and Owusu-Agyei 2022).

As outlined by Desai (2020), fraud manifests when the following three components concur: Firstly, there is the deliberate misrepresentation of a significant fact or occurrence by an individual or entity. Secondly, a false or heedless statement is communicated to the victim, wherein the issuer of the statement disregards the truth. Lastly, as a consequence of the misrepresentation, the victim places reliance on the statement and takes corresponding actions. It is substantiated that the victim incurred financial losses or relinquished property due to their reliance on and action based on the misrepresentation. In essence, intentional misrepresentation is integral to the occurrence of fraud (Shonhadji and Maulidi 2022).

**State-of-the-Art Segment 3.** *Whistleblowing is gaining prominence as a crucial mechanism for detecting and preventing fraud, underscoring the significance of ethical and efficient reporting avenues within organizations. Internal control and auditing mechanisms are acknowledged for their pivotal role in enhancing corporate governance and mitigating the risks associated with fraud.*

The concept of whistleblowing is also pertinent to our study. It refers to the act of reporting an incident or situation that may involve the perpetration of abuse or fraud.

Whistleblowing represents one of the strategies employed in response to abuse, requiring individuals to inform relevant authorities, typically management within the organization, about the occurrence or likelihood of misconduct. Defining this phenomenon poses challenges, particularly due to the absence of a clear definition in both the academic literature and legal sources. Despite efforts made in this regard (Putra et al. 2022), no definitive legal definition has been established.

The term “whistleblowing” denotes the act of reporting unethical, illegal, or dubious events, or sharing information pertaining to them. Essentially, whistleblowing entails disclosing or conveying information regarding fraud, corruption, and unethical conduct to the appropriate authority or institution. An adverse situation may be observed directly, or indicators suggesting its potential occurrence may be noted. Various avenues exist for reporting irregularities, including direct communication with supervisors or board members, or utilizing anonymous channels through which suspicions can be conveyed, such as through a designated platform, an entity-created program, or by way of an anonymous written notification (Clark and Skousen 2023).

Several studies have delineated whistleblowing as an employee practice involving the disclosure of illegal, unethical, or illicit practices within the workplace (Guthrie and Taylor 2017). Apart from employee disclosure (Robinson et al. 2012), this mechanism is also deployed to combat corruption, uncover economic fraud, and even advocate for environmental conservation (Oelrich 2023).

**State-of-the-Art Segment 4.** *The repercussions of financial fraud extend beyond immediate economic ramifications, impacting corporate reputation and stakeholder confidence. A contemporary strategy for managing fraud risk entails acknowledging the components of the ‘fraud triangle’—opportunity, pressure, and rationalization—and instituting holistic anti-fraud initiatives aimed at thwarting, identifying, and remedying fraudulent activities.*

The fraud triangle reconceptualizes social, political, and economic dynamics by intricately interweaving translations that endorse and standardize the deployment of organizational surveillance mechanisms for risk management, attributed to perceived individual moral vulnerabilities. Consequently, alternative perspectives on fraud, which highlight the broader societal, political, and institutional influences in perpetuating or combatting fraudulent activities, are marginalized, or overlooked (Morales et al. 2014; Cheliatsidou et al. 2023). Nonetheless, each of these methodologies predominantly centers on perpetrator behavior—attitudes, rationales, pressures, work milieu, and personality traits—rather than explicitly identifying and delineating distinct financial behaviors associated with fraudulent enterprises.

In order to prevent, detect, and investigate fraud, it is necessary to understand the underlying mechanisms behind various fraud schemes. Amid concerns regarding the potential concealment of criminal transactions, the transparent nature of blockchain ensures public accessibility to all transaction data, yet as the volume of cryptocurrency wallets and transactions proliferates, detection complexities escalate (Aziz et al. 2023). The decentralized nature of blockchain further complicates identification processes in the event of fraudulent activities, exacerbated by user anonymity, prompting heightened scrutiny. Numerous research endeavors have focused on detecting suspicious transactions within expansive financial networks, often leveraging models that analyse transaction timestamps and quantities as features to identify anomalies (Hyvärinen et al. 2017; Munteanu et al. 2023). These efforts seek to refine methodologies and assess the efficacy of fraud detection models, with the overarching aim of enhancing strategies for identifying fraudulent actions within blockchain systems.

Management fraud in financial situations results in the largest number of losses to the company among all types of fraud committed by managers (Savić et al. 2022). It involves distorting financial truth to gain certain advantages or to conceal potential losses or negative performances. Fraud in financial situations is characterized by improper

recognition of revenues, overvaluation of assets, undervaluation of expenses and liabilities, asset misappropriation, and improper reporting (Rosnidah et al. 2022).

Until recently, companies did not consider fraud prevention as a primary objective within their internal control system. Fraud prevention action was implicitly considered within overall objectives, compliance, and internal controls, and therefore was not regarded as a structured program with clear and explicit purposes for fraud prevention and detection (Handoyo and Bayunitri 2021). Furthermore, in the past, shareholders, the board of directors, and management often viewed fraud cases as a result of faulty internal controls that occurred only in rare instances.

However, as many high-profile fraud cases were uncovered within some of the most prominent multinational corporations in the early 21st century, this perception of fraud prevention dramatically changed. Presently, fraud is considered one of the most significant risks facing an organization, as it has a close relationship with market, credit, legal, and reputational risks (Wang and Chen 2020).

There is also a newfound awareness among investors regarding the potential risks associated with fraud, as the collateral losses generated by a fraud usually exceed the direct financial losses resulting from that fraud. Negative publicity can also cause collateral losses to an organization, which can severely impact its reputation. Consequently, investors will lose trust in the leadership and management of the organization, resulting in a decrease in the company's value. Additionally, it has a negative effect on all business relationships and employee morale. Due to this circumstance, investors have mandated the development of anti-fraud mechanisms aimed at preventing and timely detecting fraud. Increasing attention is being paid to internal control and internal audit as key elements of these mechanisms (Putra et al. 2022).

### 3. Methodology

Bibliometric methods have witnessed a surge in popularity in recent years for evaluating the advancement of academic fields. Utilizing various bibliometric software, researchers can obtain visual representations that facilitate a comprehensive observation of research trends, exploration of intricate relationships among studies, and identification of new research directions. Vos Viewer is a valuable instrument for analyzing science, leveraging bibliometrics to synthesize vast datasets and depict the intellectual terrain and emerging trends within a field (Van Eck and Waltman 2010). In the realm of science mapping, bibliometrics addresses three primary aspects: firstly, establishing the knowledge foundation of a research area by laying the groundwork for intellectual structure frameworks; secondly, depicting the conceptual structure through representative visualizations; and thirdly, enabling the observation of social structures via maps illustrating connections within the scientific community.

Our methodology encompassed several sequential steps. Initially, given the broad scope of our inquiry, our foremost objective was to identify dependable and pertinent bibliometric sources to ensure the integrity of our analysis. Acknowledging the prevailing view among scholars that a sample size of 300 articles suffices for meaningful bibliometric investigations (Scott et al. 2009), we formulated a research string to procure a pertinent and adequate sample. Subsequently, we refined our focus to integrate economic risk, a pivotal term within our research domain. Given the exploratory nature of our inquiry, we conducted both performance analysis and science mapping. The final phase entailed the retrieval of pertinent data, followed by meticulous filtering to facilitate the bibliometric analysis and subsequent reporting of findings.

We selected Scopus among online bibliographic databases, since Scopus is widely regarded as a valuable resource for academic research due to its extensive coverage, citation analysis capabilities, author profiles, search and analysis tools, and quality control measures. Many researchers and institutions rely on Scopus for accessing and analyzing scholarly literature in their respective fields. However, it is essential to note that no database is perfect, and researchers should always critically evaluate the relevance and quality of the

literature they find, regardless of the database used. Considering the investigative character of our inquiry, we implemented a comprehensive query methodology to explore relevant publications. Our research string specifically targeted the terms “economic” AND “fraud” AND “risk” across all titles, abstracts, and keywords indexed within the Scopus database.

Initially, our search yielded 647 documents meeting the specified criteria, covering the period from 1969 to 2024. While the earliest identified study in our dataset dates back to 1969, a noticeable decrease in contributions was observed until 1993, prompting the exclusion of data prior to this year from our sample. Considering that studies from 2024 are still undergoing indexing, this year was omitted from the analysis. Further refinement involved applying filters for the English language and document types, including only articles and conference papers. Additionally, incomplete documents and preprints were excluded from the sample, resulting in a final dataset of 421 papers eligible for bibliometric analysis using Vos Viewer software. The description of our sample is presented in Table 1.

**Table 1.** Description of analyzed variables.

Variable	Value
Sample period	1993–2023
Sources (Journals, Conference proceeding)	337
Sample studies	421
Number of authors	1171
Single-authored studies	97
Keywords	1397

Table 1 provides a comprehensive overview of the variables analyzed in this study and furnishes essential descriptive information essential for contextualizing the subsequent analyses and findings of this study. The sample period spans from 1993 to 2023, encapsulating a substantial timeframe for the examination of scholarly contributions within the field. The sources considered, including journals and conference proceedings, amount to 337, reflecting the diverse range of literature incorporated into the analysis. A total of 421 papers were sampled for detailed investigation, involving the collaboration of 1171 authors across various publications. Notably, 97 papers were authored by a single individual, indicating a significant proportion of independent scholarly work within the dataset. Additionally, the presence of 1397 keywords underscores the breadth of topics and themes addressed within the analyzed literature, highlighting the multifaceted nature of the research domain under scrutiny.

This study employed a multifaceted approach to assess the scientific output in the area of economic fraud and associated risks. To grasp the evolving publication patterns and scholarly influence, an additional bibliometric analysis was conducted leveraging Bibliometrix and VosViewer software. This examination revealed notable fluctuations in both publication frequency and impact, hinting at shifts in research emphasis or quality across time. Bibliometrix facilitated the quantitative assessment of scientific output within the subject area, while VosViewer enabled a detailed exploration of research trends and keyword associations. Thus, through the integration of diverse analytical tools and methodologies, ranging from statistical evaluations to bibliometric analyses and data visualizations, a comprehensive and dynamic understanding of academic interests was attained. This approach allowed for a thorough comprehension of scholarly production and its significance within the examined field.

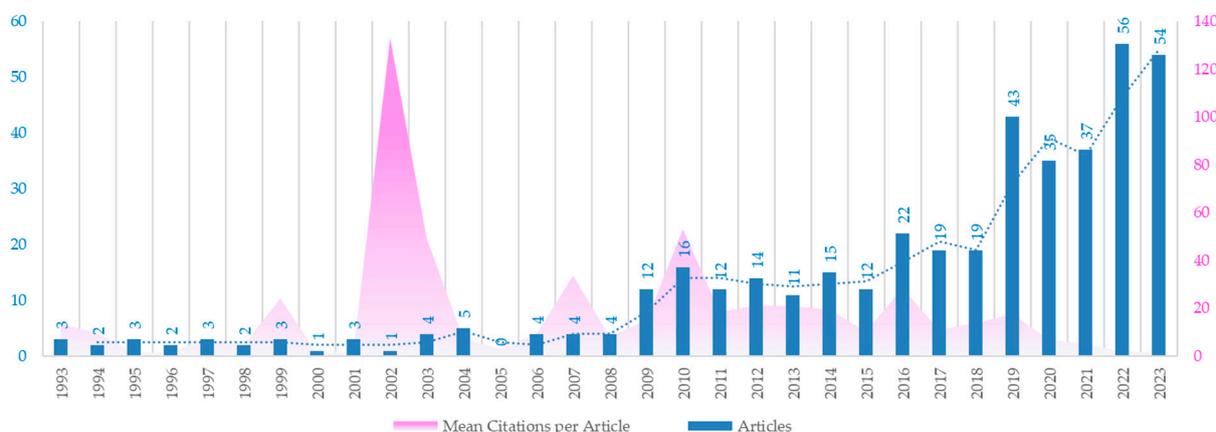
#### 4. Results and Discussion

The results of Research Question 1 (RQ1) focus on identifying the primary contributors in terms of research output, authors, journals, and countries within the studied field. This analysis offers valuable insights into the distribution of scholarly contributions and the prominence of key stakeholders shaping the academic landscape. By examining the volume of research output, the prevalence of prolific authors, the impact of prominent journals,

and the geographical distribution of scholarly activity, this section aims to elucidate the key players driving advancements and discourse within the field. The following presentation of results will provide a comprehensive overview of the primary contributors and their respective roles in shaping the scholarly discourse within the domain under investigation.

We used Vos Viewer to identify the primary contributors in terms of research, authors, journals, institutions, and countries within this field.

Figure 1 offers insights into the publication trends and citation impact across different years. Notably, there is considerable variation in the number of articles published annually, ranging from as few as 1 article in 2000 to as many as 54 articles in 2023. To obtain a more comprehensive picture of the annual production of studies and their research impact, the graphical representation integrated the citation status across each year. The mean citations per article fluctuate across the years, with peaks observed in certain years, such as 2002 (133 citations/article), 2010 (53.08 citations/article), and 2016 (28.37 citations/article).



**Figure 1.** Scientific studies published annually.

The data suggest potential shifts in research focus or quality over time, as evidenced by changes in both publication volume and citation impact. For instance, the surge in publications from 2019 to 2023 is accompanied by a notable decline in mean citations per article, potentially indicating a period of rapid expansion in research output without commensurate increases in citation impact. Conversely, years with fewer publications, such as 2000 and 2005, exhibit relatively low mean citations per article, which may reflect a smaller pool of research, with varying degrees of impact.

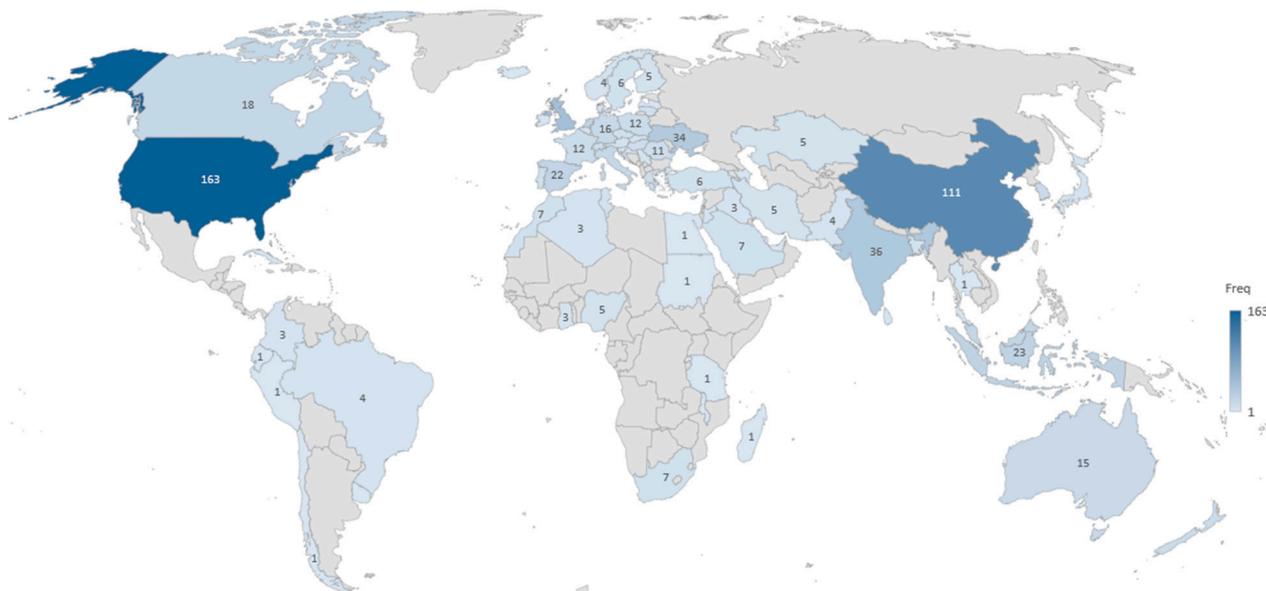
Overall, this analysis underscores the dynamic nature of scholarly research, characterized by fluctuations in publication volume and citation impact over time, influenced by factors such as research trends, academic rigor, and dissemination practices.

Table 2 presents the top 10 source journals, based on the number of documents published and the corresponding citations received, and provides valuable insights into the leading journals driving research output and impact within the domain under study. "Journal of Financial Crime" emerges as the leading journal, with 15 documents and 142 citations, indicating its significance within the field. "Food Control" and "Mathematics" follow closely behind with six and three documents each, but with notably higher citation counts of 301 and 142 respectively, suggesting strong research impact. Similarly, "Crime, Law and Social Change" and "Sustainability" exhibit lower document counts but demonstrate respectable citation counts, implying their relevance and influence within the academic community. Other journals in the top 10, such as "Lecture Notes in Networks and Systems" and "Foods", also display a noteworthy citation impact despite a relatively smaller number of documents.

**Table 2.** Top 10 source journals.

	Journal	Documents	Citations
1	Journal Of Financial Crime	15	1422
2	Food Control	6	301
3	Lecture Notes in Networks and Systems	4	30
4	Computer Fraud and Security	4	8
5	Sensors	4	8
6	Mathematics	3	142
7	Crime, Law and Social Change	3	71
8	Sustainability (Switzerland)	3	56
9	Foods	3	31
10	Managerial Finance	3	15

The geographical representation in Figure 2 outlines the frequency of research publications originating from various regions. The USA exhibits the highest frequency, with 163 publications, followed by China, with 111 publications. The UK, India, and Ukraine trail behind with 47, 36, and 34 publications, respectively. Other notable contributors include Spain, Italy, Canada, the Netherlands, Australia, Germany, and Indonesia, each with varying frequencies, ranging from 15 to 23 publications. This distribution underscores the diverse geographical landscape of scholarly research, with certain regions, particularly the USA and China, emerging as prominent contributors to the global academic discourse.



**Figure 2.** Global framework of scientific papers.

The data presented in Figure 3 indicate the total number of citations garnered by scholarly works originating from various countries. Notably, the United States leads, with 1427 citations, followed by the United Kingdom, with 495 citations. China, Italy, and Malta follow with 445, 222, and 147 citations, respectively. This distribution reflects the varying degrees of research activity and impact across these nations, with the USA and UK demonstrating a relatively higher level of scientific output and citation impact compared to China, Italy, and Malta.

Table 3 presents the most cited studies within the field, providing insight into seminal works and impactful research contributions. Notably, [Yang and Garcia-Molina’s \(2003\)](#) work on “PPay: micropayments for peer-to-peer systems”, presented at the ACM conference on Computer and Communications Security, with 173 citations, underscores the importance of their contributions to the domain of computer and communication security linked to

fraud and associated risks. Insurance fraud (Derrig 2002) and money laundering (Colladon and Remondi 2017) pioneered the in-depth research of fraud mechanisms, their works receiving significant attention in this field. These studies, alongside others listed in Table 3, collectively contribute to advancing knowledge and understanding within their respective domains, shaping scholarly discourse and guiding future research endeavors.

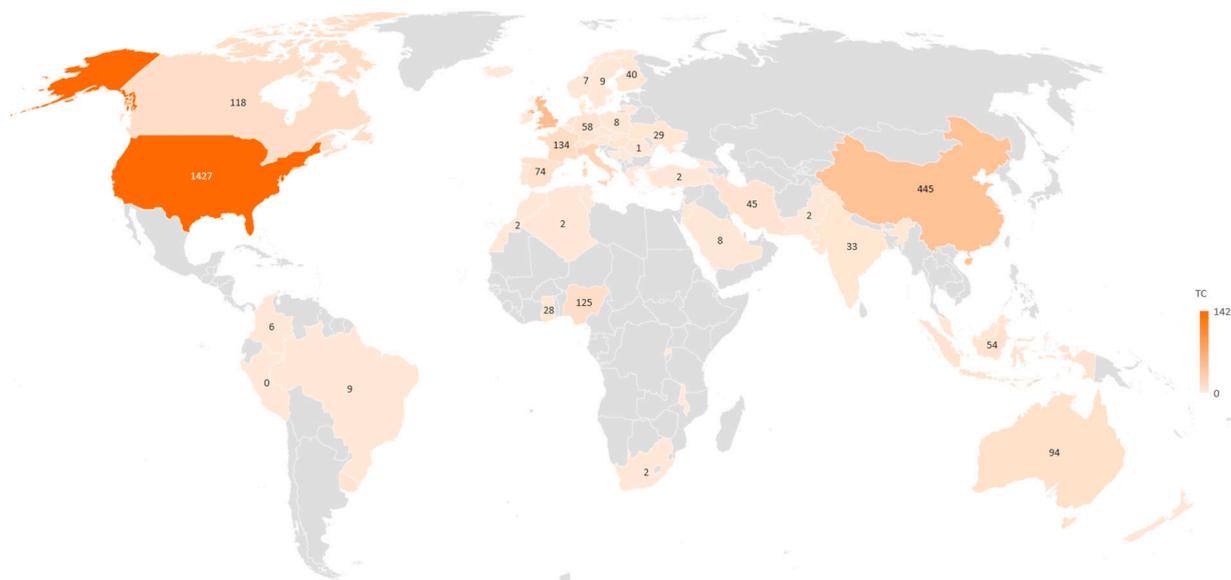


Figure 3. Global framework of most cited countries.

Table 3. The most cited studies.

Authors	Title	Journal	Total Citations
Yang and Garcia-Molina (2003)	PPay: micropayments for peer-to-peer systems	ACM conference on Computer and communications security	173
Derrig (2002)	Insurance fraud	Journal of Risk and Insurance	133
Fawole (2008)	Economic violence to women and girls: Is it receiving the necessary attention?	Trauma, Violence, & Abuse	125
Colladon and Remondi (2017)	Using social network analysis to prevent money laundering	Expert Systems with Applications	123
Peterson et al. (2014)	Financial exploitation of older adults: A population-based prevalence study	Journal of General Internal Medicine	113
Morales et al. (2014)	The construction of the risky individual and vigilant organization: A genealogy of the fraud triangle	Accounting, Organizations and Society	110
Fu and Zhu (2019)	Big production enterprise supply chain endogenous risk management based on blockchain	IEEE Access	100

In addressing Research Question 2 (RQ2), the focus is directed towards elucidating the key topics and conceptual, intellectual, and social frameworks intertwined with economic fraud and risk within the studied domain. This inquiry delves into the fundamental thematic underpinnings and theoretical constructs that underlie discussions surrounding economic fraud and risk. By exploring the conceptual dimensions, intellectual paradigms, and social dynamics inherent in the discourse, this section endeavors to provide





#### 4.1. Dimensions and Contexts of Economic Fraud and Risk Management: A Bibliometric Analysis of Clusters

In the following section, we will conduct a bibliometric analysis aimed at revealing the vast and interdisciplinary spectrum of scholarly literature on economic fraud and risk management. Structured into four distinct clusters, our analysis seeks to map and synthesize the most prominent themes and connections characterizing this field.

The first cluster investigates terms such as “crime”, “risk assessment”, “fraud detection”, “computer crime”, “machine learning”, and “blockchain”, illustrating the complexity of economic fraud, as well as the diversity of techniques for combating it, especially in the digital age.

The second cluster focuses on food safety and security, a key segment affected by fraudulent practices, highlighting keywords such as “food safety”, “food contamination”, and “health risks.” This cluster underscores the importance of public health in risk assessment and reveals a deep interconnection between food quality and community well-being.

The third cluster extends the analysis to the broader economic and social context, incorporating terms such as “economics”, “humans”, “developing countries”, and “money laundering”, highlighting the influence of economic fraud on social dynamics and progress in developing countries.

The fourth cluster addresses essential aspects of risk management in the context of business and investments, reflecting a dynamic world of competition and strategic decision-making, through terms such as “risk management”, “investments”, “competition”, “decision making”, “stock market”, “financial crisis”, “risk analysis”, and “company risk.”

This section not only provides a comprehensive basis for understanding the multi-dimensional nature of economic fraud and risk management but also facilitates the identification of emerging trends and potential directions for future research and action. The approach will provide us with a strategic knowledge framework that can facilitate the discovery of innovative and effective solutions in preventing and combating economic fraud.

##### 4.1.1. Cluster 1 Encompasses Keywords Associated with Various Aspects of Economic Fraud and Risk Management, Such as “Crime”, “Risk Assessment”, “Fraud Detection”, “Computer Crime”, “Machine Learning”, and “Blockchain”

Economic fraud represents one of the most significant challenges faced by modern organizations, regardless of their size or field of activity. The increasing incidence of these types of crimes, underscored by the growing sophistication of the methods by which they are committed, necessitates a systematic and integrated approach to detecting and preventing them. In this context, risk assessment and fraud detection become essential components of an organization’s risk management.

Risk assessment is a process through which organizations identify and analyze potential vulnerabilities and threats they may face. This process primarily aims to identify critical points where the likelihood of fraudulent activity is higher and where its impact could be most significant (Aivaz et al. 2023). Thus, through risk assessment, organizations can allocate adequate resources for preventing and combating economic crimes.

Yang and Garcia-Molina (2003) contributed to the understanding of this field by proposing the PPay model in peer-to-peer systems. They highlighted not only the efficiency but also the necessity of monitoring such systems to prevent abuses, a lesson applicable to fraud detection. In complementarity, fraud detection involves identifying suspicious activities using techniques and tools that allow for early identification of these activities, including the use of information technology, such as big data processing and artificial intelligence.

Colladon and Remondi (2017) emphasized the importance of social network analysis in preventing money laundering, thereby offering an innovative method for risk assessment and fraud detection in economics. Their findings paved the way for new research developments, indicating that the most high-risk actors engage in larger or more frequent financial transactions, occupy peripheral positions in the transactions network, mediate transactions across diverse economic sectors, and operate in riskier geographical areas (Nicholls et al.

2021; Granados and Vargas 2021). Morales et al. (2014) explored the constructs of the risky individual and the vigilant organization, highlighting the influence of organizational culture and internal policies on the propensity for fraud. These studies underscore the importance of adopting a proactive approach to risk assessment.

Furthermore, machine learning has begun to play an increasingly important role in this mechanism. Mosavi et al. (2020) provided an extensive review of deep learning methods and their applications in economics, highlighting their ability to analyze large volumes of data to identify patterns and anomalies that may indicate fraudulent activities. By integrating these methods into platforms for managing economic fraud risk, organizations can develop robust systems capable of adapting to the dynamic challenges of the contemporary economic threat landscape and ensuring a healthy and secure economic environment (Agarwal et al. 2022; Venkatesan and Rahayu 2024).

Blockchain offers a new dimension in preventing economic fraud by creating a decentralized and immutable ledger. This technology ensures the transparency of transactions and data integrity, reducing the risks of manipulation and human errors. Combined with machine learning, it enables the efficient identification of anomalies and supports a robust risk assessment system, essential in detecting fraudulent activities and strengthening economic security.

#### 4.1.2. Cluster 2 Includes Keywords Related to Food Safety and Security, Such as “Food Safety”, “Food Contamination”, and “Health Risks”

Food safety, food contamination, and health-related risks are intrinsically linked aspects in the scientific discourse of risk management, with particular relevance in the context of economic fraud. In their work, “Defining the Public Health Threat of Food Fraud” Spink and Moyer (2011) highlighted how food fraud can become a serious threat to public health by intentionally introducing adulterated or deceptively labeled products into the food chain, with direct implications for consumers.

Food contamination is a critical vector through which economic fraud materializes into tangible health risks. Gliszczyńska-Świągło and Chmielewski (2017) analyzed the potential of the “electronic nose” in monitoring food authenticity. Their work raised interest in developing promising technologies that can detect unauthorized adulterants and promote the use of artificial intelligence applications in the food industry (Ali et al. 2020; Mavani et al. 2022), thus significantly contributing to combating food fraud and protecting public health.

In the context of a global market, fraud with spices and herbs is a growing concern, as highlighted by Galvin-King et al. (2018), who emphasize technological advancements in spectroscopic techniques and chemometrics, coupled with improvements in DNA analysis and mass spectrometry, for enhanced detection of adulteration in the herb and spice industry. Their aim is to safeguard industry integrity and consumer trust through fraud prevention measures (Schmitt et al. 2020). Following this research trend, several scholars discuss the challenges of detecting fraud in this food sub-segment, as well as the factors fueling this complex issue (Oliveira et al. 2020; Rivera-Pérez et al. 2021).

Managing the risk of economic fraud in the food sector must be a holistic process, incorporating innovative technologies and addressing emerging challenges in a strategic and informed manner. Safeguarding public health through ensuring food safety is an objective that requires interdisciplinary collaboration and continuous adaptation to new methodologies for detecting and preventing economic fraud in the food industry.

#### 4.1.3. Cluster 3 Comprises Keywords Associated with Broader Economic and Social Contexts, including “Economic”, “Humans”, “Developing Countries”, and “Money Laundering”

In the comprehensive study of economic fraud risk management, a critically important area is the impact these frauds have on economies and, consequently, on human lives, with particular attention to developing countries. Economic fraud not only undermines financial systems but can also perpetuate cycles of poverty and limit social and economic development.

In his work, [Fawole \(2008\)](#) addresses an alarming fraction of economic fraud, that of economic violence against women and girls, emphasizing that this type of violence is often overlooked or inadequately analyzed in risk and economic fraud studies. In the context of developing countries, where socio-economic structures may be more fragile, the impact of economic fraud can be even more damaging, with long-lasting effects on women's ability to claim their economic rights and contribute to their communities' development ([Nduka et al. 2024](#)).

[Peterson et al. \(2014\)](#) explore another dimension, that of financial exploitation of older adults, a particularly relevant issue for developing economies. In these regions, where social protection systems may be insufficient or ineffective, elderly individuals are particularly vulnerable to fraud, which can have significant repercussions on the welfare and economic security of a nation. [Ebner et al. \(2023\)](#) explore the impact of deceptive message characteristics, including personal relevance and framing, along with visual cues, such as faces, on deception detection. They emphasize the importance of understanding these factors in addressing deception risk in aging. They advocate for tailored interventions, such as age-specific warnings, and integrating artificial intelligence with human-centered approaches to mitigate fraud risks and safeguard older adults.

Economics assumes a pivotal role in dissecting and comprehending the ways in which fraud impacts societies. In developing countries, where economic resilience often wanes, the repercussions of fraud can be more pronounced, directly influencing the standard of living and the long-term development prospects of individuals ([Kar and Spanjers 2017](#)). The management of fraud risk in developing countries necessitates an approach that considers the socio-economic, cultural, and political specificities of these regions. By implementing effective policies and mechanisms for financial monitoring and control that encompass the human dimension of economic impact, more resilient and sensitive strategies can be devised to address the needs of vulnerable populations. It is imperative for financial institutions, governments, and international bodies to collaborate in developing integrated solutions that tackle not only economic fraud but also the deeply entrenched social and economic consequences, thereby fostering sustainable and inclusive progress in developing countries ([Batrancea et al. 2023](#)). Money laundering undermines economies and exacerbates inequalities, with profound repercussions in developing countries ([Amjad et al. 2022](#)). Combating it requires the integration of financial monitoring measures into economic systems, thereby enhancing transparency and accountability. In the context of social vulnerabilities, anti-money laundering measures can aid in safeguarding and fortifying economic structures, contributing to sustainable and equitable development.

4.1.4. Cluster 4 Is Associated with Terms such as "Risk Management", "Investments", "Competition", "Decision Making", "Stock Market", "Financial crisis", "Risk Analysis", "Company Risk"

Risk management within modern organizations entails the systematic assessment and mitigation of risks that can impact investments, competition, and decision-making processes. This discipline is crucial for ensuring long-term sustainability and efficiency in any competitive economic environment.

[Derrig \(2002\)](#), in the work "Insurance Fraud," examines a specific type of economic fraud affecting the insurance industry, highlighting the complexity of identifying and counteracting fraud in this sector. Derrig's survey explores moral hazards arising from asymmetric information in claiming behavior, proposing modeling strategies to bolster fraud detection and deterrence for insurers grappling with fraud and systemic abuse, aiming to streamline claim categorization processes. This research path inspired several scholars ([Hilal et al. 2022](#)), to investigate the risks associated with fraud in insurance, and their direct effects on investment profitability and market mechanisms, underscoring the critical need for the implementation of efficient risk management systems ([Debener et al. 2023](#); [Váradi et al. 2023](#)).

[Mosteanu and Faccia \(2020\)](#) emphasize the significance of incorporating sustainability principles into supply chain management, highlighting its potential to enhance competi-

tiveness and inform investment strategies. They underscore the necessity of adept supply chain risk management to mitigate vulnerabilities and maintain uninterrupted operations (Fernández-Caramés et al. 2019). Similarly, Fu and Zhu (2019) project the future utility of blockchain technology in addressing endogenous risks within expansive enterprise supply chains. They posit that blockchain's implementation can bolster transparency, diminish fraudulent activities, and consequently foster equitable competition and informed investment choices.

Hence, investment and risk management are intricately intertwined, as investment decisions necessitate consideration of the potential repercussions of risks. Concurrently, an organization's adeptness in risk management significantly impacts its competitive stance in the market, mandating meticulous risk evaluation for enduring success and resilience (Kang et al. 2023). Incorporating emerging technologies and sustainable methodologies into risk management strategies can furnish a robust framework for attaining these objectives. Within the capital market, corporate risk management plays a pivotal role in securing strategic footing amidst economic oscillations. Through rigorous risk analysis, companies can discern and quantify risks, enhancing their capacity to forecast financial crises and make well-informed decisions.

The occurrences of financial crises such as the 2008 downturn and the COVID-19 pandemic underscore the systemic frailties present, emphasizing the imperative for more stringent regulation and enhanced risk evaluation mechanisms (Arum et al. 2023). Within this paradigm, companies must evaluate not only market risks but also operational and strategic risks, such as credit and liquidity risks (Balci et al. 2022). This comprehensive appraisal is indispensable for safeguarding investments and fostering robust competition within a dynamic market milieu (Burlacu and Robu 2023).

Moreover, companies must swiftly adapt to fluctuations in the capital market, where investment decisions hinge closely on risk evaluation and management. Thorough risk scrutiny can unveil latent opportunities and guide resource allocation strategies, thus augmenting investment yields and corporate competitiveness.

The implementation of well-informed risk management strategies is paramount for ensuring sustained growth and adeptly addressing challenges in an adaptable and sustainable manner. By leveraging data and predictive analytics, organizations can proactively anticipate potential threats and streamline decision-making processes, thereby securing a competitive edge in the market and bolstering economic stability amidst uncertainty.

#### *4.2. Limitations and Future Directions for Research*

One of the primary constraints of our study lies in its reliance on the databases utilized for extracting publications and citations. Should these databases prove incomplete or fail to adequately represent the international spectrum of research, there exists a risk of overlooking pertinent papers that could influence the conclusions drawn. Moreover, citation analysis often exhibits a bias towards older papers, which have had more time to accrue citations, potentially overshadowing recent studies of equivalent significance that have yet to establish themselves in the field.

Furthermore, fluctuations in citation counts may be influenced by factors such as the accessibility and availability of publications, alterations in journal editorial policies, or the emergence of new subfields that may capture researchers' attention. Consequently, a high volume of publications or citations may not necessarily denote the actual impact of the research but might solely serve as an indicator of fluctuating interest in specific research topics.

Regarding prospective research avenues, it is imperative to broaden the database's scope by encompassing a diverse array of sources and journals, potentially extending to related disciplines, to achieve a more comprehensive understanding of the research landscape within the field. Furthermore, conducting a longitudinal analysis to track the evolution of research interest and impact over time holds considerable merit, facilitating the identification of trends and the anticipation of future directions within the field. In addition

to quantitative aspects, future research endeavors could incorporate qualitative evaluations of research impact through methodologies such as case studies or expert interviews. This approach would afford a deeper insight into how research influences practical applications and policy formulation in the realm of combating economic fraud and risk management.

## 5. Conclusions

This study unveils substantial fluctuations in the yearly publication volume, ranging from one article in 2000 to a peak of 75 articles in 2023. Incorporating the average citation count per article unveils potential shifts in research focus or quality over time, as evidenced by notable disparities in publication impact. The surge in publications between 2019 and 2023 aligns with a decline in the average citation count per article, suggesting a potential rapid proliferation in research output that is not matched by a proportional increase in citation impact. Conversely, years characterized by fewer publications, such as 2000 and 2005, also exhibit a diminished average citation count per article, indicative of a reduced volume of research with divergent levels of impact. This dynamic underscores the fluctuating essence of academic research, marked by shifts in publication volume and citation impact over time, influenced by factors such as research trends, scholarly rigor, and dissemination methodologies.

Regarding source journals, the *Journal of Financial Crime* emerges as the frontrunner, boasting 19 papers and 153 citations, underscoring its significance within the discipline. “*Food Control*” and “*Trends in Food Science and Technology*” closely trail, each with eight published papers and notably higher citation counts, indicating their considerable research influence. This distribution underscores the heterogeneous nature of academic inquiry, with regions such as the US and China serving as primary contributors to the global scholarly dialogue.

The geospatial examination of publications and citations reaffirms the leadership position of the US and the UK, showcasing a comparatively elevated level of scientific output and citation influence in contrast to China, Italy, and India. This disparity mirrors the diverse levels of research engagement and impact across these countries. The most frequently referenced papers, such as [Spink and Moyer’s \(2011\)](#) exploration of the threat posed by food fraud to public health and [Yang and Garcia-Molina’s \(2003\)](#) investigation into micropayments for peer-to-peer systems, underscore significant contributions in these domains, accentuating the pivotal role of their research in shaping academic discourse.

The bibliometric analysis conducted enabled us to observe predominant trends and methodologies for the examination of economic fraud and its associated risks. The primary thematic directions derived from the bibliometric clusters signify a growing emphasis on evaluating risk within investment contexts vulnerable to fraud, particularly leveraging emerging technologies such as machine learning. This trajectory reflects a response to the imperative of addressing sophisticated fraudulent schemes with advanced detection and prevention tools. Within this framework, machine learning demonstrates its capacity to handle vast datasets and to uncover patterns and irregularities indicative of fraudulent behavior, thereby serving as a valuable asset in informing decision-making processes and fortifying anti-fraud measures.

Concurrently, alongside the focus on investment risk assessment, our investigation unveiled a notable concern regarding the practical implications of research in shaping policies and strategies to combat economic fraud. This underscores the necessity of bridging research endeavors with practical applications in both business operations and public policy formulation. Our study underscores the importance of ongoing literature review to remain abreast of recent advancements and guide future research trajectories. Furthermore, our findings underscore the significance of interdisciplinary approaches in examining economic fraud and its associated risks, underscoring the imperative of integrating technological, economic, and policy perspectives for a comprehensive and nuanced comprehension of the phenomenon.

This assessment underscores the pivotal role of research in shaping scholarly comprehension and investigation into economic fraud and its associated risks. Identifying the principal themes and conceptual framework for academic deliberations on the subject contributes to fostering a comprehensive and nuanced comprehension of the intricate nature of economic fraud and risk. Ultimately, our findings underscore the significance of ongoing literature review to remain abreast of recent advancements and to steer future research paths.

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