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Rethinking audit quality: evidence from audit fees, tenure, and rotation in Indonesian infrastructure firms

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ABSTRACT

Purpose: to examine the effect of audit fee, audit tenure, and audit rotation on audit quality in infrastructure companies listed on the Indonesia Stock Exchange during the 2020–2023 period.
Method: this study uses a quantitative approach and secondary data from the annual reports of 15 infrastructure companies listed on the Indonesia Stock Exchange during 2020–2023, resulting in 60 firm-year observations selected through purposive sampling. Data were analyzed using binary logistic regression in SPSS.
Findings: audit fee, audit tenure, and audit rotation do not significantly affect audit quality, either individually or simultaneously. These findings suggest that these three audit-related factors do not significantly determine audit quality in Indonesian infrastructure companies.
Implications: companies, auditors, and regulators should not rely solely on audit fees, audit tenure, and audit rotation to improve audit quality, but should also strengthen auditor competence, independence, professional skepticism, and audit oversight.
Originality: lies in providing sector-specific evidence on audit quality by simultaneously examining audit fees, audit tenure, and audit rotation in Indonesian infrastructure companies during the 2020–2023 period.

Introduction

Audit quality is fundamental to ensuring that financial statements provide accurate, reliable, and relevant information and are prepared in accordance with applicable accounting and auditing standards (Agustini & Siregar, 2020; Darmawan, 2023). High-quality audits strengthen the credibility of financial reporting, reduce information asymmetry, support stakeholders' decision-making, and enhance auditor

independence and regulatory compliance (Silva et al., 2026). In this context, audit quality is determined not only by auditors' competence and independence but may also be influenced by several characteristics of the audit engagement, including audit fees, audit tenure, and audit rotation (Deshandrio et al., 2025). Audit fees may reflect the level of audit effort, complexity, and resources allocated to an engagement (Ayoola, 2024). In contrast, audit tenure may provide auditors with greater knowledge and understanding of the client's business (Soroushyar, 2023). Conversely, excessively long auditor-client relationships may create familiarity threats that potentially impair auditor independence (Kamal, 2023). Audit rotation is therefore considered an important mechanism for maintaining auditor objectivity and reducing the risk of excessive familiarity between auditors and their clients (Kusuma, 2021; Sari & Rahmi, 2021).

The importance of these factors becomes more apparent when considering financial reporting problems and regulatory developments in Indonesia. Several companies have faced financial reporting issues that demonstrate the importance of effective auditing and oversight mechanisms. One notable example is PT Kimia Farma Tbk., which was involved in a financial statement manipulation case, highlighting the importance of reliable auditing and appropriate oversight in ensuring transparent and credible financial reporting (Hariyanto, 2021). At the regulatory level, audit services in Indonesia are also subject to specific requirements for the use of public accountants and public accounting firms, including regulations issued by the Financial Services Authority and the Ministry of Finance. These regulations reflect the continuing emphasis on auditor independence, the use of public accounting services, and mechanisms related to auditor engagement and rotation (13/POJK.03/2017 and 17/PMK.01/2008). Despite these regulatory efforts, questions remain about whether audit fees, audit tenure, and audit rotation effectively improve audit quality in practice. This issue is particularly relevant to infrastructure companies, which generally operate in industries characterized by substantial investments, complex transactions, long-term projects, and significant financial reporting requirements.

Empirical studies examining the relationship between audit fees, audit tenure, audit rotation, and audit quality have produced inconsistent findings. Agastya & Ardelia (2024) found that audit fees had a positive but insignificant effect on audit quality, audit tenure had a negative but insignificant effect, while audit rotation had a positive and significant effect on audit quality. In contrast, Arif & Lastanti (2023) reported that audit fees and audit rotation had positive effects on audit quality, whereas audit tenure had a negative effect. Similar patterns appear in other studies. Dewita & NR (2023) examined audit tenure, audit rotation, and audit fees, while Fadhlan et al. (2023) investigated audit fees, audit tenure, audit rotation, and public accounting firm reputation. Other studies have also reported different results concerning these variables (Herdian & Sudaryono, 2023; Lailatul & Yanthi, 2021; Lestari & Rochmatullah, 2024; Prima & Gunawan, 2024). These inconsistencies indicate that the relationship between audit fees, audit tenure, audit rotation, and audit quality remains inconclusive. Furthermore, much of the existing evidence examines broad populations or specific sectors such as banking and public accounting firms, leaving relatively limited evidence focused specifically on infrastructure companies listed on the Indonesia Stock Exchange. Therefore, this study addresses this gap by examining these three audit-related factors simultaneously within the infrastructure sector and focusing on the 2020–2023 period. This sector- and period-specific approach is the study's novelty, providing more contextual empirical evidence on audit quality in an industry characterized by distinctive operational and financial complexities.

Based on the identified phenomenon and research gap, this study examines the effect of audit fees, audit tenure, and audit rotation on audit quality in infrastructure sector companies listed on the Indonesia Stock Exchange during 2020–2023. Specifically, the study examines whether audit fee amounts, the length of the auditor-client relationship, and auditor changes are associated with variations in audit quality. By examining these variables within a specific industrial context, this research is expected to provide a more focused understanding of how engagement-related factors influence audit quality. The study also seeks to complement previous empirical research by reassessing relationships that have generated inconsistent findings across different samples, industries, and research periods.

This research matters because audit quality is closely linked to the reliability of financial information and the confidence of investors, creditors, regulators, and other stakeholders in corporate reporting. For infrastructure companies, reliable financial reporting is particularly important given the scale and complexity of their operations and investments. The findings are expected to provide empirical evidence that can contribute to the development of the audit quality literature in Indonesia, particularly by strengthening the evidence from the infrastructure sector. From a practical perspective, the results may help companies and audit committees evaluate audit engagement arrangements, including determining appropriate audit fees, monitoring auditor tenure, and considering auditor rotation as part of corporate governance practices. The findings may also help auditors maintain audit quality and independence and help regulators evaluate policies on auditor engagement and rotation. Thus, this study is expected to contribute not only to the academic discussion of audit quality but also to developing more effective audit and corporate governance practices in Indonesian infrastructure companies.

Literature review

Agency theory

Agency theory provides a theoretical foundation for understanding the relationship between shareholders (principals) and management (agents) (Khandelwal et al., 2023). The separation of ownership and control creates the possibility of differing interests, as managers may have objectives that do not always align with shareholders' (Goranova & Ryan, 2022). In addition, managers generally have more information about the company's operations and financial condition than shareholders, creating information asymmetry (Alsayegh et al., 2022). These conditions can create agency problems because shareholders cannot directly and continuously observe managerial actions (Kasbar et al., 2023). An independent audit can function as a monitoring mechanism to reduce agency conflicts and information asymmetry by providing reasonable assurance that financial statements are presented fairly and in accordance with applicable accounting and auditing standards. Therefore, audit quality is an important mechanism for protecting principals' interests and increasing the credibility of management-provided information (Sharif & Osman, 2026). From an agency theory perspective, audit fees, audit tenure, and audit rotation may influence the effectiveness and independence of the auditing process and, consequently, audit quality.

Audit quality

Audit quality refers to the extent to which an auditor can conduct an audit in accordance with applicable auditing standards and identify and appropriately respond

to material misstatements in financial statements (Francis, 2024). Audit work is high quality when performed in compliance with applicable auditing standards (Agustini & Siregar, 2020). High audit quality is essential because audited financial statements serve as an important source of information for shareholders, investors, creditors, regulators, and other stakeholders in making economic decisions (Darmawan, 2023). In the context of agency theory, audit quality represents an important monitoring mechanism because an effective and independent audit can reduce information asymmetry between management and shareholders and increase the reliability of financial reporting. Consequently, audit quality reflects not only auditors' technical performance but also the extent to which the audit process provides credible assurance to financial statement users (Albahrun, 2025).

Audit fee

An audit fee is the compensation a client pays an auditor or public accounting firm for professional audit services (Susanto, 2023). Several characteristics of the audit engagement determine audit fees, including the client's complexity and risk, the scope of audit procedures, the resources required, and the level of expertise involved (Arif & Lastanti, 2023). In this study, audit fees are measured using the natural logarithm of professional fees. From an agency theory perspective, audit fees can be viewed as an economic mechanism associated with the monitoring function of external auditing. Higher audit fees may reflect greater audit effort, more extensive audit procedures, greater audit risk, or the involvement of auditors with higher expertise and resources (Darmawan, 2023). Therefore, an adequate audit fee may enable auditors to allocate sufficient time, personnel, and resources to the engagement, potentially increasing their ability to detect material misstatements and produce a higher-quality audit (Krishnan & Tanyi, 2024).

Audit tenure

Audit tenure refers to the length of time an auditor or public accounting firm continuously provides audit services to the same client, generally measured in years (Alhazmi et al., 2024). Audit tenure reflects the duration of the auditor-client relationship and may have both positive and negative implications for audit quality (Kamarudin et al., 2022). A longer tenure may allow auditors to develop a deeper understanding of the client’s business characteristics, internal control systems, operational processes, and financial reporting risks (Abouelela et al., 2025). Such knowledge can improve audit efficiency and the auditor’s ability to identify potential misstatements. However, an excessively long auditor-client relationship may create familiarity threats and economic or personal dependence, potentially reducing professional skepticism and auditor independence. From an agency theory perspective, this condition matters because the effectiveness of auditing as a monitoring mechanism depends on the auditor’s ability to remain independent of management. Thus, audit tenure may influence audit quality by balancing accumulated client-specific knowledge with potential threats to auditor independence (Agastya & Ardelia, 2024; Dewita & NR, 2023).

Audit rotation

Audit rotation refers to the replacement of an auditor or public accounting firm after a certain period of providing audit services to a client (Tessema & Sood, 2023). The primary purpose of audit rotation is to maintain auditor independence, objectivity, and

professional skepticism and to reduce the possibility of excessively close relationships between auditors and management (Kamal, 2023). Audit rotation is also associated with regulatory efforts to strengthen the independence of external audits (Dayanandan & Kuntluru, 2023). In Indonesia, the use of public accountants and public accounting firms is regulated by the Financial Services Authority, including provisions concerning the provision of audit services and auditor-related requirements. From the perspective of agency theory, audit rotation can strengthen the monitoring function of external auditing by introducing a new auditor who may provide a more objective assessment of the client's financial reporting. A new auditor may also bring a different perspective and be less affected by familiarity with management. Consequently, audit rotation has the potential to enhance auditor independence and improve audit quality (Herdian & Sudaryono, 2023).

Hypothesis development

Agency theory views external auditing as a monitoring mechanism that helps principals reduce information asymmetry and agency conflicts arising from the separation of ownership and management. Within this framework, audit fees may influence audit quality because adequate compensation gives auditors the resources to perform audit procedures more thoroughly and appropriately. Higher audit fees may reflect greater audit complexity, higher audit risk, greater audit effort, or the use of more experienced and competent audit personnel. When auditors receive adequate compensation, they may have greater capacity to allocate sufficient time, personnel, and audit procedures to identify material misstatements and assess financial reporting risks. Therefore, higher audit fees are expected to be associated with higher audit quality. This argument is supported by Ramadya et al. (2023) and Prima & Gunawan (2024), who found that audit fees have a significant effect on audit quality. Nevertheless, based on agency theory and the argument that adequate audit compensation can support greater audit effort and monitoring effectiveness, this study proposes the following hypothesis: H1: Audit fees have a positive effect on audit quality.

Agency theory emphasizes the importance of auditor independence in ensuring that external auditing effectively monitors management on behalf of shareholders. Audit tenure can affect audit quality because the length of the auditor-client relationship determines the extent of accumulated client-specific knowledge and the potential for familiarity threats. A longer audit tenure may initially improve audit quality because auditors gain a more comprehensive understanding of the client's business, accounting systems, internal controls, and financial reporting risks. However, when the relationship continues for an extended period, excessive familiarity may arise and weaken professional skepticism and independence. From an agency theory perspective, weakened independence can reduce the effectiveness of auditing as a monitoring mechanism and, consequently, impair audit quality. Empirical evidence from Dewita & NR (2023) and Agastya & Ardelia (2024) indicates that audit tenure negatively affects audit quality. These findings suggest that the potential familiarity threat associated with prolonged auditor-client relationships may outweigh the benefits of accumulated client knowledge. Therefore, based on agency theory and previous studies, this study proposes H2: Audit tenure has a negative effect on audit quality.

Agency theory suggests that effective monitoring requires an auditor who is sufficiently independent and objective when evaluating management's financial reporting. Audit rotation can support this monitoring function by replacing the existing auditor or Public Accounting Firm and thereby reducing the risk of excessive familiarity

between the auditor and client. A new auditor may provide a fresh perspective, exercise greater professional skepticism, and assess the client's financial statements more objectively. Consequently, audit rotation may strengthen auditor independence and reduce the possibility that established relationships with management will influence audit judgments, ultimately improving audit quality. This argument is consistent with the findings of Kusuma (2021); Sari & Rahmi (2021); and Lestari & Rochmatullah (2024), who found that audit rotation has a positive and significant effect on audit quality. Despite these mixed findings, agency theory supports the argument that auditor rotation can strengthen the independence of external monitoring. Therefore, this study proposes: H3: Audit rotation has a positive and significant effect on audit quality.

Method

This study employs a quantitative research approach to examine the effect of audit fees, audit tenure, and audit rotation on audit quality. The study uses secondary data from annual reports and other publicly available corporate information for infrastructure companies listed on the Indonesia Stock Exchange (IDX) during 2020–2023. A quantitative approach is appropriate because the study examines the relationships between measurable variables and tests the proposed hypotheses using statistical analysis. The research was conducted from January 2025 to March 2025, covering data collection, data processing, statistical analysis, interpretation of results, and preparation of the research report.

This study's population consists of 69 infrastructure companies listed on the Indonesia Stock Exchange during the 2020–2023 observation period. The sample was selected through purposive sampling based on predetermined criteria aligned with the study's objectives. The criteria included infrastructure companies listed on the IDX during the observation period that published annual reports for 2020–2023 and that provided the information needed to measure audit quality, audit fees, audit tenure, and audit rotation. Based on these criteria, the study selected 15 companies as its sample. With four years of observation for each company, the study yielded 60 firm-year observations. The data were collected through documentation, literature studies, and online searches by identifying, recording, and compiling information relevant to the research variables from the companies' annual reports and other publicly available sources.

The dependent variable in this study is audit quality (AQ), measured as a dummy variable based on the company's auditor. A value of 1 is assigned to companies audited by a Big Four public accounting firm, while a value of 0 is assigned to companies audited by a non-Big Four public accounting firm. This approach assumes that Big Four firms generally have greater audit resources, expertise, experience, and reputation, which may support higher-quality audit services. The first independent variable is audit fee (AF), defined as the compensation a company pays for professional audit services. Audit fee is measured using the natural logarithm of the professional fee disclosed in the company's annual report. The measurement is expressed as follows: audit fee = Ln (professional fee). The second independent variable is audit tenure (AT), which refers to the length of the auditor-client relationship. Audit tenure is measured by the number of consecutive years that the same public accounting firm has provided audit services to the company. A higher value indicates a longer period of continuous engagement between the auditor and the client. The third independent variable is audit rotation (AR), which refers to a change in the auditor or public accounting firm providing audit services to the company. Audit rotation is measured using a dummy variable. A value of 1 is assigned when an

auditor or public accounting firm change occurs during the observation period, while a value of 0 is assigned when no rotation occurs.

Because this study operationalizes audit quality as a binary variable, it uses binary logistic regression to test the proposed hypotheses. Logistic regression is appropriate for estimating the probability that an observation belongs to one of two categories of the dependent variable: high audit quality (1) and non-high audit quality (0). The analysis uses IBM SPSS Statistics. The regression model examines whether audit fee, audit tenure, and audit rotation significantly influence the probability that a company receives a high-quality audit. The logistic regression model can be expressed as follows: $AQ = \alpha + \beta_1 AF + \beta_2 AT + \beta_3 AR + \varepsilon$, where AQ represents audit quality, AF represents audit fee, AT represents audit tenure, AR represents audit rotation, α represents the constant, β_1–β_3 represent the regression coefficients, and ε represents the error term. The analysis includes statistical testing to evaluate the overall suitability of the regression model and the significance of each independent variable.

Results and discussion

Descriptive statistics

Descriptive statistical analysis provided an overview of the characteristics and distribution of the variables used in this study. The analysis presents the minimum, maximum, mean, and standard deviation values for audit fee (AF), audit tenure (AT), audit rotation (AR), and audit quality (AQ) based on 60 firm-year observations from infrastructure companies listed on the Indonesia Stock Exchange during the 2020–2023 period. Table 1 presents the descriptive statistics.

Table 1 descriptive statistics

Variable	N	Minimum	Maximum	Mean	Std. deviation
Audit fee (AF)	60	14.47	22.03	201.330	150.420
Audit tenure (AT)	60	1.00	4.00	23.667	113.446
Audit rotation (AR)	60	0.00	1.00	0.2833	0.45442
Audit quality (AQ)	60	0.00	1.00	0.4667	0.50310

Source: secondary data, processed.

As shown in Table 1, audit fee (AF) ranges from 14.47 to 22.03, with a mean of 20.1330 and a standard deviation of 1.50420. The mean value indicates that the logarithmic value of professional fees across the sampled companies is relatively concentrated around 20.13. The standard deviation of 1.50420 indicates moderate variation in audit fees among the observed companies, suggesting that professional fees differ across infrastructure companies depending on the characteristics and complexity of their audit engagements. Audit tenure (AT) ranges from a minimum of 1.00 year to a maximum of 4.00 years, with a mean of 2.3667 and a standard deviation of 1.13446. This indicates that, on average, the same auditor or Public Accounting Firm maintained an engagement with a company for approximately 2.37 years during the observation period. The relatively moderate standard deviation suggests variation in the length of auditor-client relationships among the sampled companies, with some companies experiencing shorter and others longer audit engagements.

Audit rotation (AR) ranges from 0.00 to 1.00, as it is measured as a dummy variable. The mean value of 0.2833 indicates that about 28.33% of firm-year observations experienced audit rotation, while the remaining 71.67% did not experience rotation in the respective observation year. The standard deviation of

0.45442 reflects the variation generated by the binary nature of this variable. Finally, audit quality (AQ) also has a minimum value of 0.00 and a maximum value of 1.00 because it is measured using a dummy variable based on the auditor's affiliation with a Big Four or non-Big Four Public Accounting Firm. The mean value of 0.4667 indicates that approximately 46.67% of the observations were audited by Big Four Public Accounting Firms, while approximately 53.33% were audited by non-Big Four Public Accounting Firms. The standard deviation of 0.50310 reflects the variation in audit quality classification across the 60 observations. Overall, the descriptive statistics indicate that the sampled infrastructure companies exhibit variation in audit fees, audit tenure, audit rotation, and audit quality, providing an appropriate basis for further analysis using binary logistic regression.

Logistic regression model

Before testing the individual effects of the independent variables on audit quality, the overall suitability of the logistic regression model was evaluated using the Omnibus Test of Model Coefficients and the Hosmer-Lemeshow Goodness-of-Fit Test. The Omnibus Test determined whether audit fee, audit tenure, and audit rotation jointly explain variation in audit quality compared with a model containing only the constant. The results of the Omnibus Test of Model Coefficients are presented in Table 2.

Table 2 omnibus test of model coefficients

Test	Chi-square	df	Sig.
Step	2.982	3	0.394
Block	2.982	3	0.394
Model	2.982	3	0.394

Source: Secondary data, processed.

As shown in Table 2, the Omnibus Test of Model Coefficients produces a Chi-square value of 2.982 with 3 degrees of freedom and a significance value of 0.394. Because the significance value of 0.394 is greater than the 5% significance level (0.05), we cannot reject the null hypothesis that adding the independent variables does not significantly improve the model. This indicates that audit fee, audit tenure, and audit rotation do not have a statistically significant joint effect on audit quality in the observed sample. In other words, the three independent variables, when considered simultaneously, do not significantly improve the explanatory ability of the logistic regression model compared with the model containing only the constant.

In addition to the Omnibus Test, we assessed the logistic regression model's goodness of fit using the Hosmer-Lemeshow Test. This test evaluates whether the observed outcomes differ significantly from the outcomes predicted by the logistic regression model. A significance value greater than 0.05 indicates no statistically significant difference between the observed and predicted values, suggesting the model fits the data adequately. The results of the Hosmer-Lemeshow test are presented in Table 3.

Table 3 hosmer and lemeshow goodness-of-fit test

Step	Chi-square	df	Sig.
1	7.376	8	0.497

Source: secondary data, processed.

As presented in Table 3, the Hosmer-Lemeshow test produces a Chi-square value of 7.376 with 8 degrees of freedom and a significance value of 0.497. Because the significance value of 0.497 is greater than 0.05, there is no statistically significant difference between the model's observed and predicted values. Therefore, the null hypothesis of the Hosmer and Lemeshow test cannot be rejected, indicating that the logistic regression model fits the observed data adequately. Thus, although the Omnibus Test indicates that the independent variables do not jointly provide a statistically significant improvement in explaining audit quality, the Hosmer and Lemeshow Test indicates that the model itself fits the data adequately. The individual effects of audit fee, audit tenure, and audit rotation are therefore examined further through the logistic regression coefficient estimates and hypothesis testing.

Partial significance test

The partial significance test used the Wald statistic to examine the individual effects of audit fee, audit tenure, and audit rotation on audit quality. In a binary logistic regression model, the regression coefficient (B) indicates the direction of the relationship. At the same time, the significance value (Sig.) indicates whether the effect is statistically significant. An independent variable has a statistically significant effect when its significance value is below the 5% significance level ($\alpha = 0.05$). Table 4 presents the Wald test results and estimated odds ratios.

Table 4 results of partial significance test

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for Exp(B)
Audit fee (AF)	-0.278	0.199	1.947	1	0.163	0.758	0.513–1.119
Audit tenure (AT)	0.204	0.237	0.743	1	0.389	1.227	0.771–1.952
Audit rotation (AR)	0.061	0.591	0.011	1	0.918	1.063	0.334–3.386
Constant	4.958	4.047	1.500	1	0.221	142.239	

Source: secondary data, processed.

As shown in Table 4, audit fee (AF) has a regression coefficient of -0.278, a Wald value of 1.947, and a significance value of 0.163. Since the significance value is greater than 0.05, audit fee does not have a statistically significant effect on audit quality. The negative coefficient indicates a negative relationship; however, this direction should not be interpreted as evidence of a systematic negative effect because the relationship is statistically insignificant. The Exp(B) value of 0.758 indicates that, holding the other variables constant, a one-unit increase in audit fee is associated with approximately a 24.2% decrease in the estimated odds of the observation being classified as high audit quality. Nevertheless, the 95% confidence interval for the odds ratio (0.513–1.119) includes 1, further indicating that the estimated effect is not statistically significant.

Audit tenure (AT) has a regression coefficient of 0.204, with a Wald value of 0.743 and a significance value of 0.389. Because the significance value exceeds 0.05, audit tenure does not have a statistically significant effect on audit quality. The positive coefficient indicates a positive estimated relationship, contrary to the negative direction proposed in H2. The Exp(B) value of 1.227 suggests that a one-year increase in audit tenure is associated with an estimated 22.7% increase in the odds of the observation being classified as high audit quality, holding other variables constant. However, this estimated relationship is not statistically significant, as reflected by both the significance value of 0.389 and the 95% confidence interval for Exp(B), which ranges from 0.771 to 1.952 and includes 1. Audit rotation (AR) produces a regression coefficient of 0.061, a Wald value of 0.011, and a significance value of 0.918. Since the significance value is

substantially greater than 0.05, audit rotation does not have a statistically significant effect on audit quality. Although the positive coefficient is consistent with the direction proposed in H3, the high significance value indicates that the data do not statistically support the relationship. The Exp(B) value of 1.063 indicates that audit rotation is associated with an estimated 6.3% increase in the odds of being classified as high audit quality. However, the 95% confidence interval of 0.334–3.386 is wide and includes 1, reinforcing the conclusion that the estimated effect is not statistically significant.

Based on the partial significance test, all three independent variables do not show a statistically significant effect on audit quality. Therefore, the results do not provide sufficient empirical evidence to support the proposed hypotheses. The hypothesis decisions are summarized as follows: H1, which states that audit fee has a positive effect on audit quality, is rejected because the coefficient is negative and statistically insignificant (B = -0.278; Sig. = 0.163). H2, which states that audit tenure has a negative effect on audit quality, is rejected because the coefficient is positive and statistically insignificant (B = 0.204; Sig. = 0.389). H3, which states that audit rotation has a positive and significant effect on audit quality, is rejected because although the coefficient is positive, the effect is statistically insignificant (B = 0.061; Sig. = 0.918). Overall, these findings indicate that audit fee, audit tenure, and audit rotation do not individually explain significant variations in the audit quality of the sampled infrastructure companies during the 2020–2023 period.

The effect of audit fee on audit quality

The findings indicate that audit fees do not significantly affect audit quality. This finding suggests that differences in audit fees paid by infrastructure companies do not necessarily translate into differences in the quality of audits received. In other words, auditor compensation cannot independently explain whether an audit will be classified as high or low quality. This result indicates that audit quality may depend more strongly on other aspects of the audit engagement, such as auditor competence, independence, professional skepticism, audit procedures, internal control quality, and the characteristics of the audit firm.

This finding indicates that a higher audit fee should not automatically be interpreted as evidence of greater audit effort or better audit quality. Audit fees may reflect various client characteristics, including company size, business complexity, audit risk, transaction volume, and the resources required to conduct the engagement. Therefore, higher audit fees may reflect greater engagement complexity or risk rather than improved audit quality. In the infrastructure sector, where companies may have complex projects, substantial assets, long-term contracts, and diverse operational activities, audit fees may primarily compensate auditors for the engagement's complexity and risk rather than directly determine the resulting audit quality.

This finding is consistent with Agustini & Siregar (2020), who found that audit fees did not significantly affect audit quality. However, this result differs from the findings of Ramadya et al. (2023) and Prima & Gunawan (2024), which reported a significant relationship between audit fees and audit quality. These differences suggest that the role of audit fees may depend heavily on sample characteristics, industry, audit-quality measurement, and other factors included in the research model. Therefore, this finding contributes to the literature by showing that the relationship between audit fees and audit quality is not necessarily consistent across research settings, particularly in Indonesian infrastructure companies.

From an agency theory perspective, audit fees represent an economic resource the principal allocates to support the auditor's monitoring function. Ideally, sufficient audit compensation should enable auditors to devote appropriate resources and effort to examining management's financial reporting, thereby reducing information asymmetry and agency problems. However, the insignificant finding suggests that the existence of an audit fee alone does not guarantee that the monitoring mechanism will operate effectively. Agency theory therefore needs to be understood not merely in terms of the resources allocated to monitoring but also in terms of how effectively those resources translate into independent and competent audit procedures. Monitoring quality depends on the auditor's professional judgment, independence, expertise, and commitment to auditing standards.

In practice, the finding implies that companies should not focus solely on increasing or negotiating audit fees to improve audit quality. Instead, companies and audit committees should assess whether audit fees match audit complexity and whether the auditor has sufficient expertise, time, personnel, and independence to perform the engagement effectively. Audit firms should ensure that fee arrangements do not compromise professional judgment or create inappropriate economic dependence. For future research and practice, audit fees should also be considered alongside other determinants of audit quality, such as auditor reputation, auditor specialization, audit committee effectiveness, company complexity, and audit risk. Such an approach would provide a more comprehensive understanding of how audit resources contribute to effective external monitoring.

The effect of audit tenure on audit quality

The findings indicate that audit tenure does not significantly affect audit quality. This suggests that the length of the auditor-client relationship alone cannot explain differences in audit quality among infrastructure companies. A longer or shorter audit engagement does not automatically lead to better or worse audit outcomes. This finding suggests that the benefits of accumulated client knowledge and the potential risks of prolonged familiarity may offset each other, resulting in no clear relationship between audit tenure and audit quality in the observed context.

The finding may indicate that audit tenure has two competing effects. On the one hand, a longer relationship enables auditors to develop a deeper understanding of the client's business operations, accounting policies, internal controls, and financial reporting risks. Such knowledge can improve audit efficiency and help auditors identify unusual transactions or potential misstatements. On the other hand, a prolonged relationship may increase familiarity with management and potentially weaken professional skepticism. The absence of a significant effect suggests that neither mechanism is strong enough to produce a systematic change in audit quality among the sampled infrastructure companies. Consequently, audit tenure should not be viewed as inherently beneficial or detrimental to audit quality.

This finding aligns with Agastya & Ardelia (2024), who reported a negative but insignificant relationship between audit tenure and audit quality. However, it differs from studies by Dewita & NR (2023), which found a negative effect of audit tenure on audit quality. These differences may stem from variations in industry characteristics, observation periods, audit quality proxies, regulatory environments, and auditor-client relationships. This finding therefore adds to the mixed empirical literature by showing that the expected negative relationship between prolonged audit tenure and audit quality is not consistently observed in infrastructure companies.

In terms of agency theory, the finding suggests that auditor-client tenure does not automatically weaken the monitoring mechanism established to address agency problems. Although agency theory emphasizes auditor independence as an important condition for effective monitoring, the length of an audit relationship does not necessarily determine the degree of independence the auditor exercises. Professional standards, audit firm quality-control systems, ethical requirements, partner involvement, and professional skepticism may function as additional safeguards against familiarity threats. Thus, the auditor's effectiveness as a monitoring mechanism may depend more on the auditor's actual independence and professional conduct than on the number of years of engagement with a particular client.

From a practical perspective, the finding suggests that companies and regulators should avoid treating audit tenure as the sole indicator of audit quality. Instead, monitoring should focus on whether auditors continue to demonstrate independence, professional skepticism, competence, and compliance with auditing standards throughout the engagement period. Audit committees should periodically evaluate auditor performance and potential familiarity threats rather than relying solely on engagement length. Audit firms should also strengthen internal independence safeguards and quality-control procedures for long-standing clients. Future studies could examine whether the relationship between tenure and audit quality changes at different tenure lengths or when moderated by auditor reputation, audit committee effectiveness, auditor specialization, or company complexity.

The effect of audit rotation on audit quality

The findings indicate that audit rotation does not significantly affect audit quality. This suggests that replacing an auditor or Public Accounting Firm does not automatically improve audit quality. Although rotation is intended to introduce greater objectivity and reduce excessive familiarity between auditors and clients, replacing an auditor alone may not be sufficient to improve the effectiveness of the audit process. Therefore, rotation should not be interpreted as direct evidence that a company has achieved higher audit quality.

The finding may reflect a trade-off between auditor independence and client-specific knowledge. A new auditor may bring a fresh perspective and reduce familiarity threats, but may initially have less comprehensive knowledge of the client's business, systems, contracts, risks, and historical transactions. This learning process may be particularly relevant for infrastructure companies because their operations can involve complex projects, long-term arrangements, substantial capital expenditure, and industry-specific transactions. Consequently, the potential independence benefits of rotation may be accompanied by an initial loss of client-specific knowledge. These opposing mechanisms may explain why rotation does not systematically improve audit quality.

The finding differs from Kusuma (2021); Sari & Rahmi (2021) and Lestari & Rochmatullah (2024), who found that audit rotation had a positive and significant effect on audit quality. However, it is consistent with Lailatul & Yanthi (2021), who found that audit rotation did not affect audit quality. Inconsistent findings across previous studies show that the effectiveness of audit rotation remains context-dependent. Differences in industry characteristics, regulatory requirements, auditor characteristics, and the way audit quality is measured may influence whether rotation generates meaningful improvements in audit outcomes. The present study therefore reinforces the argument

that mandatory or actual auditor changes do not necessarily translate into higher audit quality in every organizational setting.

From an agency theory perspective, audit rotation is intended to strengthen external monitoring by reducing the risk that excessive familiarity between auditors and management impairs auditor independence. However, the insignificant finding suggests that changing auditors does not necessarily make the monitoring function more effective. Agency theory implies that monitoring effectiveness depends not only on the structural separation between the auditor and management but also on the auditor's competence, independence, professional skepticism, and ability to understand the client's risks. Thus, rotation may create an opportunity for more objective monitoring, but it will improve audit quality only when the incoming auditor can effectively understand the client and perform appropriate audit procedures.

In practice, the finding implies that companies, audit committees, and regulators should not rely on audit rotation as the only mechanism to improve audit quality. When rotation occurs, companies should support an effective transition by providing access to relevant information and ensuring the incoming auditor gains a sufficient understanding of the company's operations and risks. Audit committees should also monitor the transition process and evaluate whether the new auditor maintains sufficient independence and professional competence. For regulators, the finding suggests complementing rotation policies with broader mechanisms that strengthen auditor independence, audit-firm quality control, professional competence, and audit committee oversight. Future research should further investigate whether rotation effectiveness depends on factors such as auditor reputation, industry specialization, audit firm size, audit committee effectiveness, or client complexity.

Conclusions

This study examined the effects of audit fee, audit tenure, and audit rotation on audit quality in infrastructure companies listed on the Indonesia Stock Exchange during 2020–2023. The findings show that audit fee, audit tenure, and audit rotation do not have a significant individual effect on audit quality. These findings indicate that audit fees, the length of the auditor-client relationship, and auditor rotation alone are not sufficient to explain variation in audit quality among the sampled infrastructure companies. The results also demonstrate that the expected relationships proposed in the hypotheses are not empirically supported in this research context. Thus, other factors beyond the three audit engagement characteristics examined in this study appear to influence audit quality.

The findings contribute to the audit quality literature by providing empirical evidence from the Indonesian infrastructure sector, a context that has received relatively limited attention compared with other sectors. From an agency theory perspective, the results suggest that the effectiveness of external auditing as a monitoring mechanism cannot be determined solely by audit-related economic arrangements or structural characteristics. In practice, auditor competence, independence, professional skepticism, audit firm reputation, industry expertise, internal quality-control mechanisms, and audit committee effectiveness may play an important role in determining audit quality. These findings also have practical implications for companies, audit committees, auditors, and regulators. Companies and audit committees should therefore evaluate audit quality through broader indicators rather than relying solely on audit fee levels, auditor tenure, or rotation. Similarly,

auditors and regulators should strengthen mechanisms that support auditor independence, professional competence, and effective audit procedures.

This study has several limitations that should be considered when interpreting its findings. The study is limited to infrastructure companies listed on the Indonesia Stock Exchange and covers a relatively short observation period, resulting in few firm-year observations. In addition, the study measures audit quality using Big Four affiliation as a proxy, which may not fully capture the multidimensional nature of actual audit quality. The study also focuses on only three explanatory variables, while audit quality may be affected by various other factors. Future research should therefore expand the sample across industries and longer observation periods to improve the generalizability of the findings. Further studies could also employ alternative or more comprehensive measures of audit quality and incorporate additional variables, such as auditor specialization, public accounting firm reputation, audit committee effectiveness, auditor independence, company size, financial risk, and corporate governance characteristics. Examining moderating or mediating variables may also deepen understanding of the conditions under which audit fee, audit tenure, and audit rotation influence audit quality.

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