
**Determinants of Audit Quality in Manufacturing Companies in Indonesia:
The Role of Auditor Specialization**

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Abstract

This research aims to analyze the effects of audit tenure, audit rotation, audit fees, age of publication, and auditor specialization on audit quality. The population in this study are manufacturing companies listed on the Indonesia Stock Exchange for the period 2019 – 2021. This study used purposive sampling with a total sample of 201. The data analysis technique used in this study was logistic regression analysis. The results of the analysis prove that the variables of audit tenure, audit rotation, age of publication, and auditor specialization positively affect audit quality. In contrast, the audit fee variable does not affect audit quality. This research implies that using auditor specialization can improve audit quality, because it is believed that specialized auditors have more experience and knowledge than those who do not have specialization.

Keywords: audit tenure, audit rotation, audit fees, age of publication, auditor specialization, audit quality

1. Introduction

1.1. Background

The Financial Services Authority (Otoritas Jasa Keuangan - OJK) requires companies listed on the Indonesia Stock Exchange (IDX) to publish their annual financial statements, audited by an external party, within a maximum of 90 days after the fiscal year ends. This is stipulated in OJK Regulation Number 42/POJK.04/2016 concerning the submission of stock exchange reports. Company management is required to report operational activities and financial position in the form of financial statements. Therefore, a third party is needed to assess the reliability of these financial statements, referring to the audit results of public accountants (Ahmad et al., 2022).

The auditor is the party with the authority to provide an independent opinion on a financial statement (Sari et al., 2019). The auditor must examine and report any material misstatements in a financial statement, along with clear explanations obtained during the audit process (Nuri, 2021). Auditors must possess high audit quality. Audit quality is the ability of an auditor to detect irregularities in financial statements and report them to the user (Sari et al., 2019).

One of the case studies reported by Laucereno (2018) in detikFinance regarding financial statement falsification and manipulation scandals stated that on October 1, 2018, administrative sanctions were imposed on Public Accountant Marlina, Public Accountant Merliyana Syamsul, and the Public Accounting Firm Satrio, Bing, Eny, and Partners by OJK. In this case, the Public Accountant and the Public Accounting Firm issued an Unqualified Opinion on SNP Finance. However, the examination by the Financial Services Authority revealed that SNP Finance's financial statements did not reflect the actual condition. It could lead to losses for many parties. From the above phenomenon, it is clear that an auditor must possess competence and independence.

An auditor with competence and independence will enhance audit quality. Competence is a skill auditors require to conduct audits accurately and effectively, helping maintain the auditor's objectivity and integrity (Wiastrini & Dwirandra, 2018). Meanwhile, independence is an unbiased stance, free from influence or attachment to other parties (Dewi & Yenni Latrini, 2020). An auditor cannot provide an opinion on the fairness of financial statements if they are not independent from their client (Meidawati & Assidiqi, 2019).

The first factor that can influence audit quality is audit tenure. A long engagement period with a client can financially benefit the auditor, but an extended engagement may foster an emotional relationship that can affect the auditor's independence (Nuri, 2021). Government Regulation No. 20 of 2015 states that there is no restriction on the engagement period for public accounting firms. However, for individual public accountants, there is a maximum limit of 5 consecutive years. Several researchers have conducted research on audit tenure; for instance, Sari et al. (2019) demonstrated that the effect of audit tenure on audit quality is positive. This result aligns with Nugroho's (2018) and Ardani's (2017) studies. The results of these studies are different from the result of research by Puspaningsih & Syarifa (2021), which states that audit tenure has no effect on audit quality.

The second factor that can affect audit quality is audit rotation. The purpose of audit rotation is to prevent excessive closeness between the auditor and the client (Pramaswaradana & Astika, 2017). Several researchers have conducted research on audit rotation; for example, Sari et al. (2019) found that audit rotation does not impact audit quality. This finding contrasts with the study by Akbar (2017), which concluded that audit rotation positively influences audit quality.

The third factor that can influence audit quality is the audit fee. The audit fee is received once the auditor has completed their services (Nuri, 2021). Several researchers have also conducted research on audit fees. For instance, Sari et al. (2019) demonstrated that the audit fee does not impact audit quality. This finding does not align with the study by Prabhawanti & Widhiyani (2018), Puspaningsih & Syarifa (2021) which found that the audit fee positively affects audit quality.

Publication age is the fourth factor in this study that can influence audit quality. A company with a long publication age can indicate good management quality, whereas a shorter publication age may suggest lower management quality (Pramaswaradana & Astika, 2017). Pramaswaradana and Astika (2017) conducted research on publication age and concluded that publication age does not affect audit quality. This result aligns with the findings of Paramita & Latrini (2015). However, another study by Amaliatussa' diah & Aprilia (2021) contradicts these findings, showing that publication age does affect audit quality.

Auditor specialization is the final factor in this study that can influence audit quality. An auditor is considered specialized when they have experience auditing the same company previously and possess a deeper understanding of the company's conditions. Specialized auditors are seen as more capable and efficient in identifying errors in the client's financial statements (Pramaswaradana & Astika, 2017). On the other hand, clients using non-specialized auditors are viewed as less capable of performing audits effectively and promptly (Pramaswaradana & Astika, 2017). Nuri (2021) conducted research on auditor specialization, who found that auditor specialization does not affect audit quality. This finding contrasts with the study by Sari et al. (2019), which concluded that auditor specialization does impact audit quality.

This study replicates previous research conducted by Sari et al. (2019). The difference between this study and the previous one lies in the independent variables, which include: 1) Replacing accounting firm size with publication age. The longer a company has been publicly listed, its systems are expected to improve, resulting in more reliable financial statements. This, in turn, can lead to higher audit quality. 2) Another difference is that a sample of manufacturing companies was used over a different period, specifically from 2019 to 2021. Manufacturing companies were chosen because the manufacturing sector is the largest industry in Indonesia and has a more comprehensive business process than the service industry. This complexity is expected to require a more complex audit process, potentially providing a more comprehensive picture of audit quality. Another reason is that the audits conducted during the 2019-2021 period occurred during the COVID-19 pandemic, where part of the audit process was conducted online.

1.2. Literature Review

1.2.1. Agency Theory

This study employs the Agency Theory articulated by Jensen and Meckling (1976). This theory emphasizes the relationship between managers (agents) and company owners (principals). The relationship between agents and principals is established through a contract. Agents are responsible for managing the company and are obligated to report their performance outcomes in the form of financial statements to the principals. Within this agency theory framework, problems arise due to conflicts between agents and principals. Agents are motivated to enhance their well-being by improving the company's performance to receive rewards from the principals, which often involves minimizing risks. One method agents may employ to achieve their interests is by manipulating information in financial statements. This leads to a misalignment between the

information held by the agents and the information presented to the principals (Jensen & Meckling, 1976). Meanwhile, the principal's primary objective is to maximize profits.

Agents and principals have divergent interests in company management (Sari et al., 2019). To align the objectives of both parties, an independent intermediary is required to provide assurance and to examine the financial statements (Nuri, 2021). This intermediary is the auditor.

1.2.2. Audit Quality

According to DeAngelo (1981), audit quality refers to the likelihood that an auditor will detect and report violations within a client's accounting system. In contrast, Yadiati and Mubarak (2017) define audit quality as the accuracy of an auditor's information, which includes accounting violations in the client's financial statements. This perspective differs from that of Andriani and Nursiam (2017), who argue that audit quality is a synthesis and evaluation of evidence related to the information used to report and determine the conformity of that information with existing criteria.

An audit is considered to be of high quality when an auditor is able to detect misstatements in the presentation of the auditee's financial statements and conducts the audit process in accordance with established standards (Sihombing & Triyanto, 2019). Audit standards encompass independent auditors, professional quality, and the judgments applied during the audit process and in the preparation of the audit report (Yolanda et al., 2019).

1.3. Research Hypothesis

Audit tenure refers to the duration of the relationship between the auditor and the client (Krisinndiastuti & Rasmini, 2016). A relatively short audit tenure requires more time for the auditor to familiarize themselves with the client and its environment, resulting in limited access to information in the form of data and evidence.

According to research conducted by Sari et al. (2019), audit tenure positively affects audit quality, as an extended duration can enhance an auditor's competence. This finding aligns with the study by Alsmairat et al. (2019). When auditors possess sufficient knowledge, their auditing process becomes more thorough, enabling them to detect fraudulent activities and resulting in high-quality audit outcomes (Darya & Puspitasari, 2017). Based on this discussion, the hypothesis proposed in this study is:

H1: Audit Tenure has a positive effect on Audit Quality.

Based on agency theory, the fees paid by a company to obtain audit services to resolve issues between principals and agents can lead to a dependency of the Public Accounting Firm on the auditee. When the auditee is satisfied with the performance of the Public Accounting Firm, they are likely to continue using the same firm's services. This situation can result in a decline in the objectivity and independence of the auditor, which may adversely affect audit quality (Priyanti & Uswati Dewi, 2019). Implementing audit rotation is expected to enhance audit quality;

conversely, the absence of audit rotation may lead to a deterioration in audit quality (Akbar, 2017). Research conducted by Akbar (2017) found that audit rotation positively affects audit quality. The findings indicate that the longer a company delays audit rotation, the lower the potential quality of the audit becomes. Based on these findings, the hypothesis formulated in this study is:

H2: Audit Rotation has a positive effect on Audit Quality.

Audit fees are determined prior to the commencement of the audit process, specifically after a contract is established between the auditor and the client (Siregar & Agustini, 2020). Several factors influence the magnitude of the audit fee, including financial characteristics, operational characteristics, and the activities of external auditors (Meidawati & Assidiqi, 2019). Research conducted by Prabhawanti and Widhiyani (2018) demonstrates that audit fees influence audit quality, as higher audit fees are associated with improved audit quality. Based on these findings, the hypothesis formulated in this study is:

H3: Audit Fee has a positive effect on Audit Quality.

A longer publication age indicates effective management within the company, as the management can organize finances efficiently and competently present financial information. Conversely, a short publication age may suggest that the company possesses subpar management quality, as managers are perceived as inadequate in providing accurate financial information, potentially resulting in financial statements with low accuracy for users (Pramaswaradana & Astika, 2017).

Research conducted by Amaliatussa'diah and Aprilia (2021) found that publication age significantly positively affects audit quality, as companies that have been publicly listed for an extended period tend to produce higher-quality audits. Based on these findings, the hypothesis formulated in this study is:

H4: Publication Age has a positive effect on Audit Quality.

Auditors play a crucial role in providing assurance that the accounting figures presented in financial statements are trustworthy and accurately reflect the company's financial position. Auditors are expected to possess in-depth knowledge related to specific industry characteristics, as this can significantly impact the quality of the audits they conduct. In providing audit services, an auditor should specialize in the same industry, as this specialization enables a deeper understanding of the company's characteristics more comprehensively (Maharani & Triani, 2018). An auditor is considered specialized due to their experience in auditing financial statements of previous companies; this experience allows the auditor to conduct the audit process efficiently and effectively, leading to higher audit quality (Pramaswaradana & Astika, 2017). Craswell (1995) also state that industry expertise is a dimension of the demand for higher quality of audit.

The research conducted by Sari et al. (2019) found that auditor specialization positively affects audit quality, as specialized auditors are more likely to detect errors and deviations than non-specialized auditors. Based on these findings, the hypothesis formulated in this study is:

H5: Auditor Specialization has a positive effect on Audit Quality.

1.4. Research Model

The research model used in this study is as shown below :

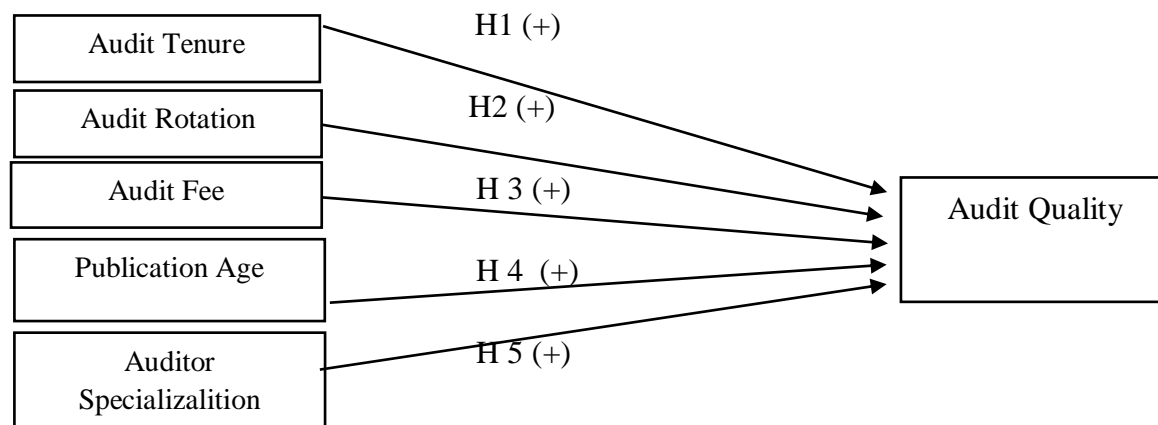


Figure 1: Research Model

2. Research Method

2.1. Population and Research Sample

The population in this study consists of manufacturing companies listed on the Indonesia Stock Exchange (IDX) from 2019 to 2021. Manufacturing companies were chosen due to their higher complexity compared to other types of companies. This complexity leads to a more intricate auditing process, making audit quality an important aspect to examine. The sample in this study was selected using the purposive sampling method, with sample selection based on specific characteristics and criteria. The sample criteria for this study are as follows:

1. Manufacturing companies listed on the IDX between 2019 and 2021
2. Manufacturing companies that consistently publish audited annual financial statements every year during the 2019–2021 period on the IDX website
3. Companies with complete data on Public Accounting Firms and auditors responsible for auditing the financial statements
4. Financial statements recorded in Indonesian Rupiah
5. Companies that include professional fees in the annual financial statements

2.2. Data Sources and Data Collection Techniques

This study uses secondary data in the form of annual financial statements of manufacturing companies listed on the IDX from 2019 to 2021. The data collection technique involves gathering all secondary data, specifically financial statements, from the official IDX website (www.idx.co.id) and the companies' websites for 2019–2021.

2.3. Definition and Measurement of Variables

In this study, the dependent variable is audit quality. An audit is considered high-quality when the audit process is conducted according to established standards, allowing the auditor to detect errors in the financial statements (Sihombing & Triyanto, 2019). This study uses a dummy variable to measure audit quality, assigning a value of 1 to each company receiving an unqualified opinion on its financial statements and 0 for companies receiving other opinions.

The independent variable influences the dependent variable (Sugiyono, 2013). This study's independent variables consist of audit tenure, audit rotation, audit fees, publication age, and auditor specialization.

Tenure refers to the working relationship between a client company and an independent auditor over a certain period (Putri & Putra, 2018). The length of audit tenure is a matter of debate as it can impact auditor independence (Sari et al., 2019). Audit tenure is assessed based on the financial statements audited by an independent auditor over three consecutive years, from 2019 to 2021. This variable is measured by counting the years of engagement with the same Public Accounting Firm, starting with a value of 1 for the first year (2019) and adding one for each subsequent year during the research period, 2019–2021.

Audit rotation is the periodic exchange of independent auditors at a Public Accounting Firm to minimize familiarity between the auditor and the auditee (Suciana & Setiawan, 2018). In this study, the audit rotation variable is measured as a dummy variable, assigning a value of 1 if an auditor rotation occurs and 0 if there is no rotation.

The audit fee is the remuneration charged by the auditor for the audit process conducted for the client company (El-Gammal, 2012). The audit fee is determined prior to the audit process (Siregar & Agustini, 2020). This variable is measured using the natural logarithm of the professional fees account. This approach is taken because data on audit fees is not readily available. Audit fee disclosure remains voluntary, and few companies include this data in their annual reports.

Publication age refers to the length of time an entity has been listed on the IDX from its initial registration. Publication age is measured by calculating the number of years the entity has been listed on the IDX from its registration until the end of the study period in 2021.

A specialized auditor has greater knowledge of the audited company's conditions due to prior audit engagements with the company. In this study, auditor specialization is measured using the Auditor Industry Specialization (AIS) method as applied by Craswell & Francis (1995). In their research, an audit partner is labeled a specialist if they audit 15% of the total companies in that industry. The percentage of AIS is calculated using the following formula:

$$AIS = \frac{\text{Number of KAP clients in the industry}}{\text{Number of issuers in the industry}} \times 100\%$$

This variable is a dummy variable, with specialized auditors assigned a value of 1 and non-specialized auditors assigned a value of 0.

3. Results and Discussion

3.1. Description of the Research Object

The population in this study comprises all manufacturing companies within the industrial sub-sector listed on the IDX from 2019 to 2021. The sampling technique employed in this research is purposive sampling. The following is the sample for this study:

Table 1 Research Sample

No	Description	Total
1.	Total number of manufacturing companies listed on the Indonesia Stock Exchange for the period 2019-2021	191
2.	Manufacturing companies that did not consistently publish audited annual financial statements during the period 2019-2021	(26)
3.	Manufacturing companies lacking data on Public Accounting Firms and auditors during the period 2019-2021	(0)
4.	Companies that did not present financial statements in Indonesian Rupiah	(55)
5.	Companies that did not include professional fees in their annual financial statements	(43)
Total Sample Meeting Criteria		67
Total Research Sample (67x3)		201

3.2. Data Analysis

3.2.1. Descriptive Statistical Analysis

The descriptive statistical analysis for this study is as follows:

Table 2 Descriptive Statistical Analysis

	n	Minimum	Maximum	Mean	Std. Deviation
Audit Tenure	201	1	3	1.014	0.807
Audit Rotation	201	0	1	0.45	0.499
Audit Fee	201	17.45	26.02	22.540	8.003
Publication Age	201	1	40	0.9236	10.357
Auditor Specialization	201	0	1	0.69	0.463
Audit Quality	201	0	1	1	0.071
Valid n (listwise)	201				

3.2.2. Logistic Regression Analysis

3.2.2.1. Hosmer and Lemeshow’s Goodness of Fit Test

The first step involves assessing the adequacy of the regression model. A model can estimate observed values if it fits the observational data, specifically when the Hosmer and Lemeshow goodness of fit test value is greater than 0.05.

Table 3 Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	2.900	8	0.940

The Hosmer and Lemeshow goodness of fit test statistic is 2.900, with a significance probability of 0.940, greater than 0.05. Based on the analysis results, the regression model is adequate for subsequent analyses, as there are no significant discrepancies between the predicted classifications and the observed classifications.

3.2.2.2. Overall Model Fit test

The second step involves assessing the overall regression model. The initial value for -2 Log Likelihood at Block Number = 0 is 60.757, while the value for -2 Log Likelihood at Block Number = 1 is 36.898.

Table 4 Overall Model Fit Test

-2 Log Likelihood Block Number = 0	-2 Log Likelihood Block Number = 1
60.757	36.898

The results of the overall model fit test indicate a significant decrease in the transition from -2 Log Likelihood at Block Number = 0 to -2 Log Likelihood at Block Number = 1, suggesting that the hypothesized model fits the data well.

3.2.2.3. Nagelkerke R²

The third step involves the Nagelkerke R-squared, a combination of the Cox and Snell coefficients designed to ensure that the value ranges from 0 to 1 by dividing the Cox and Snell R² value by its maximum value. The Nagelkerke R² value can be interpreted similarly to the R² value in multiple regression. The following table presents the results of the Nagelkerke R² values:

Table 5 Nagelkerke R Square

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	36.898 ^a	0.112	0.429

The table above indicates that the Nagelkerke R-squared value is 0.429, which means that only 42.9% of the variability in the dependent variable can be explained by the variability in the independent variables. Meanwhile, the remaining 57.1% may be attributed to other variables not included in the analysis.

3.2.2.4. Logistic Regression Coefficient Analysis

The following presents the results of the logistic regression coefficients:

Table 6 Logistic Regression

	B	S.E.	Sig.
Audit Tenure	6.956	3.030	0.022
Audit Rotation	3.707	1.658	0.025
Fee Audit	-179.094	141.865	0.207
Publication Age	5.146	2.414	0.033
Auditor Specialization	3.489	1.382	0.012
Constant	260.628	214.839	0.225

From the regression equation above, the resulting logit regression model is as follows:

$$Y = 260.628 + 6.956X_1 + 3.707X_2 - 179.094X_3 + 5.146X_4 + 3.489X_5 + e$$

3.2.2.5 . Hypothesis Testing

In this study, the first hypothesis suggests that audit tenure positively affects audit quality. The audit tenure variable has a regression coefficient of 6.956 with a significance level of 0.022.

Thus, the audit tenure variable positively influences audit quality, as the significance value of 0.022 is less than 0.05. Based on these results, the hypothesis stating that audit tenure positively affects audit quality is supported.

The second hypothesis in this study posits that audit rotation positively affects audit quality. The regression test results support this second hypothesis, as the audit rotation variable has a regression coefficient of 3.707 with a significance level of 0.025. Therefore, the audit rotation variable positively influences audit quality since the significance value of 0.025 is less than 0.05.

In this study, the third hypothesis suggests that audit fees positively affect audit quality. The audit fee variable has a regression coefficient of -179.094 with a significance level 0.207. Therefore, the audit fee variable does not influence audit quality, as the significance value of 0.207 is greater than 0.05. Based on these test results, the hypothesis stating that audit fees positively affect audit quality is not supported.

The fourth hypothesis in this study indicates that publication age positively influences audit quality. The publication age variable has a regression coefficient of 5.146 with a significance level of 0.033. Thus, the publication age variable positively affects audit quality since 0.033 is less than 0.05. Based on the regression test results, the hypothesis that publication age positively impacts audit quality is supported.

This study's fifth hypothesis suggests that auditor specialization positively influences audit quality. The auditor specialization variable has a regression coefficient 3.489 with a significance level of 0.012. Therefore, the auditor specialization variable positively affects audit quality, as 0.012 is less than 0.05. Based on these regression test results, the hypothesis that auditor specialization positively impacts audit quality is supported.

3.3. Discussion

3.3.1. The Effect of Audit Tenure on Audit Quality

The hypothesis testing results indicate that audit tenure positively influences audit quality. Thus, the duration of the audit engagement can enhance the auditor's competence during the audit process, enabling the detection of fraudulent activities. Consequently, the audit results will be of high quality. The length of the audit engagement may also broaden the auditor's business insights, leading to a more effective audit program design. Therefore, audit tenure is a suitable benchmark for achieving good audit quality. These findings align with the results of studies conducted by Alsmairat et al. (2019) and Sari et al. (2019).

This research was conducted during the pandemic era, where the audit process was mostly carried out online (remote audit). In a remote audit, the auditor cannot see the whole thing. For example, auditors make observations using video and cameras online. The observations made are limited to the part indicated by the client (Binus University, 2021).

Having a tenure audit really helps auditors in carrying out their duties in the pandemic era. This is because by having a longer audit tenure, the auditor already understands the client's business processes. Thus, it is hoped that the quality of the audit will remain good, even though the audit is carried out remotely.

3.3.2. The Effect of Audit Rotation on Audit Quality

The hypothesis testing results indicate that audit rotation positively influences audit quality. Therefore, implementing audit rotation can prevent the establishment of overly close relationships between auditors and clients. It is anticipated that audit rotation will lead to improved audit quality. This study's findings are consistent with the results of the research conducted by Akbar (2017).

3.3.3. The Effect of Audit Fees on Audit Quality

The hypothesis testing results indicate that audit fees do not affect audit quality. Thus, audit fees do not influence audit quality, as they do not serve as a reliable predictor of audit quality. The amount of audit fees does not necessarily guarantee or reflect the quality of the audit, whether high or low. Consequently, audit fees are not a suitable benchmark for achieving good audit quality. These findings align with the results of the study conducted by Sari et al. (2019).

3.3.4. The Effect of Publication Age on Audit Quality

The hypothesis testing results conclude that publication age positively influences audit quality. Thus, the longer a company has been publicly listed, the higher the audit quality, as such companies are considered well-established in their sector and demonstrate strong reporting practices. A company that has been publicly listed for a long period assures high audit quality. Based on this analysis, publication age is a valid benchmark for achieving good audit quality. These findings are consistent with the study conducted by Amaliatussa'diah & Aprilia (2021).

3.3.5. The Effect of Auditor Specialization on Audit Quality

The regression test results indicate that auditor specialization positively affects audit quality. Therefore, specialized auditors are more likely to detect irregularities in financial statements. Due to their experience, specialized auditors are considered to possess enhanced abilities and are quicker at identifying discrepancies in financial reports. Based on the above, auditor specialization is a suitable benchmark for achieving high audit quality. These findings align with the results of the study conducted by Sari et al. (2019) and Craswell (1995). In the research conducted by Craswell (1995), industry expertise is needed to improve audit quality.

In the pandemic era, where the audit process is carried out online (remote audit), auditor specialization is very necessary. This is because with auditor specialization, public accounting firms can better organize auditor assignments. It is hoped that audit quality will remain well maintained, even though the audit is carried out online (remote audit).

4. Conclusion, Recommendations, and Implications

4.1. Conclusion

This study analyzed the effects of Audit Tenure, Audit Rotation, Audit Fees, Publication Age, and Auditor Specialization on Audit Quality in manufacturing companies listed on the IDX from 2019 to 2021. The conclusions from this study are as follows: Audit Tenure, Audit Rotation, Publication Age, and Auditor Specialization have a positive effect on Audit Quality. Meanwhile, Audit Fees do not have an impact on Audit Quality. This research was conducted in the pandemic era, so it is possible that this conclusion may not fully apply to conditions before or after the pandemic era. This is because in the pandemic era, most audit processes are carried out online (remote audits).

4.2. Recommendations

The study results show a Nagelkerke R Square value of 42.9%, indicating that the independent variables influence 42.9% of the dependent variable. In comparison, the remaining 57.1% is explained by other variables not included in this study. For future research, it is recommended to incorporate additional independent variables that may significantly affect the dependent variable.

4.3. Implications

The findings of this study demonstrate that audit rotation and auditor specialization positively impact audit quality. Therefore, it is recommended that companies implement audit rotation and engage auditors with specialization. The results suggest that audit rotation and specialized auditors can enhance audit quality, as specialized auditors are perceived to have more experience and knowledge than non-specialized ones.

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