

Meta-Analysis of the Relationship between Audit Expertise and Audit Tenure on Fraudulent Financial Reporting

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Abstract: The present study aims to conduct a meta-analysis of the relationship between audit expertise and audit tenure on fraudulent financial reporting. This research is quantitative in terms of data type. The study population included all domestic and international articles and theses published on fraudulent financial reporting, totaling 771,305 in sixteen databases and two search engines during the period from 2002 to 2022. Ultimately, 18 studies that addressed the relationship between audit firm size and audit fees on fraudulent financial reporting were selected as the sample through purposive random sampling based on the inclusion and exclusion criteria. The selected studies were analyzed using CMA2 software, and heterogeneity of the studies was determined through Q-value, I-squared, and Tau-squared tests. The results showed that the effect size of audit quality and audit firm size were the most frequently cited variables influencing fraudulent financial reporting. Based on Cohen's interpretive framework, this influence was evaluated as moderate, and this relationship was statistically significant ($P \leq 0.05$). Finally, using a tree diagram, studies with the least deviation from the random-effects model effect size were identified and recognized as more valuable research. Moreover, based on the fail-safe N test, it can be asserted that the impact of audit firm size on fraudulent financial reporting is negative and will persist for several years. Therefore, it can be concluded that precise and efficient auditing enhances investor reliability and consequently reduces the likelihood of fraudulent financial reporting. Hence, investors and other stakeholders should emphasize improving audit quality to ensure accurate financial disclosure and prevent fraudulent activities.

Keywords: Fraudulent Financial Reporting, Audit Expertise, Audit Tenure, Meta-Analysis.

1. Introduction

Financial reporting, due to its significant importance for financial providers, has always been one of the main research areas in the fields of accounting and finance. A decline in the quality of financial statements is accompanied by increased uncertainty among actual and potential investors, which ultimately drives the most critical factor for economic activity, namely capital, away from the economic unit and increases the cost of capital [1, 2]. The increase in the cost of capital is not the only consequence of low-quality financial reporting; in fact, if a company engages in fraudulent financial reporting with opportunistic behavior to

deceive stakeholders, it may be sanctioned by society and other stakeholders and lose its legitimacy. Fraudulent financial reporting leads to information asymmetry and affects the efficiency and effectiveness of the market in resource allocation, resulting in negative consequences such as the erosion of investor trust in the market [3, 4]. Fraudulent financial reporting arises from fraud, which includes methods and skills used by an individual to gain profit from other parties in a representative position. In other words, fraud is "the use of one's occupation to enrich oneself through the deliberate misuse or misappropriation of the resources or assets of the employing organization". The Association of Certified Fraud Examiners categorized professional fraud into three groups: financial corruption, asset misappropriation, and financial statement fraud [5]. This institution defines fraudulent reporting as the omission of items and non-disclosure of information to deceive financial statement users, particularly investors and creditors. Paragraph 2 of Iran's Auditing Standard No. 240 also defines fraudulent financial reporting as the intentional misstatement or omission of amounts or disclosures from financial statements to deceive financial statement users.

There are various motivations for financial reporting fraud, including management bonuses based on profit levels [6], maintaining or increasing stock market prices, minimizing taxes (Dechow et al., 1996), achieving internal and external goals and forecasts [7], adhering to debt covenants (Spatis, 2002), and securing financing in the most cost-effective manner [8]. One of the most critical factors affecting financial reporting quality and preventing fraudulent financial reporting is the independent audit of the financial statements and the information contained in the accompanying notes [9, 10]. Moreover, auditor characteristics also enhance the prevention of fraudulent financial reporting. Specifically, the greater the ability, experience, specialized knowledge, and overall quality of the audit team, the higher the quality of the financial reports produced by the audit unit. In other words, audit quality is directly related to financial reporting quality [11].

McConomy (1998) demonstrated that since the requirement for auditors to review capital increase reports was established in 1989, managers' earnings forecasts have shown significantly less positive bias compared to the period before the mandate. This study is one of the few that directly compares audited figures with unaudited published figures, thereby ensuring high reliability. Additionally, Nelson, Elliott, and Tarpley (2003) found that auditors are unlikely to overlook management's efforts to inflate earnings. While the quality of one auditor may differ from another, this difference in quality, due to its specific nature, is often unobservable and costly to measure. Therefore, a variable that directly correlates with audit quality but is less costly and time-consuming to measure must be used as a proxy for audit quality [12].

Another influencing factor is audit fees. Higher audit fees are likely associated with greater effort and time investment. When audit fees are low, auditors lack the incentive for thorough examinations due to economic unfeasibility. Thus, higher audit fees enhance audit process quality. Conversely, higher fees might also lead auditors to compromise audit quality to retain clients [13-15].

However, the impact of audit quality on reducing fraudulent financial reporting in Iran remains largely unclear. Unlike efficient capital markets such as the United States, where most public companies are audited by the Big Four international firms, companies in Iran's capital market are audited by local firms. In developing countries like Iran, due to the lack of precise accounting systems and legal frameworks, auditors providing low-quality audits face minimal litigation risk [16], potentially reducing their motivation for high-quality audits. Additionally, studies indicate that auditors in developing countries, including Iran, may collude with client managers [17, 18].

The primary motivation for this study is the contradictory results of previous research. For instance, studies by Dadashi and Atighi (2021) and Azizadeh and Khodadadeh Shamloo (2019) found no significant effect of audit

tenure on fraudulent financial reporting [18, 19], while Mamashli and Karshenas (2019) demonstrated that audit tenure reduces fraudulent reporting and fraud risk [20]. However, Khajavi and Ebrahimi (2017) found that prolonged audit tenure increases fraudulent financial reporting [14].

Given these contradictory findings, this study employs meta-analysis to synthesize and integrate past research. Despite numerous studies on fraudulent financial reporting domestically and internationally, no meta-analysis has been conducted focusing on independent audit quality and fraudulent reporting. This study seeks to answer the question: How does the meta-analysis of the relationship between audit expertise and audit tenure affect fraudulent financial reporting?

2. Methodology

The method used in this study is meta-analysis, which classifies it as a quantitative study. This research is a secondary study and is considered an applied research in terms of its objective. The process of searching and selecting the studies used in this research involved accessing studies related to fraudulent financial reporting from articles published in domestic scientific databases such as SID, Civilica, Magiran, NoorMags, and international databases including Emerald, Springer, Scopus, Wiley, Sage, Taylor & Francis, ScienceDirect, EBSCO, Web of Science, and the Google Scholar search engine, as well as theses available in domestic (IranDoc) and international (ProQuest, OATD) scientific repositories. A total of 771,305 articles and theses were identified based on title searches for “fraudulent financial reporting” in Persian and English. From these studies, those that examined the relationship between audit expertise and audit tenure on financial reporting quality were reviewed. Since the search results for related keywords were entirely repetitive and similar to the initial search, the number of studies was reported based on title searches. The inclusion criteria for this study were Persian and English articles and theses in the field of financial reporting quality published between 2002 and 2022.

After identifying 33 relevant studies on the relationship between audit expertise and audit tenure on financial reporting quality, exclusion criteria were applied. These included theses and articles lacking proper validity and reliability, those that did not correctly specify sampling methods or sample sizes (articles with sample sizes below 100), studies without valid questionnaires, those using incorrect statistical methods or tests (omitting or inaccurately reporting significance levels, path coefficients, etc.), books, qualitative and conference articles, theses extracted from already included articles, and studies lacking reputable indexing as verified by the researcher. Ultimately, 16 studies were purposefully selected for meta-analysis based on these exclusion criteria.

Data collection was conducted using checklists, serving as the equivalent of questionnaires or interview forms in other types of research. These checklists included information on the research title, type of study, researchers, year and location of the study, research hypotheses, path coefficients and significance levels, data collection tools, questionnaire types, statistical population, sampling methods, sample sizes, gender, statistical methods and software used, validity, and reliability. Data from these checklists were analyzed using the comprehensive meta-analysis software CMA2, with effect sizes calculated for each study and evaluated based on Cohen’s criteria. Cohen’s guidelines (1992) were applied for effect size assessment, where correlations of 0.10, 0.30, 0.50, and 0.70 were considered small, moderate, large, and very large effects, respectively.

Table 1 presents the classification of the selected articles and theses based on the predictor variables examined in this study.

Table 1. Classification of Studies on Fraudulent Financial Reporting Based on Predictor Variables

Predictor Variables	Studies
Audit Expertise	Hejazi & Mokhtarine (2017), Bandarian et al. (2022), Azizzade & Khodadadeh Shamloo (2019), Barzegar Abbaspour et al. (2023), Dadashi et al. (2018), Mukhlasin (2018), Khaksar (2021), Huang & Thiruvadi (2010)
Audit Tenure	Bandarian et al. (2022), Yari & Baghomian (2022), Khajavi & Ebrahimi (2017), Dadashi et al. (2018), Mukhlasin (2018), Carcello & Albert (2022), Khaksar (2022), Horne (2015)

3. Findings and Results

A total of 8 articles published between 2011 and 2020 and 3 articles published after 2020 examined the relationship between auditor expertise and fraudulent financial reporting, including 4 domestic and 4 international studies. Additionally, 8 articles published between 2011 and 2020 examined the relationship between audit fees and fraudulent financial reporting, consisting of 6 international and 2 domestic studies. The results related to the research hypotheses were entered into CMA2 software, and effect sizes for each study were obtained through statistical analysis. The results were then aggregated using fixed-effects and random-effects models, and homogeneity tests were conducted. The effect sizes of all initial studies were reported, followed by the overall mean effect size for each research question.

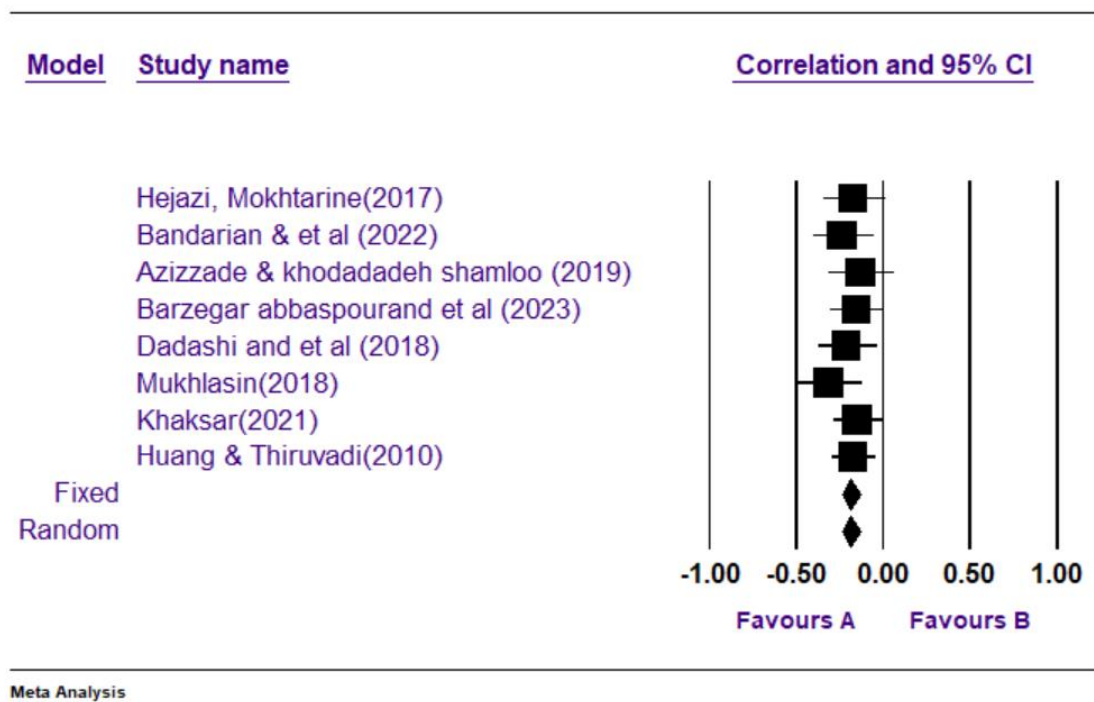


Figure 1. Forest Plot of Effect Sizes for Studies on the Relationship Between Auditor Expertise and Fraudulent Financial Reporting

Figure 1 presents the forest plot of effect sizes for studies on the relationship between auditor expertise and fraudulent financial reporting. As shown, the effect sizes ranged from moderate to very large. The P-value and Z-value for significance were reported, indicating that studies by Barzegar Abbaspour et al. (2023), Khaksar (2022), and Huang & Thiruvadi (2010) had the least deviation from the random-effects model with effect sizes of -0.15, -0.15, and -0.17, respectively, making them more valuable studies. Conversely, the study by Mukhlasin (2018) with an effect size of -0.31 had greater deviation from the mean and was considered less valuable.

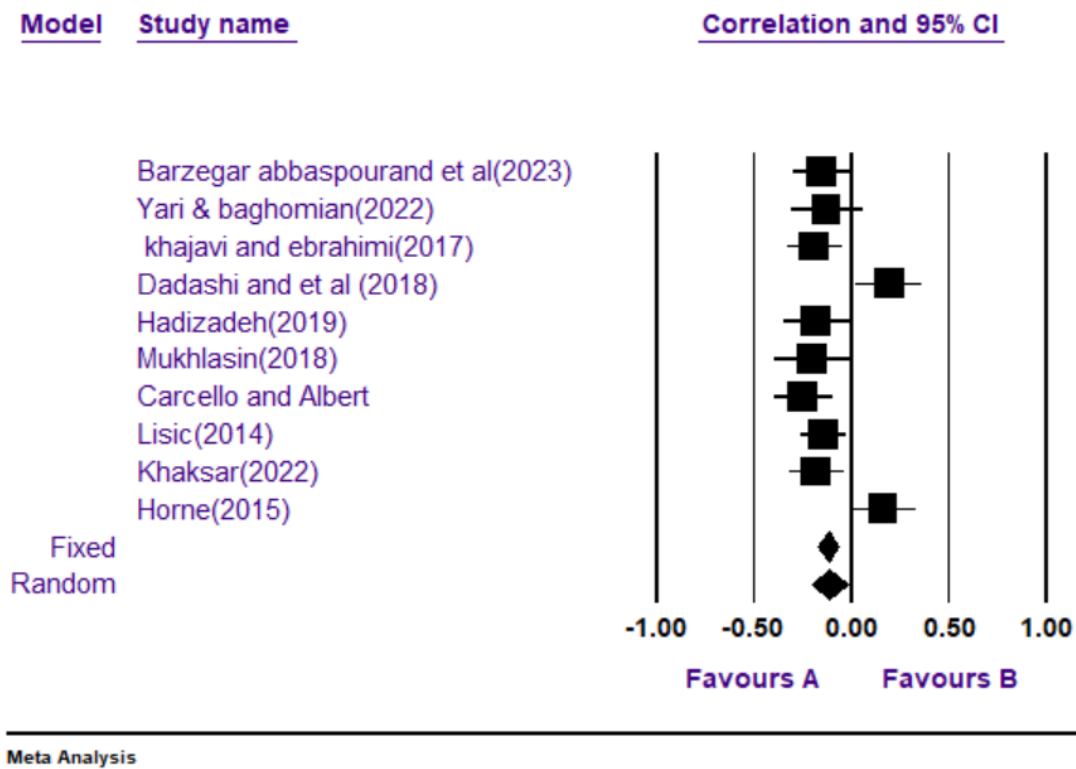


Figure 2. Forest Plot of Effect Sizes for Studies on the Relationship Between Audit Tenure and Fraudulent Financial Reporting

Figure 2 illustrates the forest plot of effect sizes for studies on the relationship between audit tenure and fraudulent financial reporting. The effect sizes in this hypothesis also ranged from moderate to very large. Due to the limited number of studies, the study by Lisic (2014) with an effect size of -0.14 had the least deviation from the random-effects model and was deemed more valuable. In contrast, studies by Mukhlasin (2018) and Dadashi et al. (2018) with effect sizes of -0.20 and -0.19, respectively, showed greater deviation from the mean and were considered less valuable.

The results of the fixed-effects and random-effects models for the research hypotheses are presented in Table 2. The effect size for the relationship between auditor expertise and fraudulent financial reporting was -0.187 in both fixed and random models, with a significance level of 99% ($z = -6.231$, $p = 0.000$), indicating a significant negative relationship and supporting the hypothesis. For audit tenure, the effect sizes were -0.120 in the fixed-effects model and -0.112 in the random-effects model, both significant at the 99% confidence level ($z = -4.653$, $p = 0.000$ and $z = -2.427$, $p = 0.015$, respectively), confirming that longer audit tenure negatively affects fraudulent financial reporting.

Table 2. Fixed-Effects and Random-Effects Models for Hypotheses on Auditor Expertise, Audit Tenure, and Fraudulent Financial Reporting

Research Question	Model Type	Effect Size	Lower Limit	Upper Limit	Z-Value	P-Value
Auditor Expertise → Fraudulent Financial Reporting	Fixed Effects	-0.187	-0.244	-0.129	-6.231	0.000
Auditor Expertise → Fraudulent Financial Reporting	Random Effects	-0.187	-0.244	-0.129	-6.231	0.000
Audit Tenure → Fraudulent Financial Reporting	Fixed Effects	-0.120	-0.170	-0.070	-4.653	0.000
Audit Tenure → Fraudulent Financial Reporting	Random Effects	-0.112	-0.201	-0.022	-2.427	0.015

Combining the results from 16 studies on auditor expertise and 8 studies on audit tenure showed that the fixed-effects and random-effects models represent the overall findings. Both models confirmed the research hypotheses, with the fixed-effects model showing an effect size of -0.18 for auditor expertise and the random-effects model showing -0.11 for audit tenure, both significant at the 99% confidence level. Although both models yielded similar results, homogeneity tests were performed to determine which model was closer to reality and to identify potential moderating variables that may influence the relationship between the studied variables.

The homogeneity and heterogeneity of studies were tested using Q-value, I-squared, and Tau-squared tests. If the studies were found to be homogeneous, the fixed-effects model was used, whereas if they were heterogeneous, the random-effects model provided a more accurate and realistic result. One of the primary reasons for heterogeneity is the presence of an unknown moderating variable.

Table 3. Results of Homogeneity and Heterogeneity Tests

Hypothesis	Q-Value	df(Q)	Significance	I-Squared
Auditor Expertise → Fraudulent Financial Reporting	2.944	7.000	0.890	0.000
Audit Tenure → Fraudulent Financial Reporting	28.206	9.000	0.001	68.092

Based on the Q-value and significance levels of the research hypotheses, which were below 0.05, the null hypothesis was rejected at a 95% confidence level, confirming H1. This indicates that studies related to both hypotheses are not homogeneous, making the random-effects model a more appropriate choice. According to Rosenthal (1992), I-squared values of 25, 50, and 75 correspond to low, moderate, and high heterogeneity, respectively. As shown in Table 3, the I-squared values for the first and second research questions were 98.10 and 25.36, respectively, indicating a high level of heterogeneity between studies, which supports and confirms the previous test results.

According to Table 3, the p-value for the effect of auditor expertise on fraudulent financial reporting is greater than 0.05, confirming the null hypothesis and rejecting H1. This indicates that studies on this hypothesis are homogeneous, making the fixed-effects model more appropriate. However, for audit tenure, the p-value is less than 0.05, leading to the rejection of the null hypothesis and confirmation of H1 at a 95% confidence level. This implies that studies in this hypothesis are not homogeneous, making the random-effects model a better fit.

As indicated in Table 3, based on the Q-value test, only the second hypothesis exhibited heterogeneity, whereas studies related to other hypotheses were homogeneous.

The I-squared test categorizes heterogeneity into three levels: low (25), moderate (50), and high (75). As shown in Table 3, the I-squared value for the first hypothesis is zero, indicating low heterogeneity among studies, which supports the previous test results. However, for the second hypothesis, the I-squared value is 68.09, indicating moderate heterogeneity. Based on these results, the fixed-effects model is appropriate for the first and second hypotheses. Publication bias was assessed using funnel plots.

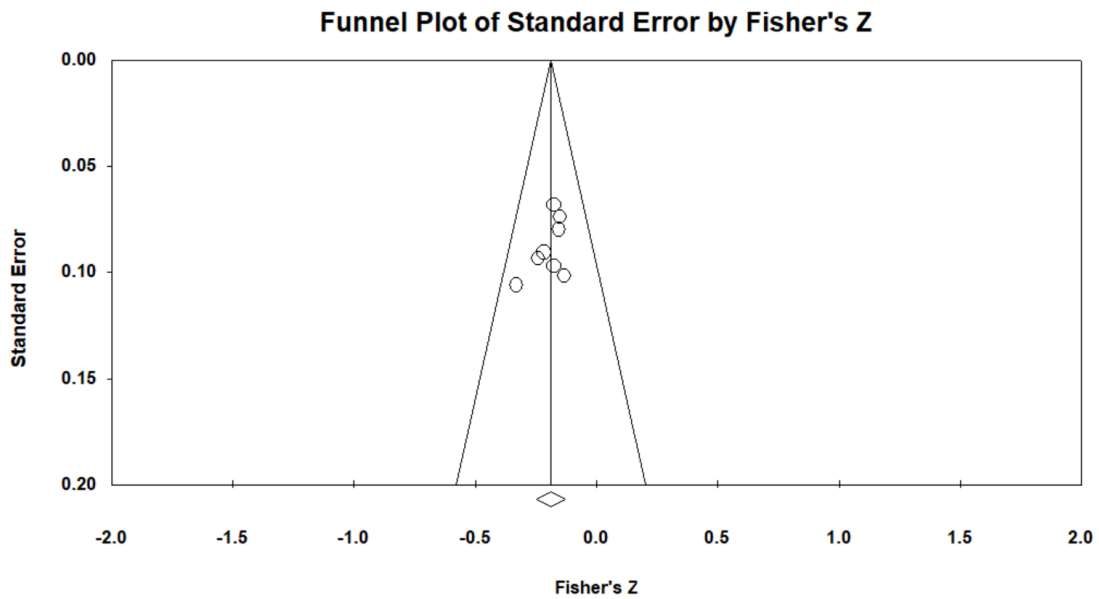


Figure 3. Funnel Plot for the First Research Question

As illustrated in Figures 3 and 4, most studies related to the first and second research questions are located at the top of the funnel, with no studies observed at the bottom. This clustering of studies at the top creates symmetry on both sides of the vertical line, indicating that publication bias is not present in this study.

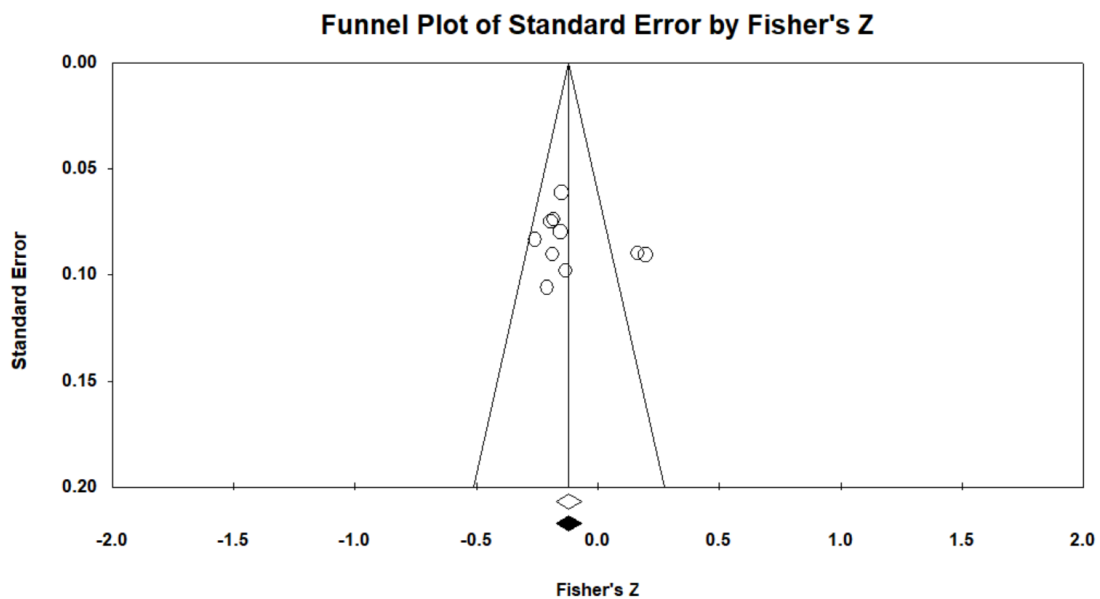


Figure 4. Funnel Plot for the Second Research Question

Finally, to determine the durability of this research over time and assess its robustness, the fail-safe N test was applied. If the fail-safe N is greater than 10, the meta-analysis is considered acceptable, but the theory may not have strong durability. However, if N exceeds 1,000, the theory is considered highly robust over decades. As shown in Table 3, the fail-safe N for the first and second research questions was 75 and 41 studies, respectively.

For the third sub-hypothesis, the fail-safe N was 75, indicating that while the meta-analysis is acceptable and auditor expertise negatively affects fraudulent financial reporting, its durability is limited. Similarly, for the fourth sub-hypothesis, the fail-safe N was 41, confirming that audit tenure negatively impacts fraudulent financial reporting, but with limited long-term robustness.

4. Discussion and Conclusion

This study aimed to systematically review research conducted over the past two decades (2002 to 2022) on the impact of auditor expertise and audit tenure on fraudulent financial reporting. The meta-analysis results demonstrated that auditor expertise and audit tenure had the most significant effect sizes on fraudulent financial reporting. The third sub-hypothesis, examining the effect of auditor expertise, revealed that with an effect size of -0.18 and significance level ($z = -6.23$, $p = 0.000$) at 99% confidence, auditor expertise negatively and significantly impacts fraudulent financial reporting. Auditors with industry-specific expertise, possessing deep knowledge and sufficient experience, significantly improve audit quality and enhance confidence in the accuracy of financial reports. Their comprehensive understanding of industry operations allows them to identify and assess potential fraudulent financial reporting more effectively, thereby reducing fraudulent activities and increasing public trust in financial information. This result aligns with global research findings, confirming the hypothesis. Studies [13, 15, 21] were identified as the most valuable due to minimal deviation from the random-effects model, while Mukhlisin (2018) showed greater deviation and lower value.

Audit quality depends on the auditor's expertise and independence in detecting financial fraud. Experts enable auditors to uncover and report fraudulent activities [22]. High-quality audits, particularly by industry-specialized auditors, reduce agency problems, align management interests with shareholders, and minimize fraudulent reporting [23]. Industry-specialized auditors, with greater knowledge and experience, maintain professional reputation and avoid litigation, thus limiting managerial opportunism in related-party transactions [11]. Khaksar et al. (2022) found a significant relationship between auditor characteristics, including firm size and expertise, and fraud detection in publicly listed companies, providing valuable insights for users and analysts [15]. The fail-safe N for this hypothesis was 75, indicating that while auditor expertise negatively affects fraudulent financial reporting, its durability is limited, suggesting caution in interpreting these results.

The second hypothesis, examining the effect of audit tenure, showed a negative and significant impact on fraudulent financial reporting with an effect size of -0.11 and significance level ($z = -2.42$, $p = 0.000$) at 99% confidence. A prolonged relationship between a company and its audit firm enhances understanding of company processes and systems, improving financial reporting quality and reducing fraudulent activities. This finding aligns with previous studies. Lisic et al. (2014) provided the most valuable evidence with minimal deviation [16], while Mukhlisin (2018) and Dadashi et al. (2018) showed greater deviation [19, 24]. Prolonged audit tenure enables better industry familiarity, reducing fraud risk, though some studies suggest short tenures decrease fraud due to auditors' unfamiliarity. Lisic et al. (2014) also highlighted that companies audited by larger firms face fewer sanctions and perform better in competitive markets like China [16]. Carcello and Nagy (2004) found that mandatory auditor rotation negatively affects audit quality [25]. The fail-safe N for this hypothesis was 41, indicating that while audit tenure negatively affects fraudulent financial reporting, the limited number of supporting studies warrants cautious interpretation, particularly given contradictory findings on the optimal tenure length for reducing fraud.

The main limitation of this study is the reliance on secondary data from various articles and theses, which may introduce bias due to differing methodologies and contexts. Additionally, the limited number of studies available in certain time frames and regions restricts the generalizability of the results.

Future research could explore the impact of auditor expertise and tenure on fraudulent financial reporting across different industries and regions, using primary data collection methods to enhance reliability. Investigating the role

of regulatory environments and enforcement mechanisms in shaping audit quality and fraudulent reporting would also be valuable.

In practice, stock exchange authorities should focus on developing auditor expertise across various industries, encouraging continuous professional education, and investing in advanced technologies for efficient and high-quality audits. Regular monitoring and evaluation of audit processes, adopting international standards, and enhancing communication with audited companies can further reduce fraudulent financial reporting and improve market trust.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

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Conflict of Interest

The authors report no conflict of interest.

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