



META-ANALYSIS: AUDIT QUALITY DETERMINANTS

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Abstract

This research aims to identify the results of empirical research related to the determinants of audit quality and to show a deep understanding of the reasons behind the differences in the results of previous studies. This study uses a meta-analysis with a sample of 45 international studies from original scientific articles from the years 2003 to 2020. The results showed that audit firm size and independence had a significant positive effect on audit quality. Meanwhile, audit tenure and industry specialization have a non-significant positive impact on audit quality. Furthermore, the analysis results also prove that the classification of countries (developed and developing) can moderate the relationship between audit firm size, independence, audit tenure, and industry specialization in audit quality.

Keywords: *audit quality, audit firm size, independence, audit tenure, auditor specialization*

INTRODUCTION

The statement of opinion on the fairness of the financial information from the auditor is essential for external parties to obtain assurance that the figures and descriptions contained in the financial statements represent the company's actual financial position (Alareeni, 2019). The information must have a reliable quality because it is helpful in the decision-making process (Al-Khaddas et al., 2013). Public accountants always maintain audit quality based on professional standards of public accounting and a professional code of ethics for certified public accountants for the survival of clients and the general accounting firm itself (Halim et al., 2014). Concern about audit quality became so high after the sudden collapse of several large companies in various countries (Firth et al., 2011). As a result, public trust, especially among investors in the capital market, in the audit quality of public accountants has decreased (Sarwoko and Agoes, 2014).

The importance of transparency of financial statement information as a basis for decision making and believing in the role of auditors regarding the reliability of financial statements causes factors related to audit quality to be significant to study (Salehi et al., 2019). The main objective of this study is to find the reasons for the differences in the results of previous studies by investigating the role of country classification (developed and developing countries) as a moderate subset that allows managers and users of the information to make decisions in appointing auditors in various countries. This study presents a clear picture of the determinants of audit quality in both developed and developing countries. In this case, the audit profession's reputation is considered wrong in developing countries such as Indonesia, Nigeria, Egypt, and Algeria, which is caused by some audit firm services being of low quality and

ineffective (Salehi et al., 2019). Developed countries such as the United States, Britain, China, and Australia have law enforcement systems that provide more excellent protection to investors, including the ability to sue auditors if fraud is found, so that the quality of audit reports produced is very high (Francis and Wang, 2008).).

Many studies on the factors that influence audit quality have been carried out previously and obtained mixed results, making it difficult to draw general conclusions. According to the findings of Geiger and Rama (2006), Francis and Michael (2009), Al-Thuneibat et al. (2010), Al-Khaddas et al. (2013), Chen et al. (2005), Mohamed and Magda (2013), Tobi et al., (2016), Mansi et al., (2004), Lim and Hun-Tong (2010), Dunn and Brian (2004), Lowensohn et al., (2007), and Adeniy.

Contrasting with research conducted by Bauwhede and Willekens (2004), Padri and Molina (2015) and Benzouai and Khalil (2020) found that audit firm size, independence, audit tenure, and audit specialization did not affect audit quality. Based on these reasons, the researchers used meta-analysis as an analytical tool to identify relevant empirical studies on the factors that affect audit quality. In addition, this research will also integrate the findings of previous studies, make generalizations quantitatively, and look for effects or relationships that are not explained when viewed from another way of summarizing a result from the same primary research group (Hunter and Schmidt, 2000).

The novelty in this study is that first, this study tries to fill the research gap by examining the moderate effect of factors affecting audit quality using the classification of countries (developed and developing countries) on the law enforcement side. The criteria for the type of developed and developing countries are based on the United Nations Conference on Trade and Development (UNCTAD) results in 2021. Second, this study adds an independent variable as one of the factors affecting audit quality. Auditor independence makes a high contribution to audit quality. In dealing with freedom conflicts, the auditor will apply professional skepticism, professional judgment, and auditing standard guidelines, including ethical standards, to make final decisions (Nizalur et al., 2007). Third, this study uses the US and non-US journals published after the Sarbanes-Oxley Act (SOX) 2002. SOX is a law issued by America to solve the many financial scandals involving large companies such as Enron, which resulted in disappearances. Investors trust financial statements that auditors have audited. Therefore, researchers are interested in conducting research under "Meta-Analysis: Audit Quality Determinants."

LITERATURE REVIEW

Audit Quality

According to Mulyadi (2014:43), the notion of audit quality is a systematic process to obtain and evaluate evidence objectively regarding statements about economic activities and events to determine the level of conformity between these statements and predetermined criteria and the delivery of results. -results to interested users. Meanwhile, DeAngelo (1981) argues that audit quality is a combination of competent auditors finding violations in the client's accounting system and reporting their findings independently.

Audit Company Size

Audit firm size is one of the proxies for measuring audit quality (DeAngelo, 1981). According to Arens et al. (2014), audit firm size is a scale that shows total revenue, number of partners, number of professional staff, and number of offices. More significant audit firms (Big4 firms) have better audit quality than smaller ones (non Big4). To maintain their reputation, they provide high-quality services to avoid situations that could destroy their integrity in front of clients. However, several previous studies claim that the size of the audit firm does not guarantee better audit quality (Lowensohn et al., 2007). The results of research conducted by Geiger and Rama (2006), Choi et al. (2007), Francis and Michael (2009), and Al-Khaddas et al. (2013) show that audit firm size has a significant and positive relationship with audit quality. Contradictory to the research conducted by Bauwhede and Willenkens (2004), which examined the effect of audit firm size on audit quality in the Belgian market.

H₁: *Audit Company Size Has a Positive and Significant Relationship to Audit Quality*

Independence

Arens et al. (2012) define independence as taking an unbiased point of view. Auditors must not only be independent, in fact, but must also be independent in appearance and thought. Auditor independence is one of the cornerstones of the auditing profession, meaning that the auditor must refuse to support any detected misstatements and oppose the client's attempts to influence the audit report (Lu, 2005). Auditor independence contributes to audit quality because in dealing with conflicts, auditor independence will apply professional skepticism, professional judgment, and auditing standard guidelines, including ethical standards, to make final decisions (Nizalur et al., 2007). The results of research conducted by Chen et al. (2005), Mohamed and Magda (2013), Halim et al. (2014), and Tobi et al. (2016) found that auditor independence has

a positive effect on audit quality. Contradictory to research conducted by Benzouai and Khalil (2020) found that auditor independence did not affect audit quality.

H₂: *Auditor Independence Has a Positive and Significant Relationship to Audit Quality*

Audit Tenure

Audit tenure is defined as the number of consecutive years the auditor has audited the client's financial statements (Johnson et al., 2002). Furthermore, Carey and Simnett (2006) define the auditor's tenure as the period of involvement between the audit and the client or the length of the relationship between the auditor and the company's client. Carcello and Nagy (2004) argue that the effect of auditor tenure on audit quality is still controversial. There are two opposing views, proponents of audit rotation state that longer tenure can lead to a lack of auditor independence, self-satisfaction, and reduced objectivity due to close relationships with clients. On the other hand, some argue that audit quality increases along with the long period of auditor collaboration due to the experience of auditors who are more knowledgeable and familiar with the client's business operations. Research conducted by Mansi et al. (2004), Lim and Hun-Tong (2010), and Bell et al. (2015) found that there is a positive relationship between audit tenure and audit quality. Contradictory to the research results conducted by Padri and Molina (2015), which found that audit tenure did not affect audit quality.

H₃: *Audit Tenure Has a Positive and Significant Relationship to Audit Quality*

Industry Specialization Auditor

Balsam et al. (2003) argue that accounting firms that have auditors specializing in the client audit process will be able to select and carry out audit procedures that are more appropriate and effective than non-specialized auditors. Industry-specialized auditors imply extensive knowledge of the client's business environment, industry accounting practices, and accounting abuse practices. Therefore, the assignment of specialization auditors to specific client industries provides positive benefits because it can maintain the quality of company earnings, ultimately improving audit quality (Lin et al., 2010). Research conducted by Dunn and Brian (2004), Lowensohn et al. (2007), and Lim and Hun-Tong (2010) showed a positive relationship between industry-specialized auditors and audit quality. It is contrasted with research conducted by Hasasyeganeh and Azinfar (2010) which examined the impact of auditor specialization on reporting rate in the Tehran stock market. The study results found that there

was no significant difference between the information of companies that have industry specialization auditors or not.

H₄: *Industry Specialization Auditors Have a Positive and Significant Relationship with Audit Quality*

Classification of Countries as Moderate Variables

Institutional strengths shape the role of accounting and auditing in corporate governance. Developed countries have law enforcement systems that provide excellent protection to investors, including the ability to sue auditors if errors are found in financial statements (Francis and Wang, 2008). Developing countries with weak legal environments are generally less demanding high audit quality (Francis et al., 2003). Big4 companies have higher audit quality in countries with strict law enforcement systems. In contrast, small audit firms with a common reputation in the eyes of investors and the public do not care about the threat of punishment (Francis, 2006).).

Audit plays a role in enforcing the application of appropriate accounting policies. In their activities, auditors have incentives to follow earnings management behavior. However, the auditor's incentives have changed due to a strict law enforcement system (Francis, 2006). Auditor independence is significant to maintain its integrity and reputation before the public. Audit companies try not to be influenced by others and report any findings of earnings management activities which will ultimately improve the quality of financial statement audits (Khurana and Raman, 2004).).

Several companies in various countries still extend the audit tenure for a long time because they are considered to impact both audit companies and clients positively. On the other hand, developed countries such as China, Britain, the United States of America, and several other countries have issued rules that require audit partners to change every five years (also referred to as audit rotation). It is done to prevent auditors from not being independent due to long cooperative relationships (Firth et al., 2011).

The demand for industry-specialized auditors in developed markets is increasing along with the increase in audit quality. This situation happens because the unique expertise possessed by auditors has a significant impact on the company's audit results. After all, they have more ability to analyze misstatements effectively (Salehi et al., 2019).

H₅: *Country Classification Moderates Relationship Between Audit Quality Factors and Audit Quality*

METHOD

The method used in this research is a meta-analysis in a quantitative description. A meta-analysis is a research approach that helps researchers reach an appropriate combination of conflicting results from previous studies to describe contradictions and establish the structure of moderating variables in the literature (Hunter et al., 1982). The purpose of using the meta-analysis method in this study is to generalize the results of previous studies that are contradictory so that a general conclusion can draw. Inconsistency in the same research findings with the same purpose is also usually caused by differences in research samples, countries with different regulations, and various measurements and definitions of variables.

Population and Sample

The population of this research is all articles or research journals related to the factors that affect audit quality which consists of 647 research articles. The sampling technique in this research is purposive sampling. In other words, whether a research result becomes a sample depends on the researcher's assessment based on predetermined criteria, and the sample obtained is 45 research articles.

Table 1 Sample Articles Analyzed

No	Researcher	Country	Year
1	Adeniyi et al	Nigeria	2013
2	Enofe et al	Nigeria	2013
3	Al-Khaddash et al	Yordania	2013
4	Ali and Mekha	Indonesia	2015
5	Al-Thuneibat et al	Yordania	2010
6	Ball et al	Australia	2015
7	Bell et al	Amerika	2015
8	Jackson et al	Australia	2007
9	Chen et al	Taiwan	2005
10	Wuchun Chi and Tand	Taiwan	2005
11	Corbella et al	Itali	2015
12	Elder et al	Amerika	2015
13	Firth et al	China	2011
14	Francis and Michael	Amerika	2009
15	Geiger and Dasaratha	Amerika	2006
16	Jackson et al	Australia	2008
17	Jenkins and Uma K	Amerika	2012
18	Lim and Hun-Tong	Singapura	2010
19	Manry et al	Amerika	2008

20	Rahmina dan Sukrisno	Indonesia	2014
21	Al-mutairi et al	Amerika	2009
22	Carey and Roger	Australia	2006
23	Chen et al	Taiwan	2005
24	Dunn And Brian	Amerika	2004
25	Gul et al	Amerika	2007
26	Hegazy	Mesir	2015
27	Iryani	Indonesia	2017
28	Johnson et al	Amerika	2003
29	Lawrence et al	Amerika	2017
30	Myers et al	Amerika	2003
31	Sawan and Ihab	Libya	2013
32	Sundgren And Tobias	Swedia	2013
33	Halim et al	Indonesia	2014
34	Fernando et al	Amerika	2010
35	Agoes	Indonesia	2014
36	Mohamed and Magda	Mesir	2013
37	Wang et al	Taiwan	2014
38	Benzouai dan Khalil	Algaria	2020
39	Tobi1 et al	Nigeria	2016
40	Choi et al	Amerika	2009
41	Jeong dan Joonhwa	Korea	2004
42	Knechel and Ann	Belgia	2007
43	Krau and Henning	Jerman	2013
44	Lowensohn et al	Amerika	2007
45	Padri and Molina	Indonesia	2015

Meta-Analysis Stage

Study Material Collection

The collection of articles as study material begins with listing the keywords used in article searches. These keywords are words that represent the dependent variable or the independent variable. After the keywords are determined, the next step is to maximize the use of electronic databases such as Google Scholar, Emerald, Science Direct, JSTOR, Wiley, and EBSC.

Coding Article

Information entered into coding includes general identity, dependent variable details, and information on each independent variable. Public identity has study identity, publication type, year of publication, number of samples, unit of analysis, study object, the population represented, and measurement method.

Calculating Average Effect Size

To calculate the average effect size, perform the following steps:

- a. Not all studies use the Pearson coefficient, but still display other statistical measurements such as t , F , p -value, and x^2 . If this happens, the first step is to convert the statistical size data into r -person by following the formula as in the research of Hunter et al., (1982) as follows:

$$r = \sqrt{\frac{t^2}{t^2 + df}} = \frac{t}{\sqrt{t^2 + df}}$$

$$r = \sqrt{\frac{x^2}{n}}$$

$$r = \sqrt{\frac{F}{F + df}}$$

$$r = \frac{Z}{\sqrt{n}}$$

- b. After conversion to r , the next step is to determine the population mean of correction (r)

$$r = \frac{\sum \bar{n}_i r_i}{\sum n_i}$$

Testing the Hypothesis by Calculating the Significance of the Effect Size

The mean effect size significance test is used to determine whether a hypothesis is accepted or rejected. The first step is to convert the results of the average effect size to Z-score and then compare it with a table containing the critical Z-score values at the level α 0,05. Z-score is greater than the critical point, and the effect size is statistically significant. The second step calculates the 95% confidence interval (CI). To begin the process of calculating the Z-score as well as the confidence interval, it is necessary first to determine the variance of the sample correlation using the following formula:

$$V_r = \frac{\sum [n_i (r_i - \bar{r})^2]}{\sum n_i}$$

From the variance, the standard error can be calculated with the following formula:

$$SE_r = \sqrt{\frac{V_r}{k}}$$

Where k is the number of articles used as study material. After getting the standard error, the Z-score can be calculated using the formula:

$$Z = \frac{|\bar{r}|}{SE_r}$$

Meanwhile, if you use a confidence interval, the formula used is:

$$[\bar{r} + z_{\alpha/2} SE_r] = [\bar{r} + 1,96 \times SE_r]$$

Heterogeneity Test and Moderating Effect

The Q-Statistic test, which uses the following formula, is applied to examine the validity of the hypothesis that the distribution is homogenous.

$$Q = \sum \frac{[(ni-1)(ri-\bar{r})^2]}{[(1-\bar{r}^2)2]}$$

The chi-square statistic examines whether the observed variation is due to a moderating impact or some other statistical error. This measurement aims to test the moderating effect and determine whether the observed variance has a substantial positive effect as anticipated. The equation used is:

$$X^2_{k-1} = \frac{NS^2_r}{(1 - \bar{r}^2)^2}$$

RESULT AND DISCUSSION

Table 2 Meta-Analysis Statistical Results

Variable	Sample (n)	Number of studies (k)	Mean (Z)	Confidence interval 95% lowest/highest	X^2_{k-1}	File drawer
Audit firm size	7735.368	19	6.259	0.136 0.259	3027.845	273.969
Independence	563.9	10	5.619	0.106 0.219	49.839	115.665
audit tenure	7894.88	25	0.775	-0.034 0.079	4103.854	375.275
Industry Specialization	5599.667	12	0.963	-0.018 0.054	272.305	133.548

Audit Firm Size

A meta-analysis of the data shows that the average coefficient value of r for audit firm sizes is 0.198, with a correlation variance (S^2_r) magnitude of 0.019 and a standard size deviation and a standard deviation of 0.138 at a 95% confidence level, with an acceptable limit of 0.136

and p less than 0.01. This result indicates that the findings of the average correlation are at the acceptance limit of 0.198. A more prominent audit firm is more motivated to enhance its audit quality to maintain a positive reputation and serve a broader range of clients, as shown by these calculations, which show that the size of an audit firm impacts audit quality

In addition, a meta-analysis was performed to determine whether or not there is a statistically significant relationship between audit firm size and audit quality. This meta-analysis showed that the variance of sample correlation (V_r) was 0.019, and the standard error (SEr) was 0.031. This result produced a Z-score of 6258, which indicates that the Z-score is greater than the critical point value of 1.96.

The findings of this study provide evidence that the size of the audit firm has a significant effect on audit quality statistically. This finding suggests that the size of the audit firm plays a role in motivating and encouraging companies to meet varying investor expectations during times of increasingly fierce market competition by improving the quality of the company's audit. It conforms to the findings of studies carried out by Chen et al. (2005), Geiger and Rama (2006), Francis and Michael (2007), and others (2009). Researchers Al-Thuneibat et al. (2010), Al-Khaddas et al. (2013), Enofe et al. (2013), Ali and Mekha (2015), and Lawrence et al. (2017) discovered that the size of large audit firms could produce higher audit quality because better resources and technology support them. Ali and Mekha (2015) also found that the size of large audit firms can have higher audit quality.

Auditor Independence

The findings of calculating the average coefficient value of r for the auditor independence variable got r results of 0.163 based on the testing of data using meta-analysis techniques. With the significance of the correlation variance (S^2r) being 0.008 and the importance of the standard deviation (Sd) being 0.092, which is in confidence 95 percent with an acceptance limit between 0.106 and p , which means that the results of the average correlation are at the acceptance limit of 0.163, respectively. These calculations provide evidence that auditor independence positively influences audit quality, meaning that the more independent the auditors, the higher the audit quality of the financial statements that will produce.

A meta-analysis calculation is carried out to obtain the results of variance of sample correlation (V_r) of 0.008 and a standard error (SEr) of 0.029, thus getting the results of the Z-

value. It is done to determine whether or not there is a relationship between auditor independence and audit quality that is statistically significant.

A score of 5,619 means the Z-score is greater than the critical point value of 1.96. The analysis results provide evidence that auditor independence has a significant effect on audit quality statistically, which means that freedom has a vital role in maintaining the trust and integrity of financial reporting so that audit quality will also increase. It is in line with research conducted by Chen et al. (2005), Enofe et al. (2013), Al-Khaddas et al. (2013), Mohamed and Magda (2013), Rahmina and Sukrisno (2014), and Tobi et al., (2016) who found that the main focus that determines audit quality on moral and ethical issues is auditor independence.

Tenure Audit

The calculation of the average coefficient value of r for the audit firm size variable obtained the results of r of 0.022 with the magnitude of the variance correlation (S^2_r) of 0.021 and the size of the standard deviation (Sd) 0.144. Based on the testing of the data using meta-analysis. These calculations provide evidence that audit tenure has a positive influence on audit quality. The longer the collaboration period between the auditor and the company's clients, the higher the audio quality will produce because of their understanding of the client's business. Which is in the 95 percent confidence interval with the acceptance limit between -0.034 p 0.079, which means the results of the average correlation are at the acceptable level.

Furthermore, to determine whether there is a statistically significant or non-significant relationship between audit firm size and audit quality, a meta-analysis was calculated by obtaining a variance of sample correlation (V_r) of 0.021 and a standard error of 0.021. (SE_r) of 0.029, thus getting a Z-score of 0.775, which means the Z-score is smaller than the critical point value of 1.96. The analysis results provide evidence that audit tenure has a non-significant effect on audit quality statistically. Audit tenure has a negligible impact on audit quality, and other variables influence the rest. It is in line with the research conducted by Mansi et al. (2004), Chi and Tan (2005), Lim and Hun-Tong (2010), and Rahmina and Sukrisno (2014), which found that the length of the audit collaboration period (audit tenure) can be resulting in a better assessment of the risk of a material misstatement by the auditor.

This meaning is due to better experience and insight in recognizing business operations, strategies, and internal control over financial reporting.

Industry Specialization Auditor

Based on data testing using meta-analysis techniques, the calculation of the average coefficient value of r for the audit firm size variable obtained the results of r of 0.018 with the magnitude of the correlation variance (S^2_r) in the amount of 0.005.

Size of the standard deviation (S_d) in the amount of 0.064, which is at a 95% confidence interval with an acceptance limit between $-0.018 \leq p \leq 0.053$, which means the results of the average correlation are at the acceptance limit of 0.018. These calculations provide evidence that industrial specialization auditors have a positive influence on audit quality, meaning that the higher the knowledge and experience of industrial specialization auditors, the higher the audit quality of financial statements.

Furthermore, to find out whether there is a statistically significant or non-significant relationship between audit firm size and audit quality.

A meta-analysis calculation is performed to obtain the variance of sample correlation (V_r) of 0.005 and a standard error (S_{Er}) of 0.018, thus getting a Z value. The score of 0.963 means the Z -score is smaller than the critical point value of 1.96. The analysis results provide evidence that industry specialization auditors have a non-significant effect on audit quality statistically. This result means that industrial specialization auditors have little impact on audit quality, and other factors influence the rest. This study is in line with research conducted by Dunn and Brian (2004), Chen et al. (2005), Lowensohn et al. (2007), Lim and Hun-Tong (2010), and Agoes (2014), Hegazy (2015).) and Ali and Mekha (2015) found that industry-specialized auditors have a long understanding and experience in specific industries, including accounting principles, business processes, business risks, and risks of material misstatement in financial statements.

Country Classification Moderates Relationship Between Audit Quality Factors and Audit Quality

Based on data testing using meta-analysis techniques, the results of the homogeneity test calculation (Q test) obtained that the Q value of the audit firm size variable is 2003872.541 > the critical value of Q 3027.844. The Q value of the independent variable is 2778.26 > the crucial significance of Q 49.839, the Q value of the audit tenure variable is 378373.6 > the critical value of Q 4103,854, and the Q value of the industrial specialization auditor variable is 70103,439 > the crucial value of Q 273,305. The results of this analysis provide evidence that the classification of countries (developed and developing) has the potential to moderate the relationship between audit firm size, independence, audit tenure, and industry specialization

auditors with audit quality. This result is in line with El Ghoul. et al. (2016) prove that the legal environment in developed and developing countries significantly affects audit quality. Developed countries have law enforcement systems that provide more excellent protection to investors, including the ability to sue auditors if errors are found in financial statements (Francis and Wang, 2004).

CONCLUSION

In this study, the researcher tested the research hypothesis using a meta-analysis of the data from previous studies on the determinants of audit quality. The results obtained are audit firm size and independence have a significant positive effect on audit quality. Meanwhile, the audit tenure and auditor industry specialization variables have a non-significant positive impact on audit quality. Furthermore, this study also examines the moderating effect of country classification (developed and developing). It obtains the result that country classification can moderate the relationship between factors that affect audit quality and audit quality.

This study provides evidence that contributes to a more efficient standard-setting for audit practitioners to achieve audit objectives and evaluate and improve audit quality in various countries. For professional accounting institutions, this research is expected to help analyze the practical factors that affect audit quality and provide several strategies for investors to make rational decisions.

The limitation of this study is that the research sample is small, so in general, it cannot describe the actual conditions. Since meta-analysis can provide conclusions and reduce the effect of publication bias, further research is expected to develop meta-analysis. In addition, different researchers are expected to be able to expand their research either by adding independent variables or by expanding the context of their research to provide useful and more complex information.

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