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THE ASSOCIATION BETWEEN AUDIT FEE AND AUDIT QUALITY: A META-ANALYSIS STUDY

Hartaty[1]
Wiwiek Dianawati*[2]
[1,2] Department of Accountancy, Faculty of Economics and Business, Universitas Airlangga, Surabaya, Indonesia
Email: hartaty-2021@feb.unair.ac.id[1]; wiwiek.dianawati@feb.unair.ac.id[2]

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*Correspondence:
Name: Wiwiek Dianawati
E-mail:
wiwiek.dianawati@feb.unair.ac.id

ABSTRACT

Introduction: This study aims to reconcile conflicting empirical results from previous studies on the relationship between audit fees and audit quality. In addition, it investigated whether the contradictory findings were moderated by different types of audit fees and audit quality measures. The study also makes cross-country comparisons of empirical evidence to provide more insights.

Methods: This study utilized meta-analysis to integrate the findings of previous studies on the relationship between audit fees and audit quality and further investigated moderators of the association.

Results: The findings revealed that audit fees had a positive effect on audit quality. These results were observable for both developed and developing countries, indicating the beneficial consequences of audit fees on audit quality should not be overlooked. Furthermore, this study also found that the size of audit fees and quality moderated the positive influence of audit fees on the quality.

Conclusion and suggestion: This study contributes to the stream of research investigating the relationship between audit fees and audit quality. To the best of our knowledge, this study represents one of the pioneering efforts to apply statistical meta-analysis to the issue addressed.

INTRODUCTION

The correlation between audit fees and audit quality is an intriguing issue for policymakers, investors, and academics. An ongoing debate persists regarding whether high audit fees enhance audit quality or whether they interrupt auditor independence. The payment level for audit firms affects audit quality, and no significant correlation exists between non-audit service fees and audit quality (Garcia-Blandon et al., 2020). In Nigeria, high audit fees have the possibility of compromising auditor independence, resulting in

lower audit quality (Mohammed et al., 2018). During the 2010 sanctions intensification in Tehran, a significant positive correlation was found between audit fees and the level of misstatement (reverse audit quality criteria) at an error rate of 10% years before and after 2010. However, no significant correlation is observed between audit fees and audit quality (Salehi et al., 2017). Before Sarbanes-Oxley (SOX), audit fees were positively related to accrual quality, while non-audit fees were negatively related to accrual quality (Mande and Son, 2015). However, following the implementation of SOX, this correlation weakens in several specifications (Mande and Son, 2015). During the 2008 recession, audit fee pressures were positively and significantly related to accounting misstatements (Ettredge et al., 2014). Beck et al. (2013) find evidence that when audit fees are presented to investors with additional contextual information indicating that they are low, average, or high compared to industry averages, investors perceive audit quality and auditor effort as low, on average, or high. When not provided with any additional information regarding audit fees, investors typically rate audit quality and auditor effort as average.

Previous research has proven the effect of audit fees on audit quality (Hakim and Mardijuwono, 2020; Kurniawan et al., 2019; Ayu et al., 2019; Nurintiati & Purwanto, 2017; Ardani, 2017; Kusumawardani and Riduwan, 2017; Mande and Son, 2015; Suseno, 2013; Beck et al., 2013). However, other research shows that audit fees do not affect audit quality (Rochmatilah et al., 2021; Munidewi et al., 2021; Ariyanto and Fanani, 2020; Rizki and Sudarno; 2020, Tobi et al., 2016). Audit fees may have a significant adverse impact on audit quality (Ishak and Sholehah, 2022; Egiyi, 2022). The contradictory results might be influenced by several different measurements of the research variables. For instance, Ettredge et al. (2014) and Salehi et al. (2017) quantify audit fees as the difference between ''normal'' and real audit fees, while other researchers quantify audit fees as the total fees paid by companies for audits (Mande and Son, 2015; Mohammed et al., 2018; Garcia-Blandon et al., 2020), and audit fees by industry (Beck et al., 2013). Audit quality is measured in different ways, with financial reporting misstatements (Ettredge et al., 2014; Salehi et al., 2017), discretionary accruals (Mande and Son, 2015; Garcia-Blandon et al., 2020), Big Four effect (Mohammed et al., 2018), material misstatement, abnormal accruals, and restatement of financial statements (Beck et al., 2013). These variations underscore the need for further investigation and standardization of research methodologies in this domain.

Research conducted by Widmann et al. (2021) enriches the literature on pricing in audit firms to ensure or improve the quality of audit services and contribute to the international literature on the audit market from a theoretical point of view by deriving a new testable model in determining audit fees. Their study is not able to provide results that can reflect the effect of determining audit fees to ensure the quality of audit services.

Thus, we need a meta-analysis study to interpret the past literature review with a statistical approach.

Meta-analysis studies effectively summarize, integrate, and interpret several previous research results with a statistical approach to a subject area. Essentially, they involve analyzing existing results (Glass, 1976) while allowing researchers to explain inconsistent and often contradictory findings (Allen, 2017; Bing et al., 2011; Hunter et al., 1982; Hunter and Schmidt, 2004; Lohwasser et al., 2021).

The first motivation for conducting meta-analysis research stems from the importance of filling the gap in recent research on the correlation between audit fees and audit quality. Despite the abundance of publications focusing on audit fees, we rarely found comprehensive literature reviews that provide a brief overview of the main current findings and insights. The most significant papers are written by Hay et al. (2006) and Hay (2013). Their meta-analysis studies explored an audit fee using data collected before the 2007 financial period. Widmann et al. (2021) enrich those previous studies by creating a literature review of the audit market with a new audit fee determinant model from a theoretical point of view.

The current research also stems from the contradiction of various research results regarding the effect of audit fees on audit quality. While several studies have shown that audit fees affect audit quality (Hakim and Mardijuwono, 2020; Kurniawan et al., 2019; Ayu et al., 2019; Nurintiati & Purwanto, 2017; Ardani 2017; Kusumawardani and Riduwan 2017; Mande and Son, 2015; Suseno, 2013; Beck et al., 2013). However, others suggest the absence of such a correlation (Rochmatilah et al., 2021; Munidewi et al., 2021; Ariyanto and Fanani 2020; Rizki and Sudarno, 2020; Tobi et al., 2016). This disparity provides an opportunity for researchers to conduct a study that can integrate previous results to re-evaluate the effect of audit fees on audit quality. By using the meta-analysis method, it is possible to aggregate the findings from several previous research results to obtain an accurate estimate of the correlation between audit fees and audit quality.

The third motivation arises from the existence of various measurements in measuring audit quality and audit fees. Using primary data, audit fees are measured as the difference between ''normal'' and real audit fees (Ettredge et al., 2014; Salehi et al., 2017) or as the total fees paid by firms for audits (Mande and Son, 2015; Mohammed et al., 2018; Garcia-Blandon et al., 2020). Meanwhile, audit quality is measured by financial reporting misstatement (Ettredge et al., 2014; Salehi et al., 2017), discretionary accruals (Mande and Son, 2015; Garcia-Blandon et al., 2020), and the impact of the Big Four effect (Mohammed et al., 2018). Using secondary data, audit fees are measured based on risk assessment, the complexity of the services provided, the level of service expertise, and the audit firm's fee structure (Wiguna et al., 2019; Ishak and Sholehah, 2022). Meanwhile, audit quality is measured by reporting all client errors, understanding the client's

information system, having a strong commitment to completing the audit, guiding fieldwork auditing and accounting principles, ensuring the client's statements, and being prudent in making decisions (Wiguna et al., 2019; Munidewi et al., 2020).

This study performed a meta-analysis of 34 previous empirical studies to reconcile their inconsistent results on the correlation between audit fees and audit quality and provide unproven assumptions. By extracting statistical results from relevant studies, this study sought to obtain an estimate of the effect size (Hunter et al., 1982; Hunter and Schmidt, 2004) and draw general conclusions about the effect of audit fees on audit quality. This study also examined whether conflicting results were caused by size variations in both audit fees and audit quality. Meta-analysis can be used to see if the moderating variable, size in this case, causes conflicting results (Allen, 2017; Bing et al., 2011; Hunter et al., 1982; Hunter and Schmidt, 2004; Lohwasser et al., 2021). This study also examined the measurement differences and their functions in identifying the effect of audit fees on audit quality.

This study yields three contributions to the knowledge. First, this study contributes to the literature on the association between audit fees and audit quality. Second, using a meta-analysis approach, this study reconciles conflicting empirical results on the issue. Finally, this study intends to compare journal quality across countries regarding the issue. The remainder of this paper is structured with other four sections. Section 2 describes the literature review and hypothesis development. Section 3 describes the research methodology. Section 4 outlines the results and discussion, and finally, Section 5 presents the conclusions.

LITERATURE REVIEW

Audit fees and audit quality

Audit quality can be considered one of the determinants of audit performance. Through auditing, the information asymmetry between management and users can be mitigated, enabling users of financial statements to evaluate and predict the company's financial performance. One of the factors affecting audit quality is the fees paid to auditors. The theory of economic rents suggests that high audit fees create an economic bond between auditors and clients, thereby impairing auditor independence because firms are less willing to lose or terminate clients (Simunic, 1984; Davis et al., 1993). However, two important factors mitigate the incentives created by economic ties. First, the auditor must consider the decision against the potential reputational costs associated with poor-quality work and the loss of another client (Weber et al., 2008). Second, auditors may be prosecuted as subject to lawsuits for malpractice as they are well-known to have “deep pockets” (DeAngelo, 1981). Higher fees will make auditors more dependent on their

clients economically. Because auditors do not want to lose their interest in the company, they try to carry out their activities with higher quality (Hoitash et al., 2007).

Fees paid to auditors reflect the auditor's efforts. The amount of audit fees is sometimes used as an indicator of audit quality (Hardies et al., 2015; Zerni, 2012). As argued in previous research, higher fees are expected to reflect higher auditor effort. Several studies have shown that the correlation between audit fees and audit quality is significant and positive (Rahmina and Agoes, 2014; Tobi et al., 2016; Hakim and Mardijuwono, 2020; Aljaaidi et al., 2021), affirming that high audit fees are accompanied by an increase in audit quality. The higher the audit fee, the higher the audit quality. Based on this argument, the proposed hypothesis is:

H1. Audit fees have a positive effect on audit quality.

Moderation effect

The previous empirical literature on the effect of audit fees on audit quality uses a variety of measurements. Some studies quantify audit fees as the difference between ''normal'' and real audit fees (Ettredge et al., 2014; Salehi et al., 2017) and the fees paid by companies for audits or Ln audit fees (Mande and Son, 2015; Mohammed et al., 2018; Garcia-Blandon et al., 2020). Meanwhile, audit quality is measured by financial reporting misstatements (Ettredge et al., 2014; Salehi et al., 2017), discretionary accruals (Garcia-Blandon et al., 2020), and the Big Four effect (Mohammed et al., 2018). However, a contradiction emerges in the correlation between audit fees and audit quality. Ilechukwu and Ubaka (2017) found that audit fees as measured by the Ln audit fee were positively related to audit quality as measured by the Big Four effect, while Mohammed et al. (2018) observed a negative and significant result of the variables. Hakim and Mardijuwono (2020) discovered that audit fees as measured by Ln audit fees were positively related to audit quality assessed from discretionary accruals, while Garcia-Blandon et al. (2020) found negative results.

Considering the existing differences in how audit fees and audit quality are differently measured and the possibility of effects from the empirical results, this study proposes a *second hypothesis that is:*

H2. The positive effect of audit fees on audit quality is moderated by the audit quality measurement model and audit fees.

RESEARCH METHODS

This study used the meta-analysis method. The initial stage began by collecting t-statistics values from each relevant article. Research articles as data sources were included in the sample overview table and sorted chronologically and alphabetically (as depicted in Table 2). Similar measurements were grouped based on every variable (as

depicted in Table 3). From the t-statistics values obtained, calculations were carried out using the formulas contained in the equation section sequentially, starting from Equation 1 to Equation 7. The results of the meta-analysis calculations are depicted in Table 4 and Table 5.

Data and samples

This study measured the effect size (r̂) based on t-statistics and previous studies that did not include it were excluded. The articles used for meta-analysis came from the SCOPUS, EBSCO, Google Scholar, Science and Technology Index databases as depicted in Table 1. A total of 496,808 articles were initially obtained using the keywords "audit costs and audit quality". Out of the initial 496,808 articles, all underwent another round of sorting using the keywords "independent variables, dependent variables, audit costs, and audit quality". After that, the articles were categorized again manually by selecting articles that had an independent variable, namely audit costs, and a dependent variable, namely audit quality. After further research on independent variables, dependent variables, and availability of t-statistics, this study eventually gathered 34 articles published between 2013 and 2022. From the 34 articles collected, a meta-analysis was then carried out using Microsoft Excel.

Table 1. Sampling criteria

Sampling Criteria	Number of Articles
The number of articles in the database of SCOPUS, EBSCO, Google Scholar, Science, and Technology Index with "audit fee and audit quality" as the keyword.	496,808
	(496,764)
The number of articles that do not use audit fee as an independent variable and audit quality as a dependent variable.	(10)
The number of articles that do not display t-statistic values.	34
The number of articles in the final sample.	

Source: Processed Data

Table 2 reports the list of final articles used in this study. The table shows the authors, selected audit fee measures and selected audit quality measures. This table describes the number of observations done, the country as a research location, and the type of journal.

Table 2. Sample overview (in chronological and alphabetical order)

No	Author	Audit Fee Measures	Audit Quality Measures	n	Country	Journal
1	Egiyi (2022)	Ln (Audit fee)	Big Four effect. A value of 1 was given to the company if it used the audit service of the Big Four. A value of 0 was applied if it did not use the variable.	165	Nigeria	International
2	Wijaya and Susilandari (2022)	Ln (Audit fee)	Accrual discretionary	95	Indonesia	National
3	Ishak and Sholehah (2022)	Questionnaire (Audit Fee: risk determination, the complexity of the services provided, level of expertise required to perform these services, and audit firm fee structure)	Questionnaire (Strategy quality, technical quality, process quality, BPKP code of ethics/principles). Ref: PMP, Code BPKP, and Code of Ethics	50	Indonesia	National
4	Saheed *et al*. (2021)	Ln (Audit fee)	Accrual quality model of Fuad (2012)	80	Nigeria	International
5	Aljaaidi *et al*., (2021)	The proportion of the company's revenue to the audit company's total revenue	Principal components of the linear combination of the four audit firm quality measures based on DeFond (1992)	108	Arab countries in the Gulf	International
6	Salim and Raharja (2021)	Ln (Audit fee)	Big Four effect. A value of 1 was given to the company if it used the audit service of the Big Four. A value of 0 was used if it did not analyze the variable.	180	Indonesia	National
7	Salam and Arman (2021)	Ln (Audit fee)	Big Four effect. A dummy variable was utilized with code 1 if KAP was Big Four auditing. Code 0 was used if KAP was non-Big Four.	48	Indonesia	National
8	Rochmatilah *et al*. (2021)	Ln (Audit fee)	Discretionary accruals of the Kaznik model (1999)	78	Indonesia	National
9	Munidewi *et al*. (2020)	Questionnaire: (1) the amount of the auditing fees, (2) audit risks, (3) the complexity of the services, (4) the level of auditor's expertise, and (5) audit firm fee structure	Questionnaire: (1) reporting all client errors, (2) understanding the client's information system, (3) strong commitment to completing the audit, (4) guiding fieldwork auditing and accounting principles, (5) not simply believing	114	Indonesia	National

No	Author	Audit Fee Measures	Audit Quality Measures	n	Country	Journal
			in the client's statements, and (6) prudence in making decisions			
10	Garcia-Blandon *et al*. (2020)	Ln (Audit fee)	Discretionary accruals (Dechow, Sloan, & Sweeny 1995)	813	Spain	International
11	Malinda & Sudarno (2020)	Ln (Audit fee)	DA (Model Jones 1991)	187	Indonesia	National
12	Hakim & Mardijuwono (2020)	Ln (Audit fee)	DA (Model Jones 1991)	127	Indonesia	International
13	Ariyanto and Fanani (2020)	Ln (Audit fee)	GAO (1986) is a form of auditor compliance with professional standards and contract terms specified for audit services.	166	Indonesia	International
14	Kurniawan *et al.* (2019)	Questionnaire (management risk, assigned audit work, level of expertise in the task, audit fees with managing risk, IAPI management cost indicator by Law Number 2 in 2016, and cost structure of involved accounting firms)	Questionnaire (audit quality and audit compliance with the standard)	98	Indonesia	National
15	Wiguna *et al*. (2019)	Questionnaire (assignment risk, complexity of services provided, the auditor's level of expertise in the client industry, and public accountant fee structure)	Questionnaire (Report all client errors, understand the client's accounting information system, establish a strong commitment to complete the audit, do not immediately trust the client's statement, and be cautious in making decisions)	70	Indonesia	National
16	Mohammed *et al.* (2018)	Ln (Audit fee)	Big Four effect. A value of 1 was given to the company if it used the audit service of the Big Four. A value of 0 was used if it did not apply the variable.	72	Nigeria	International

No	Author	Audit Fee Measures	Audit Quality Measures	n	Country	Journal
17	Permatasari and Astuti (2018)	Ln (Audit fee)	discretionary accruals	132	Indonesia	National
18	Ibrahim and Ali (2018)	Ln (Audit fee)	DA (Model Jones)	72	Nigeria	International
19	Ayu *et al.* (2018)	Ln (Audit fee)	Kasznik's discretionary accrual model	122	Indonesia	International
20	Nurintiati and Purwanto (2017)	Ln (Audit fee)	Discretionary accrual	154	Indonesia	National
21	Kusumawardani and Riduwan (2017)	Questionnaire (the complexity of the services provided, the level of expertise, and engagement risk that affects the auditor's independence)	Questionnaire (sufficient evidence, misstatement detection, materiality, compliance with accounting standards, and real reporting)	46	Indonesia	National
22	Ilechukwu (2017)	Ln (Audit fee)	Big Four effect. A value of 1 was given to the company if it used the audit service of the Big Four. A value of 0 was used if it did not use the variable.	60	Nigeria	International
23	Salehi *et al. (*2017)	The difference between the client's annual audit fees and the real audit fees in the same year	Financial reporting misstatements	104	Iran	International
24	Kafabih and Adiwbowo (2017)	Ln (Audit fee)	Abnormal working capital accruals	146	Indonesia	National
25	Pham *et al.* (2017)	Ln (Audit fee)	DA (Model Jones)	192	Vietnam	International
26	Ardani (2017)	Ln (Audit fee)	Discretionary accrual model and modified Jones (Dechow:1995)	33	Indonesia	National
27	Kuntari *et al.* (2017)	Questionnaire [(1) audit quality is determined by the amount of audit fee received and the complexity of the work; (2) audit	Questionnaire [(1) audit report contains objective findings and conclusions of the audit results, as well as constructive recommendations; (2) the resulting report	30	Indonesia	National

No	Author	Audit Fee Measures	Audit Quality Measures	n	Country	Journal
		quality is determined by the amount of audit fee received and the level of auditor expertise; (3) audit quality is determined by the amount of audit fee received and audit risk encountered; (4) the quality of the audit is determined by the amount of audit fees received and the effort to obtain clients; and (5) the quality of the audit is determined by the amount of audit fees received and the effort to retain clients]	must be accurate, complete, objective, convincing, clear, concise, and timely to collect maximum benefits from the information provided; (3) the report shall state the explanation or response of the official/party of the audit object about the audit result; (4) the report discloses matters which are issues that have not been resolved until the end of the audit; and (5) the report should be able to express recognition of an achievement or an improvement action that has been carried out by the audit object]			
28	Tobi *et al.*(2016)	Ln (Audit Fee)	Log of the total number of staff in the audit firm	35	Nigeria	International
29	Mande and Son (2015)	Ln (Audit Fee)	The absolute value of the residuals in the regression was related to the accruals of the past, present, and future operating cash flows, changes in sales revenue, plant, and equipment property.	25470	United States of America	International
30	Rahmina and Agoes (2014)	Questionnaire [fees charged by public accountants to audited companies for audit services performed by public accountants on financial reports (Iskak, 1999 in Suharli and Nurlaelah, 2008)]	Questionnaire [shared probability where the auditor finds and reports errors contained in the audited financial statements to meet general auditing standards in carrying out their duties to maintain credibility (De Angelo, 1981 in Kusharyanti, 2003)]	143	Indonesia	International

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No	Author	Audit Fee Measures	Audit Quality Measures	n	Country	Journal
31	Ettredge *et al.* (2014)	The difference between ''normal'' benchmark audit fees and actual audit fees	Financial reporting misstatements	3039	United States of America	International
32	Pamungkas (2014)	Ln (Audit fee)	Company's total accruals	25	Indonesia	National
33	Beck *et al.* (2013)	Questionnaire (Audit fee compared to the industry)	Questionnaire [material misstatement (DeAngelo 1981), abnormal accrual, restatements of financial reports, or other substitutes for accounting for ''deviations'' (Reynolds and Francis 2000; Romanus et al.2008; Francis and Yu 2009)]	112	United States of America	International
34	Suseno (2013)	Questionnaire (Size of an auditee, complexity, and risk)	Questionnaire (skill, experience, ethical value, mindset, the reliability of audit methods, the effectiveness of the tools utilized, and the availability of technical support)	73	Indonesia	International

Source: Processed Data

Variables

Table 3 highlights the operational variables commonly used in the literature. It describes three measures of audit fees: audit fees, the difference between ''normal'' and “real” audit fees, risk assessment indicators, the complexity of the services provided, the level of expertise required to perform these services, and the audit firm's fee structure. It also displays audit quality measures: the Big Four effect, discretionary accrual, financial reporting misstatement, indicators reporting all client errors, understanding the client's information system, a strong commitment to completing the audit, guiding auditing and accounting principles in doing fieldwork, not simply believing in client's statements, and prudence in making decisions.

Table 3. Operational variables and number of related articles

Variable	Proxy	Literature	Measures
Audit fee	Ln audit fee	22	Natural logarithm of audit fees. Most previous studies used this measure according to Mande and Son (2015)
	Difference between ''normal'' and real audit fees	2	Natural logarithm of the difference between ''normal'' and “real” audit fees (Ettredge *et al.,* 2014; Salehi *et al.*, 2017)
	Questionnaire	2	Measurement of audit fees with risk assessment indicators, the complexity of the services provided, the level of expertise required to perform these services, and the cost structure of the audit firm (Wiguna et al., 2019; Ishak and Sholehah, 2022)
Audit quality	Big Four effect	5	A value of 1 was given to the company if it used the audit service of Big Four. However, a value of 0 was used if it did not assess the variable (Ilechukwu and Ubaka, 2017; Mohammed *et al*., 2018; Salam and Arman, 2021; Salim and Raharja, 2021; Egiyi 2022).
	Discretionary accrual	11	Using the estimation of discretionary accruals from the Jones model, most of the previous studies used this measure (Dechow *et al*., 1995)
	Financial reporting misstatement	2	A value of 1 was given to the company if the company had a financial misstatement. However, a value of 0 was given if it did not have the financial misstatement (Ettredge *et al.,* 2014; Salehi *et al.*, 2017).
	Questionnaire	2	Measurement of audit quality with indicators: reporting all client errors, understanding the client's information system, having a strong commitment to completing the audit, guiding fieldwork auditing and accounting principles, not simply believing in client’s statements, and prudence in making decisions (Wiguna *et al*., 2019; Munidewi *et al*., 2020)

Source: Processed data

Equations

This study chose to use t-statistics (t) to derive the value of r, and Equation (1) needs to be performed to analyze the data:

$$r = \sqrt{\frac{t^2}{(t^2+df)}} \quad \ldots\ldots\ldots\ldots \quad (1)$$

In this case, r is the mean correlation; t is the t-statistic; and df is the number of sample sizes used (n) in each article minus the number of independent variables (k) used in the model. Once r was found, the weighted average correlation coefficient (r̂) of all sample sizes (Ni) was calculated as:

$$\hat{r} = \frac{\sum(Niri)}{\sum Ni} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

In the second formula, r̂ represents the weighted average of the correlation coefficients. After r̂ was determined, the next step was to find the observed variance (S_r^2) of all correlation coefficients in the article sample by dividing the error-weighted mean squared by $\sum Ni$.

$$S_r^2 = \frac{\sum[Ni\,(1-\hat{r}^2)^2 k]}{\sum Ni} \quad \ldots\ldots\ldots\ldots \quad (3)$$

Equations (4) and (5) were used to calculate the variance of the sampling error:

$$S_e^2 = \frac{(1-\hat{r}^2)^2 k}{\sum Ni} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (4)$$

$$S_p^2 = S_r^2 - S_e^2 \quad \ldots\ldots\ldots\ldots\ldots \quad (5)$$

The next step was to determine the level of the trust interval. This study used a 95% trust interval. Since the study used more than 30 articles, the z-statistics was determined using this model:

$$[\hat{r} - S_p\,Z\,0{,}975,\ \hat{r} + S_p\,Z\,0{,}975] \approx [\hat{r} - S_p\,Z\,1{,}96,\ \hat{r} + S_p\,Z\,1{,}96] \ldots\ldots\ldots\ldots\ldots \quad (6)$$

The Hunter equation (Hunter *et al.*, 1982) was used to test statistical validity, aiming to establish a new trust interval to reduce the level of heterogeneity caused by the use of different measures of audit fee and audit quality (Fanani, 2014; Hunter *et al.*, 1982). Equation (7) was used to test the data validity.

$$X_{k-1}^2 = \frac{N_{S_r^2}}{(1-\hat{r}^2)^2} = K\,\frac{S_r^2}{S_e^2} \quad \ldots\ldots\ldots\ldots \quad (7)$$

The first step of hypothesis testing was to check whether the mean correlation (r̂) ranged from the minimum to maximum trust intervals. As shown in the formula, the 95% trust level was used to test whether the correlation between audit fees and audit quality was significant. If r was between two trust interval levels, the correlation was strong with the proven hypothesis. This type of hypothesis testing has been demonstrated by some researchers (Brierley, 1999; Dalton *et al.,* 2017; García-Meca and Sánchez-Ballesta, 2009; Heemskerk, 2019; and Tosi et al., 2000).

The second step is related to the directional nature of testing the first hypothesis. If it showed positive values of the upper and lower trust interval levels, the correlation was also positive. On the contrary, if the values were all negative, the correlation was negative.

The second hypothesis was tested by examining the results of the Chi-square test *(X^2)*. If the Chi-square test value was significant, the difference in the size of audit fees moderated the effect of audit fees on audit quality.

RESULT AND ANALYSIS

Effect of audit fees and audit quality

Table 4 shows that the r̂ of the overall correlation is 0.044. Assuming a 95% trust level, these values fall well between the lower and upper trust levels of 0.034 and 0.054, respectively. All values were positive with a positive influence. Thus, the first hypothesis that audit fees have a positive effect on audit quality was proven.

The variances of the estimated error and the observed variances indicate that the sampling error cannot significantly account for the variance in the effect size. High variability was indicated in all portrayed measures with the overall percentage explained at 17.381%. This result suggested 82.619% variability in the size effect. This considerable variability may be due to the high number of observations used in the literature. The high variation in audit fee measures and audit quality measures resulted from the X^2 statistic. Table 4 also shows the value of X^2 for all measurements is 195,617 which is above the critical value of X^2 of 5,992. It means that the second hypothesis, indicating that audit fees and audit quality measures moderated the effect of audit fees on audit quality, was correct. With the current results, future researchers should consider the examined audit fee and quality measures and others.

Based on the findings, it appears that the conflicting results of previous studies did not contribute significantly to the meta-analysis results. More studies under research showed a positive effect of audit fees on audit quality than those that presented negative results. Some revealed a positive correlation and used more observations and/or had higher levels of t-statistics, resulting in a trend toward a positive correlation (r̂) in the meta-analysis findings.

Comparison of literature between country and journal types

Articles were analyzed by countries and the journals in which they were published. The country category was divided into developed countries and developing countries. The Journal category was categorized into two types of journals, international journals and national journals.

Table 5 shows that in the developed country category, the f̂ value is 0.0301 with a lower and upper respective trust level of 0.0298 and 0.0303. In developing countries, the f̂ value is 0.1819 with a lower and upper trust level of 0.1193 and 0.2445, respectively. The articles in the international journal category have the f̂ value of 0.0360 with a lower and upper trust level of 0.0312 and 0.0407, respectively. The table shows that articles in the national journal category demonstrate the f̂ value of 0.2142 with a lower and upper trust level of 0.1584 and 0.2700, respectively. All categories are between the lower and upper trust levels. All values are positive, indicating a positive effect of audit fees on audit quality. Thus, we can conclude the first hypothesis was true as audit fees had a positive effect on audit quality in all categories (developed countries, developing countries, international journals, and national journals).

The results displayed that the sampling error could not significantly explain the variances in the effect size. The articles under research had high variability in each category (developed countries, developing countries, international journals, and national journals) of 49.9676%, 22.6135%, 19.3231%, and 25.5988%, respectively. More than 50% variability in the size effect was found in each category. The high variability could be attributed to the high number of observations used in the literature, audit fee measures, and audit quality measures. The X^2 value also reaffirms the high variations in the category. Table 5 also shows the X^2 values of 8.0052 in the developed country category, 132.6641 in the developing country category, 93.1529 in the international journal category, and 62.5029 in the national journal category, which are all above the critical X^2 value of 5.992. This result implies that the second hypothesis, that the audit measures moderated the effect of audit fees on audit quality, was justified.

Using different measurements, previous studies have shown correlations between audit fees and audit quality. For example, in the categories of developing countries and international journals, audit fees as measured by the Ln audit fee were positively related to audit quality as measured by the Big Four effect (Ilechukwu and Ubaka, 2017) and discretionary accruals (Hakim and Mardijuwono, 2020). Thus, future researchers should expect that the audit measures can memorialize the results of similar studies. Future studies should use robust tests with different measures, particularly audit quality measures, to prove the correlation more accurately.

Table 4. Meta-analysis overall results

	Total Observations	Number of Independent Variables (k)	Mean of Size Effect ($\hat{r}$)	Observed Variance (Sr)	Estimated Error Variance (Se)	Residual Variance (Sp = Sr- Se)	Percentage Explained (Sr : Se)	Lower Level of the Confidence Interval	Upper Level of the Confidence Interval	Calculated X^2
All measures	32439	34	0.044**	0.006	0.001	0.005	17.381	0.034	0.054	195.617**
Big Four effect	525	5	0.100**	0.106	0.009	0.096	8.845	-0.088	0.289	56.532**
Discretionary accrual	2005	11	0.141**	0.012	0.005	0.007	43.182	0.127	0.154	25.473**
Financial reporting Misstatement	3143	2	0.033**	0.012	0.005	-0.007	43.182	0.046	0.019	0.009**
Questionnaire	184	2	0.205**	0.001	0.010	0.009	995.600	0.187	0.222	0.201**
Ln audit fee	28452	22	0.039**	0.005	0.001	0.004	17.009	0.031	0.046	129.342**
Difference between ''normal'' and “real” audit fees	3143	2	0.033**	0.000	0.001	-0.001	21088.395	0.034	0.032	0.009**
Questionnaire	120	2	0.056**	0.050	0.017	0.033	33.100	-0.010	0.122	6.042**

Note: The table reports the estimated effect sizes for all the measures used. An asterisk in the column indicates a strong relationship at the 5% level, and an asterisk in the calculated X^2 column denotes a strong moderating effect of the audit fee and audit quality measures at the 5% level.

Source: Processed data

Table 5 Meta-analysis results – countries categories and journal types

	Total Observations	Number of independent variables (k)	Mean of size effect (r̂)	Observed variance (Sr)	Estimated error variance (Se)	Residual variance (Sp = Sr-Se)	Percentage explained (Sr : Se)	Lower level of the confidence interval	Upper level of the confidence interval	Calculated X^2
All measures	32439	34	0.0441**	0.0060	0.0010	0.0050	17.3809	0.0344	0.0539	195.6169**
Developed countries	29434	4	0.0301**	0.0003	0.0001	0.0001	49.9676	0.0298	0.0303	8.0052**
Developing countries	3005	30	0.1819**	0.0413	0.0093	0.0319	22.6135	0.1193	0.2445	132.6641**
International journals	30953	18	0.0360**	0.0030	0.0006	0.0024	19.3231	0.0312	0.0407	93.1529**
National journals	1486	16	0.2142**	0.0383	0.0098	0.0285	25.5988	0.1584	0.2700	62.5029**

Notes: The table reports size effect estimates for countries' categories and journal types. Asterisks in r̂ column signify a robust association at the 5% level

Source: Processed Data

CONCLUSION

This study confirmed that audit fees had a positive impact on audit quality. The results are also visible for all categories: audit fee and quality measures, countries, and journal categories. This study also found that audit fee and audit quality measures moderated the positive effect of audit fees on audit quality. With the moderating effect of the measures, future research should carefully select them. Durability tests should be carried out to ensure that the results remain the same under different measures, especially audit quality ones.

The fact that audit fees positively affected audit quality may lead to some questions: Is this relationship universally applicable? Is there a possibility that audit fees will be less or will not affect audit quality in certain contexts? Based on the sample of articles examined, a small number of studies managed to find unfavorable audit fees and did not have an appreciable magnitude in effect size ($\hat{r}$). The effect sizes of studies with unfavorable outcomes are notably smaller in comparison to those of research with favorable ones.

Above all, this study encounters several limitations. First, the number of studies used as samples in this study was still limited. Several articles could not be included in the analysis because they did not meet the criteria, thereby reducing the number of studies studied. Secondly, some researchers did not present statistical data in their articles; thus, the variables could be tested, and the number of data sources was consequently reduced. Thirdly, this study only analyzed the articles that examined the effect of audit fees on audit quality. Research on other affecting variables was not included. It is an opportunity for the next research to explore them in a larger number of samples. Both published and unpublished research were likely to give different results that can provide richer empirical evidence and explanations behind the controversy about audits. Therefore, future studies need to provide complete tests using different measures, especially audit quality ones.

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