



Website:
ejournal.ummm.ac.id/index.php/jrak

*Correspondence:
hafiez.sofyani@umy.ac.id

DOI: [10.22219/jrak.v15i1.36375](https://doi.org/10.22219/jrak.v15i1.36375)

Citation:
Sofyani, H., Rohman, W. M., Oktavia, K. D., Efsari, A. N. (2025). Big Data Analytics-Based Audit System Quality and Public Sector Audit Performance: Audit Judgment as Mediator. Jurnal Reviu Akuntansi Dan Keuangan, 15(1), 165-182.

Article Process Submitted:
September 15, 2024

Reviewed:
September 17, 2024

Revised:
February 21, 2025

Accepted:
February 21, 2025

Published:
March 3, 2025

Office:
Department of Accounting
University of Muhammadiyah Malang
GKB 2 Floor 3.
Jalan Raya Tlogomas 246,
Malang, East Java,
Indonesia

P-ISSN: 2615-2223
E-ISSN: 2088-0685

Article Type: Research Paper

BIG DATA ANALYTICS-BASED AUDIT SYSTEM QUALITY AND PUBLIC SECTOR AUDIT PERFORMANCE: AUDIT JUDGMENT AS MEDIATOR

Affiliation:

Hafiez Sofyani^{1*}, Wildan Mujibur Rohman², Kanza Della Oktavia³, Aqilla Nur Efsari⁴

Affiliation:

^{1,2,3,4}Department of Accounting, Universitas Muhammadiyah Yogyakarta, Indonesia

ABSTRACT

Purpose: This study examines some hypotheses about the impact of quality of Big Data Analytics (BDA)-based audit system on audit performance in the public sector, focusing on the mediating role of audit judgment.

Methodology/approach: A quantitative method was employed, using primary data from a survey of 137 government auditors across Indonesia. Data were analyzed using Structural Equation Modeling based on Partial Least Squares (SEM-PLS).

Findings: The results show that audit judgment mediates the relationship between the BDA-based audit system's quality and public sector audit performance.

Practical implications: The findings emphasize the need for effective audit judgment to optimize audit technology's role in enhancing the audit performance of government auditors.

Originality/value: This study fills the research gap regarding the inconsistent results on adopting audit technologies and performance, specifically in the public sector.

Keywords: Audit Judgment; Audit Performance; Big Data Analytics; Public Sector

ABSTRAK

Tujuan penelitian: Studi ini menguji beberapa hipotesis tentang dampak kualitas sistem audit berbasis Big Data Analytics (BDA)



© 2025 Hafiez Sofyani, Wildan Mujibur Rohman, Kanza Della Oktavia, Aqilla Nur Efsari

Jurnal Reviu Akuntansi dan Keuangan is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/)

terhadap kinerja audit di sektor publik, dengan fokus pada peran mediasi audit judgement.

Metodologi/pendekatan: Metode kuantitatif digunakan, menggunakan data primer dari survei terhadap 137 auditor pemerintah di seluruh Indonesia. Data dianalisis menggunakan Structural Equation Modeling berdasarkan Partial Least Squares (SEM-PLS).

Hasil: Hasil penelitian menunjukkan bahwa audit judgement memediasi hubungan antara kualitas sistem audit berbasis BDA dan kinerja audit di sektor publik.

Implikasi praktik: Temuan penelitian menekankan perlunya audit judgement yang efektif untuk mengoptimalkan peran teknologi audit dalam meningkatkan kinerja audit para auditor pemerintah.

Orisinalitas/Kebaharuan: Penelitian ini mengisi kesenjangan penelitian mengenai hasil yang tidak konsisten tentang adopsi teknologi audit dan kinerja audit, khususnya di sektor publik.

Kata kunci: Audit Judgment; Big Data Analytics; Kinerja Audit; Sektor Publik

INTRODUCTION

Public sector audit performance in Indonesia still has a little homework to do. According to the 2023 Annual Report of the Indonesian Supreme Audit Agency (SAA), some key performance indicators, including the Quality Level and Benefits of state financial governance derived from SAA audit results and the Bureaucratic Reform Quality Assurance standards, have not yet been fully optimized. To overcome this problem, the latest technology-based audits are a necessity. One of the latest developments in the audit realm is Big Data Analytics (BDA) based audit. In the Volatility, Uncertainty, Complexity, and Ambiguity (VUCA) era, auditors play a crucial role in managing the uncertainties and complexities organizations face. With technological advancements, particularly BDA, there are opportunities to enhance the efficiency of audit information systems (Balios et al., 2020). BDA enables auditors to analyze large volumes of data quickly and accurately, identifying patterns and anomalies that may have previously gone unnoticed (Appelbaum et al., 2017). This technology also allows auditors to improving audit assessment quality and impacting overall performance. Thus, BDA-based audits are relevant to the Indonesian public sector, where unique audit challenges, such as vast geographical expanse, numerous auditees, and dynamic financial transactions, demand innovative solutions.

In the Indonesian public sector, Since 2020, BDA has been developed and utilized through the BIDICS application to identify high-risk areas and guide audit planning and execution in Indonesia's public sector, aiming to foster data-driven audits that provide more accurate assessments (Saud et al., 2025). This initiative addresses the suboptimal performance of government auditors in improving governance within Indonesia's public sector (Pratama & Komariyah, 2023). However, historically, the integration of BDA in auditing has evolved significantly over the past two decades, starting from traditional manual methods to the use of computer-assisted audit techniques (CAATs) in the early 2000s and progressing to the adoption of Artificial Intelligence and predictive analytics in the 2010s and 2020s (Saud et al., 2025). This evolution has been particularly prominent in regions like North America and Western Europe, where regulatory pressures and advanced technological infrastructure have

driven widespread adoption, with 79% of U.S. auditors using advanced analytics by 2020. In contrast, BDA adoption in developing regions such as Africa and Latin America remains slower due to technological and regulatory constraints, though it's growing, particularly in the financial sector. The financial industry, in particular, has been in charge of adopting BDA to improve risk management, fraud detection, and compliance ([Mohammed Ismail & Abdul Hamid, 2024](#)).

However, despite promising benefits, the development of advanced audit technology has also sparked debate, as it does not automatically enhance audit performance ([Xing et al., 2020](#)). A study noted that although BDA improves the efficiency of evidence collection, it does not always correlate with higher audit quality and performance ([Sahidah et al., 2023](#)). [Al-Ateeq et al. \(2022\)](#) found that using BDA could harm audit quality due to the challenges associated with interpreting the results of complex analytical procedures. Additionally, another study claims that while BDA enables auditors to process a larger volume of data, it may also increase the risk of cognitive biases and errors in judgment due to information overload ([Ahmad, 2019](#); [Appelbaum et al., 2017](#)). According to recent studies, the success of BDA-based audit systems in enhancing audit performance is contingent on various factors ([Dagilienė & Kloviėnė, 2019](#)), one of them being audit judgment ([Wedemeyer, 2010](#)). Thus, audit performance should not be presumed to improve solely due to new technology. Other crucial factors must be highlighted to enhance audit quality, particularly the auditors' judgment ([Kang & Piercey, 2020](#); [Wedemeyer, 2010](#)). In addition, although previous studies have explored technological advances in auditing, such as [Sethibe and Naidoo \(2022\)](#), [Thottoli et al. \(2022\)](#) and [Ceki and Moloi \(2024\)](#), they often overlook the cognitive biases influencing auditors' judgments, such as overconfidence or anchoring bias. Our research fills this gap by focusing on the mediating role of audit judgment in the BDA-audit performance relationship, demonstrating how BDA's integration with human judgment can mitigate and exacerbate these biases, thereby influencing audit outcomes. This nuanced approach represents a significant step forward in understanding how technology and human cognition interact within the audit process, an area that has been underexplored in prior literature.

Audit judgment by auditors enhances audit performance by leveraging professional expertise to make informed decisions, assess risks more accurately, and adapt methodologies to evolving conditions ([Hamdam et al., 2022](#)). Through nuanced decision-making, auditors can focus on high-risk areas and allocate resources more efficiently, ensuring that audit procedures are tailored to the specific context of the audit ([Tiron-Tudor & Deliu, 2022](#)). This targeted approach improves the evaluation of evidence, leading to more reliable and accurate financial reporting. By integrating judgment into the audit process, auditors can provide higher-quality insights and assurances, resulting in a more effective and comprehensive audit ([Logie & Maroun, 2021](#)). Thus, despite advancements in information technology (IT) of audit, audit judgment remains crucial for enhancing performance. It is critical to consider that IT tools excel in data processing but struggle with contextual interpretation and assessing qualitative factors like management intent ([Lotlikar & Mohs, 2021](#)). Audit judgment provides the critical evaluation and adaptability needed to address complex situations and ensure a thorough and effective audit. Thus, integrating both IT tools and expert judgment can ensure a comprehensive and high-quality audit ([Hosban & Hamdan, 2015](#)).

Moreover, the linkage between audit technology and audit judgment is demonstrated using BDA, which enhances auditors' ability to make informed, data-driven decisions. For example, in fraud detection, BDA allows auditors to analyze entire datasets rather than rely on samples, uncovering inconsistencies such as duplicate payments or unauthorized transactions that might go unnoticed ([Abdelwahed et al., 2024](#)). Similarly, in risk assessment,

BDA enables auditors to apply predictive analytics to identify higher-risk areas based on historical data and external factors, moving beyond reliance on auditors' intuition and reducing biases like anchoring or confirmation bias ([Iguma & Riccio, 2020](#); [Lombardi et al., 2023](#)). By providing comprehensive and objective data, BDA mitigates cognitive biases and enhances audit judgment. By doing so, BDA allows auditors to make more accurate decisions and improving overall audit performance ([Nasta et al., 2024](#)).

Based on the arguments presented above, where BDA enhances audit judgment and, in turn, influences audit performance, it can be inferred that there is a potential indirect relationship between BDA and audit performance mediated by audit judgment. Thus, this study examines the mediating role of audit judgment in the relationship between the quality of BDA-based audit system and audit performance in the public sector. The study's focus on the mediating role of audit judgment is well-supported by Cognitive Bias Theory (CBT). This theory suggests cognitive biases can significantly influence decision-making processes ([Hilbert, 2012](#)). In auditing, auditors are often affected by anchoring or confirmation bias, which can distort their evaluation of data and the conclusions they draw ([Maradona, 2020](#)). A high-quality BDA system can mitigate the impact of these biases by delivering more comprehensive, relevant, and objective data, thereby enabling auditors to make more informed and rational judgments ([Ahmad, 2019](#)). In this framework, audit judgment serves as a mediator, as auditors rely on the data provided by the BDA system to counteract bias, leading to more accurate decisions and, ultimately, improved audit performance.

Practically, the study holds significant implications for the public sector, particularly for the Indonesian SAA, as it aims to optimize adjustments to the evolving audit landscape in the Big Data era. It emphasizes the importance of developing audit technology and enhancing auditors' ability to make accurate assessments, ensuring that technology is a tool and a crucial support for high-quality audits. Theoretically, this study makes a significant theoretical contribution by extending existing knowledge on the role of BDA in auditing, particularly in the public sector context. While previous research has primarily focused on the direct impact of BDA systems on audit outcomes ([Mohammed Ismail & Abdul Hamid, 2024](#); [Saud et al., 2025](#)), this study introduces the concept of audit judgment as a key mediator in the relationship between BDA quality and audit performance. It extends CBT by exploring how BDA systems can mitigate cognitive biases (such as anchoring and confirmation bias) that often distort auditors' decision-making. By highlighting the mediating role of audit judgment, the study challenges the assumption that better technology directly leads to improved audit outcomes, instead emphasizing the complementary interaction between technology and human cognitive processes in achieving effective audit performance.

Moreover, the findings of this study have important implications for future research and policymaking in the public sector audit domain. Future research could explore how factors such as auditor expertise, training, and sector-specific contexts affect the interaction between BDA systems and audit judgment. Additionally, the study opens new avenues for investigating how different types of BDA systems might influence decision-making and audit performance across various industries. From a policy perspective, the study suggests that effective public sector auditing requires adopting advanced technology and comprehensive training to ensure auditors can effectively interpret BDA-generated data and minimize cognitive biases. This could lead to more transparent, accountable, and accurate auditing practices in the public sector, driving improvements in governance and decision-making.

Hypothesis Developments

System quality in BDA-based audit systems refers to the accuracy, reliability, and functionality of the technology used to process and analyze large volumes of data ([Zhang et al., 2021](#)). High-quality BDA systems ensure that data is processed efficiently and accurately, offering sophisticated analytical tools that enhance the depth and clarity of data insights ([Lee & Mangalaraj, 2022](#)). According to researchers' observations on BIDICS software, high-quality BDA systems in auditing include features such as data integration capabilities to consolidate diverse data sources, advanced analytics tools like machine learning for pattern detection, and data visualization for more precise insights. It also offers real-time updates and enables timely decisions to ensure effective and secure use. This superior system quality positively influences audit judgment by providing auditors with more accurate, comprehensive, and timely information. When auditors have access to well-structured and reliable data, they can more effectively identify patterns, anomalies, and trends that might be overlooked with traditional methods ([Bierstaker et al., 2014](#)). From the perspective of CBT, the ability to access high-quality BDA systems helps mitigate various cognitive biases, such as confirmation bias and anchoring, which might otherwise influence auditors' decision-making by narrowing their focus on preconceived notions or initial data. Consequently, this leads to better-informed decisions and more precise evaluations of financial statements and internal controls, enhancing the quality of audit judgments and outcomes. As auditors gain experience with BDA tools, they become more skilled at interpreting complex data, which enhances their decision-making in future audits ([Dagilienė & Klovienė, 2019](#)). In line with CBT, when auditors perceive the BDA tools as valuable and easy to use, they are less likely to rely on heuristics or biases, resulting in more accurate audit judgments ([Al-Ateeq et al., 2022](#)). Eliminating such biases, facilitated by BDA's systematic approach, leads to improved audit performance and judgment accuracy, reinforcing the hypothesis that high-quality BDA systems positively affect audit judgment. Based on the above arguments, the hypothesis can be formulated ([Al-Ateeq et al., 2022](#); [Bierstaker et al., 2014](#); [Lee & Mangalaraj, 2022](#); [Xing et al., 2020](#)). Thus, we propose the hypothesis as follows:

H1: The quality of the BDA-based audit system positively influences audit judgment.

Audit judgment refers to the process by which auditors apply their professional expertise, experience, and analytical skills to assess and interpret evidence related to an organization's financial statements and internal controls ([Wedemeyer, 2010](#)). This judgment involves evaluating the significance of audit findings, assessing risks, and making decisions about the appropriateness of accounting treatments and disclosures. [Kadous and Zhou \(2019\)](#) emphasized that auditors with high-quality judgment can better analyze complex data, identify key issues, and detect material discrepancies that might be overlooked. Similarly, [Hammersley \(2011\)](#) found that practical audit judgment leads to more precise risk assessments, better identification of potential issues, and more reliable audit conclusions. From a CBT perspective, high-quality audit judgment can help mitigate the influence of biases such as overconfidence, anchoring, and confirmation bias, which can distort auditors' decision-making processes and lead to inaccurate conclusions. When auditors apply their judgment effectively, they are less likely to fall prey to these biases, as their judgment is informed by a more comprehensive evaluation of evidence and risks rather than by reliance on heuristic shortcuts. These findings underscore the importance of audit judgment in improving audit performance by ensuring that audits reflect the actual financial condition of an organization. In line with CBT, high-quality audit judgment enables auditors to assess risks more accurately, leading to fewer judgment errors and more reliable audit conclusions. Based on this, the hypothesis is that high-quality audit judgment significantly enhances audit

performance by facilitating thorough and accurate audits free from cognitive distortions. Thus, the hypothesis statement can be formulated as follows:

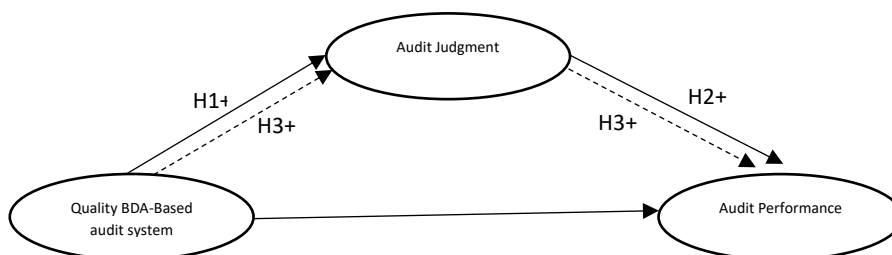
H2: Audit judgment positively influences audit performance.

The quality of a BDA-based audit system positively impacts audit performance by enhancing the accuracy and quality of audit evaluations ([Alles & Gray, 2024](#); [Dagilienė & Kloviene, 2019](#)). However, the effectiveness of BDA systems is not guaranteed; factors such as data quality, integration with existing systems, and auditor readiness to adapt to new technology can limit its potential ([Iguma & Riccio, 2020](#); [Pratama & Komariyah, 2023](#); [Saud et al., 2025](#)). This study hypothesizes that the BDA system's impact on audit performance hinges on its ability to improve auditors' judgment. From a CBT perspective, BDA tools help mitigate the influence of common cognitive biases, such as anchoring, overconfidence, and confirmation bias, which may distort auditors' judgment and decision-making. BDA tools enhance auditors' capacity to process and analyze large datasets quickly and with greater accuracy, providing more comprehensive, real-time insights into financial data. These tools help auditors make more informed judgments, uncover issues that traditional methods may overlook, and reduce bias-driven errors in judgment ([Kadous & Zhou, 2019](#)). Research has shown that when auditors are equipped with advanced technology, such as BDA, their judgment capabilities are significantly enhanced, allowing them to assess risks, detect discrepancies, and ensure that financial statements accurately reflect the organization's financial position ([Hammersley, 2011](#)) more effectively. In line with CBT, when auditors have access to high-quality BDA systems, their ability to make unbiased and accurate decisions improves, leading to more reliable audit outcomes. This improved audit judgment, in turn, leads to higher audit quality and better overall performance. Therefore, it is logical to predict that the quality of the BDA system will positively influence audit performance through its enhancement of audit judgment. Based on this rationale, the following hypothesis is proposed:

H3: The quality of the BDA-based audit system positively influences audit performance through audit judgment.

Based on the theoretical foundation and hypothesis development, the research framework model is formulated as presented in Figure 1.

Figure 1.
Research
Framework
Model



It is essential to clarify that We follow [Memon et al. \(2018\)](#) and [Ramayah et al. \(2018\)](#), two of the latest references in formulating PLS-based mediation study design. As the study focuses on mediating variables, the direct effect from X to Y can be less concerning.

METHOD

This study employs a quantitative method, utilizing regression analysis and structural equation modelling (SEM) to test the proposed hypotheses and generate scientifically valid findings. Despite the potential for normative bias from respondents during the questionnaire

completion process (Coon et al., 2020), this method was chosen due to the unavailability of secondary data from related authorities. This potential normative bias will be further analyzed in the results section to ensure it does not significantly impact the validity of the research findings. The sample consists of auditors from the SAA of the Republic of Indonesia, selected through purposive sampling. The selection criteria focus on auditors with knowledge and experience using BDA-based audit systems, particularly those utilizing BIDICS software. This approach ensures that the participants are well-qualified to provide insights into BDA's practical application and impact in auditing. This targeted selection helps improve the study's internal validity by ensuring that the sample is directly relevant to the research question, allowing for a more accurate and meaningful analysis of how BDA systems influence audit judgment and performance. Additionally, using purposive sampling enables the study to gather data from participants who have firsthand experience with the technology in question, which enhances the credibility and depth of the findings (Sekaran & Bougie, 2019).

This study used power analysis to determine the minimum sample size required for a non-probability sample (Memon et al., 2020). Based on the power analysis, a minimum of 68 samples was deemed necessary, given a confidence level of 0.80 and two predictor variables relative to the dependent variable. The sample size of 137 respondents met the criteria established by the power analysis. The demographic distribution of the respondents is presented in Table 1.

The measurement of variable indicators was adapted from some previous research. The measurement of the quality of the BDA-based audit system was based on the work of Al-Mamary and Al-Shammari (2023), the indicators include comprehensive design, application reliability, and application relevance. Audit performance measurement was derived from the study by Louis et al. (2022) using some indicators covering findings in the audit report performance, rigour audit procedures, audit review, auditors' investigation performance, and auditor recommendations. While audit judgment was referenced by Irawati and Solikhah (2018), the indicators include judgment on audit materiality, audit scope, internal control, potential fraud, and final audit opinion. Before finalization, the survey questionnaire was reviewed by six experts from the accounting field for critique and validation. A Likert scale was employed to facilitate data analysis and testing.

Criteria	Frequency	Percentage
Gender		
Male	85	62.04
Female	52	37.96
Age		
20-35	72	52.55
36-50	11	8.03
>50	9	6.57
Education Level		
Bachelor's Degree	85	62.04
Master's Degree	51	37.23
Doctorate	1	0.73
Educational Background		
Accounting & Non-IT	39	28.47
Accounting	87	63.50
IT	11	8.03
Total	137	100.00

Table 1.
Demographic
Characteristics

Source: Created by Authors

Before initiating the study, the research proposal was submitted to the Research Ethics Committee at the University's Research and Innovation Centre. After addressing several revisions suggested by the committee, the proposal received approval for implementation. The committee's feedback highlighted several key issues, including the necessity to offer incentives to participants, obtain proper permissions, and provide consent forms to ensure the confidentiality and protection of participants from any potential risks associated with their involvement in the research. Additionally, regulations stipulate that researchers must store data for no longer than two years after its collection.

The questionnaire was disseminated by coordinating with the public relations department of the SAA through its representative offices across all provinces in Indonesia. Permission to distribute the questionnaires was sought through an official letter from the researchers' affiliated university. The questionnaires were distributed upon receiving approval from the SAA in each province. Participants were required to complete a consent form to signify their agreement to partake in the study, and their consent was formally recorded via the completed form. Respondents who completed the questionnaire received digital money as an incentive to participate. The researchers ensured strict confidentiality of the data, anonymizing respondents' names to protect their privacy and adhere to ethical research standards.

Partial Least Squares Structural Equation Modelling (PLS-SEM) is the data analysis method. PLS is an appropriate method because it makes minimal assumptions about the data and can handle relatively small sample sizes, making it suitable for hypotheses based on weak theoretical foundations ([Chin et al., 2003](#)). It is preferred over the covariance-based SEM (CB-SEM) method, mainly when the focus is on predicting the impact of exogenous variables on endogenous variables rather than assessing the model's goodness of fit ([Hair Jr et al., 2021](#)). Experts argue that PLS is more accurate than CB-SEM, especially in revealing the strength and direction of hypothesized relationships, even in complex models that include moderating or mediating variables and when the data does not meet assumptions such as multivariate normality ([Akbar, 2011](#); [Úbeda-García et al., 2018](#)). The data testing begins with evaluating the outer model, including convergent and discriminant validity tests. Additionally, the inner model is assessed by examining reliability and testing the hypotheses of the research model. Some additional analyses were conducted to ensure the study results were strong and valid.

RESULTS AND DISCUSSIONS

Bias Test

A single-factor analysis was conducted before data evaluation to mitigate normative bias in the survey research ([Sofyani & Darma, 2024](#)). The review is also called the Common Method Variance (CMV) test. The result of the Harman single-factor test, specifically the unrotated factor analysis, indicated that the first component accounted for just 35% of the total variation, indicating that there is no significant risk to the research findings, as variance risk would be a concern only if the score exceeded 50% ([Podsakoff et al., 2003](#)).

Descriptive Statistics

Descriptive statistics were used to examine the data distribution (Table 2). The results indicate that the average auditor at the SAA of the Republic of Indonesia is conducting effective and adequate audits, as reflected by an average audit performance score of over 4 on a 5-point Likert scale. In contrast, the quality of the BDA-based audit system and audit judgment were rated moderately, with scores ranging between 3 and 4 on the same scale.

This suggests a perception of suboptimal system quality and less critical audit judgment among auditors at the SAA of the Republic of Indonesia.

173

Variable	Minimum	Maximum	Mean	SD
Quality of BDA-based Audit System	2.00	5.00	3.88	0.66
Audit Judgment	2.00	5.00	3.80	0.67
Audit Performance	3.00	5.00	4.33	0.55

Table 2.
Descriptive
Statistics

Source: Created by Authors from SPSS outputs

Measurement Model Assessment

To ensure valid testing, assessments of validity and reliability were conducted before hypothesis testing (Hair et al., 2019). Validity was evaluated using convergent and discriminant validity tests. Convergent validity refers to the extent to which multiple indicators intended to measure the same latent construct are strongly correlated, indicating they effectively capture the same underlying concept. In PLS, this is assessed through outer loadings of indicators on their respective constructs, with loadings above 0.50 generally considered acceptable (Hair Jr et al., 2021). Additionally, Average Variance Extracted (AVE) is used to assess convergent validity, where a value greater than 0.50 indicates that the construct explains more than half of the variance in its indicators (Fornell & Larcker, 1981). Table 3 presents the results of the convergent validity test, which shows that factor loadings exceed 0.5, thus indicating convergent validity (Chin, 1998).

Code	Indicator	Loading
System quality of BDA-based Audit – AVE: 0.550		
Systqual1	BIDICS application has a comprehensive design	0.681
Systqual2	BIDICS application is reliable for work	0.814
Systqual3	BIDICS application can be used at any time	0.618
Systqual4	BIDICS application has functions relevant to the auditor's work	0.817
Systqual5	BIDICS ensures audits are free from errors	0.760
Audit Judgment – AVE: 0.631		
Audjudgm1	Determining audit materiality	0.825
Audjudgm2	Defining the scope of the audit	0.774
Audjudgm3	Justifying the strengths/weaknesses of the auditee's internal controls	0.888
Audjudgm4	Identifying potential fraud	0.721
Audjudgm5	Providing the final audit opinion	0.754
Audit Performance – AVE: 0.550		
Auditperf1	Auditors report all audit findings in the audit report	0.651
Auditperf2	Auditors follow audit procedures according to applicable regulations	0.821
Auditperf3	Auditors adequately review or verify the auditee's documents	0.850
Auditperf4	Auditors investigate potentially controversial accounting principles applied by the auditee	0.750
Auditperf5	Auditors provide recommendations to the auditee to improve accountability	0.762

Table 3.
Convergent
Validity Test
Results

Source: Created by Authors from SmartPLS outputs

JRAK

15.1

Next, discriminant validity was tested to ensure that the constructs in the research model were distinct and not correlated with other latent variables. The Fornell-Larcker criterion results in Table 4 indicate that each indicator has a higher value with its respective construct than other latent variables (Hair et al., 2019).

Table 4.
Discriminant
Validity Test
Results
(Fornell–
Lacker)

Construct	Audit performance	Audit judgment	Quality of BDA-based system	of BDA-Auditing
Audit Performance	0.770			
Audit Judgment	0.563	0.795		
Quality of BDA-based Audit System	0.507	0.698	0.742	

Source: Created by Authors from SmartPLS outputs

Reliability testing assessed the consistency and stability of the instruments used by examining Cronbach's alpha and composite reliability. Cronbach's alpha and composite reliability require a minimum of 0.6 (Hair et al., 2019). Table 5 shows that the values for each construct exceed the minimum threshold of 0.6, indicating satisfactory reliability.

Table 5.
Reliability
Test Results

Construct	Cronbach's alpha	Composite Reliability
Audit Performance	0.826	0.593
Audit Judgment	0.852	0.631
Quality of BDA-based Audit System	0.794	0.550

Source: Created by Authors from SmartPLS outputs

Structural Model Assessment

To achieve a robust structural model evaluation, examining multicollinearity, statistical significance levels, and the magnitude of regression coefficients for both direct and indirect effects is essential. The Variance Inflation Factor (VIF) is used to detect potential multicollinearity among constructs within the inner model, with a VIF value exceeding 3 indicating the presence of multicollinearity (Hair et al., 2019).

Table 6.
Structural
Model
Assessment

Association	Symbol	β	t	f^2	VIF
Quality of BDA-based Audit System → Audit Judgment	H1+	0.698*	16.283	0.349	1.000
Audit Judgment → Audit Performance	H2+	0.408*	4.151	0.349	1.000
Quality of BDA-based Audit System → Audit Performance	NH	0.223*	1.825	0.785	1.876
Quality of BDA-based Audit System → Audit judgment → Audit Performance	H3+	0.284*	3.772		

NH: Not hypothesized; R²: 0.342; *p<0.05

Source: Created by Authors from SmartPLS outputs

Table 6 presents the results of the structural model assessment. The R² value of the research model indicates that it explains 34.2% of the variance in audit performance, with the remaining variance attributed to factors outside the model. The result of the hypothesis 1 test shows a strong positive relationship between the quality of the BDA-based audit system and audit judgment, with a standardized path coefficient (β) of 0.698 and a significant t-value of 16.283 ($t > 1.96$ indicating significance). The f^2 value of 0.349 suggests a medium effect size, meaning the quality of the BDA system has a meaningful impact on audit judgment. The VIF value of 1.000 indicates no multicollinearity issues. This supports hypothesis 1 that the quality of the BDA system positively influences audit judgment. The test also shows a significant positive relationship, with a path coefficient of 0.408 and a t-value of 4.151, more substantial than the threshold for significance ($t > 1.96$). The f^2 value of 0.349 again indicates a medium effect size, suggesting that audit judgment substantially impacts audit performance.

The VIF value of 1.000 further indicates no concerns with multicollinearity. Thus, hypothesis 2 is supported, meaning better audit judgment leads to improved performance.

175

Moreover, the direct relationship between the quality of the BDA-based audit system and audit performance shows a weaker path coefficient of 0.223, with a t-value of 1.825 ($t > 1.645$), which is statistically significant but on the borderline of conventional significance ($t > 1.96$). The high f^2 value of 0.785 indicates a substantial effect size, suggesting that this path considerably impacts audit performance. However, it is weaker than the indirect effect through audit judgment. The VIF value of 1.876 shows no signs of multicollinearity issues. Although significant, this path's impact on audit performance is less direct and smaller in magnitude compared to the mediated effect. Finally, the indirect relationship between the quality of the BDA-based audit system, audit judgment, and audit performance has a path coefficient of 0.284 and a t-value of 3.772, which is significant. This suggests that audit judgment mediates the relationship between BDA system quality and audit performance, with the BDA system improving audit performance indirectly by enhancing audit judgment. In other words, hypothesis 3 is also supported.

Furthermore, the Q^2 value is utilized to evaluate the predictive accuracy of PLS path models (Hair et al., 2019). According to general guidelines, a Q^2 value greater than zero for a specific endogenous construct indicates the structural model has predictive accuracy. A Q^2 value close to one signifies higher model accuracy (Chin et al., 2003). The PLS-SEM model demonstrates superior predictive power compared to the linear regression model (LM), as evidenced by its lower RMSE and MAE values. This research satisfies the criteria of having a Q^2 value greater than zero and approaching one. Additionally, the PLS Predict values for RMSE and MAE indicate that the PLS-SEM model has moderate predictive capability (Table 7).

	$Q^2_{predict}$	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE
Audjudgm1	0.292	0.686*	0.517*	0.679	0.507
Audjudgm2	0.354	0.562	0.412*	0.578	0.399
Audjudgm3	0.358	0.630	0.476	0.642	0.493
Audjudgm4	0.240	0.658	0.492	0.685	0.522
Audjudgm5	0.201	0.858	0.701*	0.886	0.688
Auditorperf1	0.075	0.847	0.585	0.869	0.623
Auditorperf2	0.109	0.559*	0.468*	0.544	0.434
Auditorperf3	0.127	0.524	0.444	0.531	0.450
Auditorperf4	0.143	0.712	0.533	0.731	0.548
Auditorperf5	0.201	0.545	0.453*	0.560	0.447

Table 7.
PLS Predicts Results

*PLS>LM

Source: Created by Authors from SmartPLS outputs

Robustness Test Results

Confirmatory Tetrad Analysis (Pertiaz & Sunaryo) should be employed to empirically validate whether measurement model specifications are reflective or formative. The results of the CTA in this study supported the reflective measurement model for the constructs, given that the CTA results indicated that the confidence interval included zero. Additionally, Sarstedt et al. (2021) recommend accounting for nonlinear effects and endogeneity in structural models. A quadratic analysis method was used to test for nonlinearity, and the

results revealed that all exogenous variables had non-significant p-values (Table 8). Based on these results, the relationship between exogenous and endogenous variables is linear, affirming the robustness of the model ([Hair et al., 2019](#)).

Table 8.
Quadratic
(Non-Linear)
Analysis
Results

	Original sample	T values	P values
QE (Audit Judgment) -> Audit Performance	0.035	0.658	0.255
QE (System Quality) -> Audit Judgment	-0.040	1.219	0.111
QE (System Quality) -> Audit Performance	0.091	1.612	0.054

Source: Created by Authors from SmartPLS outputs

Discussions

This study reveals that BDA-based audit systems can substantially improve audit judgment and performance within the Indonesian SAA (H1 and H2 are supported). This finding is particularly significant given the public sector's traditional hesitance towards adopting new technologies due to cost, complexity, and data privacy concerns. This study challenges the conventional view that such technologies are primarily suited for the private sector by demonstrating that BDA systems can enhance transparency, accountability, and efficiency. It highlights how BDA can address resource constraints, improve risk management, and facilitate capacity building among auditors, ultimately leading to more accurate and effective audits in the public sector. This finding confirms the study by [Joshi and Marthandan \(2020\)](#), which indicates that BDA can reshape the accounting profession by requiring new skills and competencies from auditors.

Furthermore, this study provides valuable insights into the need for sector-specific adaptations of BDA tools to align with public sector regulations and practices. The positive results suggest that strategic investments in BDA technology could significantly improve public sector auditing. Given this potential, one key policy recommendation is for governments to prioritize funding and resources for integrating BDA tools into public sector audit processes. This could include developing infrastructure to support large-scale data analysis and ensuring auditors can access advanced analytics platforms that enhance decision-making accuracy and efficiency. Moreover, training programs should be implemented to equip auditors with the skills to effectively interpret and leverage data from BDA systems. This would improve the quality of audit judgments by reducing cognitive biases and fostering greater transparency and accountability in the auditing process.

Additionally, policymakers could consider establishing standards and guidelines that encourage the adoption of BDA technology in a way that aligns with best practices for data security and privacy, ensuring that public sector audits remain robust and ethically sound. By implementing these measures, the public sector could significantly enhance its audit practices, leading to more informed decision-making, better resource allocation, and improved public trust. Additionally, this opens avenues for future research into the long-term impacts of BDA on audit outcomes and highlights the importance of addressing ethical and practical considerations in its implementation. This study contributes to a growing understanding of how advanced analytics can modernize and enhance public sector audit practices. These findings fill the gap in the literature highlighted by [Dagilienė and Klovienė \(2019\)](#) and [Al-Ateeq et al. \(2022\)](#) on the impact of BDA on audit quality and acceptance among auditors.

This study also uncovers a critical finding that the quality of BDA-based audit systems in the public sector can enhance audit performance through the mediating role of audit judgment

capabilities (H3 is Supported). Implementing new technology requires strong audit judgment skills to achieve better audit outcomes. Utilizing advanced technology without the requisite audit skills and competencies to evaluate public sector financial reports may lead to biased and uninterpretable results ([Parker et al., 2018](#)). This research addresses the inconsistency found in previous studies regarding the impact of new technology adoption on auditor performance ([Curtis & Payne, 2008](#); [Widuri et al., 2019](#)).

Practical and Theoretical Implications

Based on the study's findings, public sector audit organizations should recognize that adopting BDA technology alone is insufficient to enhance audit performance. Integrating this technology with strong audit judgment skills and comprehensive training programs is essential. Related agencies must focus on developing auditors' technical and analytical abilities to fully leverage BDA tools, ensuring that these advancements translate into meaningful improvements in audit quality. A balanced approach is needed, where technology implementation is accompanied by ongoing skill development and process refinement. Establishing feedback loops to assess the effectiveness of technology and audit practices will help address challenges and refine methods. Investing strategically in technology and auditor expertise will maximize the benefits of BDA, leading to more accurate and insightful audit outcomes and ultimately improving the overall quality and reliability of public sector audits.

Furthermore, this study provides several theoretical contributions to understanding BDA in public sector auditing, particularly by integrating insights from CBT. Firstly, it extends the theoretical framework surrounding incorporating advanced technologies into auditing practices by demonstrating that BDA can significantly enhance audit performance by meditating on audit judgment capabilities. By leveraging CBT, the study emphasizes that auditors' cognitive biases, such as anchoring or confirmation bias, often distort decision-making processes ([Camilli et al., 2024](#)). However, by providing more objective, comprehensive, and real-time data, BDA technology reduces the influence of such biases, thereby improving the quality of audit judgments. This finding supports and refines existing theories on technology adoption by highlighting the critical role of auditor expertise in interpreting and utilizing BDA systems effectively, thus optimizing technology-driven outcomes.

Secondly, the study challenges and addresses inconsistencies in prior research regarding the impact of technology on auditor performance. Previous studies often assumed that the mere presence of advanced technologies, like BDA systems, would automatically improve audit results ([Ceki & Moloji, 2024](#); [Sethibe & Naidoo, 2022](#); [Thottoli et al., 2022](#)). However, the findings reveal that technology alone does not guarantee enhanced audit outcomes and that the interplay between technology and human judgment is crucial. CBT directly informs this conclusion, suggesting that auditors' biases can undermine the potential benefits of advanced technologies unless these biases are mitigated through proper training and awareness. This highlights the need for theoretical models to account for technological tools and human cognitive processes, offering a more nuanced perspective on audit effectiveness. Furthermore, this research contributes to the theoretical understanding of how public sector audits can benefit from advanced analytics by advocating for a balanced approach where technological capabilities and audit competencies are emphasized. This dual focus provides a more comprehensive framework for understanding the conditions under which BDA technology can meaningfully enhance audit quality, particularly in reducing cognitive biases and improving judgment accuracy.

CONCLUSION

This study examines the role of audit judgment as a mediator in the relationship between the quality of Big Data Analytics-based audit information systems and their impact on audit performance in the public sector. It addresses the inconsistencies in previous research regarding adopting new technology to enhance audit performance. The Partial Least Squares (PLS) analysis reveals that the quality of a BDA-based audit system can improve both audit judgment and audit performance. Additionally, the mediation analysis demonstrates that audit judgment significantly channels the effects of BDA system quality on audit performance, suggesting that technology improvements directly enhance auditors' cognitive and decision-making processes. This result confirms the mediating role of audit judgment.

The study findings suggest several implications. Public sector audit boards should prioritize enhancing the quality of BDA-based audit systems to improve audit judgment and performance, thereby optimizing audit outcomes. Specifically, the Indonesian SAA boards can improve the quality of the BDA-based audit system by establishing strong governance frameworks, ensuring data integrity through validation and quality management practices, and prioritizing data security with rigorous access controls and privacy protocols. They should also promote ethical data use, conduct continuous monitoring, and collaborate with IT and data science teams to identify risks and improve performance. Additionally, the audit boards can define key performance metrics, encourage independent third-party audits, and ensure the system is scalable and adaptable to emerging technologies. By focusing on these strategies, audit boards can drive better decision-making, risk management, and compliance within BDA-based audit systems.

From a literature perspective, this study contributes to understanding how advanced technological tools impact audit processes, bridging gaps identified in previous research regarding technology adoption and its effects on audit efficacy. Theoretically, confirming audit judgment as a mediator underscores the importance of cognitive processes in the audit framework. This suggests that future research should explore how such mediating factors influence the relationship between technological advancements and audit performance. The results of this study also strengthen the CBT paradigm that technology adoption needs to be assessed comprehensively from various sides to achieve the expected outcomes. Specifically, this study's findings reinforce CBT by highlighting how the quality of BDA systems can mitigate cognitive biases in auditors, such as anchoring or confirmation bias, through more comprehensive and accurate data. By enhancing audit judgment, BDA systems help auditors make more objective decisions, reducing the influence of biases and improving overall audit performance.

This study has several limitations. First, although the questionnaire was distributed to all auditors in all provinces of the Republic of Indonesia, totaling over 2,000 individuals, only 137 completed responses were received. The small sample size can be attributed to the voluntary nature of the questionnaire distribution, which occurred when SAA auditors were occupied with field audit tasks. Additionally, since using BDA-based audit applications is not yet mandatory, not all auditors have adopted these tools, and therefore, they did not qualify as respondents. As a result, the limited sample size necessitates caution when concluding this study, as it lacks sufficient power to ensure external validity or generalizability. Therefore, future research should consider using a larger sample size to strengthen the validity of the results. Second, subsequent studies should explore which specific audit judgment frameworks can enhance performance when optimized with BDA-based audit systems. Third, due to the inherent nature of quantitative data, which does not elucidate the reasons

behind the values obtained, triangulation with qualitative data is recommended to provide a more detailed analysis of the relationships between variables. Specifically, qualitative data can help interpret the quantitative findings from big data analytics by explaining trends or anomalies, such as organizational behaviour or contextual factors influencing the results. This deeper understanding allows auditors to align the data-driven insights with practical, real-world implications, ensuring more accurate and actionable recommendations.

REFERENCES

- Abdelwahed, A. S., Abu-Musa, A. A. E. S., Badawy, H. A. E. S., & Moubarak, H. (2024). Investigating the impact of adopting big data and data analytics on enhancing audit quality. *Journal of Financial Reporting and Accounting*. <https://doi.org/10.1108/JFRA-12-2023-0724>
- Ahmad, F. (2019). A systematic review of the role of Big Data Analytics in reducing the influence of cognitive errors on the audit judgement: Una revisión sistemática del papel del "Big Data Analytics" en la reducción de la influencia de los errores cognitivos en el juicio de auditoría. *Revista de Contabilidad-Spanish Accounting Review*, 22(2), 187-202. <https://doi.org/10.6018/rcsar.382251>
- Akbar, R. (2011). *Performance measurement and accountability in Indonesian local government* [Curtin University].
- Al-Ateeq, B., Sawan, N., Al-Hajaya, K., Altarawneh, M., & Al-Makhadmeh, A. (2022). Big data analytics in auditing and the consequences for audit quality: A study using the technology acceptance model (TAM). *Corporate Governance and Organizational Behavior Review*, 6(1), 64-78. <https://doi.org/10.22495/cgobrv6i1p5>
- Al-Mamary, Y., & Al-Shammari, K. K. (2023). Determining factors that can influence the understanding and acceptance of advanced technologies in universities' teaching and learning. *International Journal of Advanced and Applied Sciences*, 10(3), 87-95. <https://doi.org/10.21833/ijaas.2023.03.012>
- Alles, M., & Gray, G. L. (2024). The marketing on Big 4 websites of Big Data Analytics in the external audit: Evidence and consequences. *International Journal of Accounting Information Systems*, 54, 100697. <https://doi.org/10.1016/j.accinf.2024.100697>
- Appelbaum, D., Kogan, A., & Vasarhelyi, M. A. (2017). Big Data and analytics in the modern audit engagement: Research needs. *Auditing: A Journal of Practice & Theory*, 36(4), 1-27. <https://doi.org/10.2308/ajpt-51684>
- Balios, D., Kotsilaras, P., Eriotis, N., & Vasiliou, D. (2020). Big data, data analytics and external auditing. *Journal of Modern Accounting and Auditing*, 16(5), 211-219. <https://doi.org/10.17265/1548-6583/2020.05.002>
- Bierstaker, J., Janvrin, D., & Lowe, D. J. (2014). What factors influence auditors' use of computer-assisted audit techniques? *Advances in Accounting*, 30(1), 67-74. <https://doi.org/10.1016/j.adiac.2013.12.005>
- Camilli, R., Cristofaro, M., Hristov, I., & Sargiacomo, M. (2024). Cognitive biases in accounting judgment and decision making: a review, a typology, and a future research agenda. *Accounting Forum*, <https://doi.org/10.1080/01559982.2024.2434340>
- Ceki, B., & Moloi, T. (2024). Technology Adoption Factors for Supreme Audit Institutions. *Journal of Accounting Research, Organization and Economics*, 7(3), 413-428. <https://doi.org/10.24815/jaroe.v7i3.37550>
- Chin, W. W. (1998). Commentary: Issues and opinion on structural equation modeling. In (pp. vii-xvi): JSTOR.

- Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information systems research*, 14(2), 189-217. <https://doi.org/10.1287/isre.14.2.189.16018>
- Coon, J. J., van Riper, C. J., Morton, L. W., & Miller, J. R. (2020). Evaluating nonresponse bias in survey research conducted in the rural Midwest. *Society & Natural Resources*, 33(8), 968-986. <https://doi.org/10.1080/08941920.2019.1705950>
- Curtis, M. B., & Payne, E. A. (2008). An examination of contextual factors and individual characteristics affecting technology implementation decisions in auditing. *International Journal of Accounting Information Systems*, 9(2), 104-121. <https://doi.org/10.1016/j.accinf.2007.10.002>
- Dagilienė, L., & Kloviėnė, L. (2019). Motivation to use big data and big data analytics in external auditing. *Managerial auditing journal*, 34(7), 750-782. <https://doi.org/10.1108/MAJ-01-2018-1773>
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. In: Sage publications Sage CA: Los Angeles, CA. <https://doi.org/10.2307/3150980>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, 31(1), 2-24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., Ray, S., Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). An introduction to structural equation modeling. *Partial least squares structural equation modeling (PLS-SEM) using R: a workbook*, 1-29. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hamdam, A., Jusoh, R., Yahya, Y., Abdul Jalil, A., & Zainal Abidin, N. H. (2022). Auditor judgment and decision-making in big data environment: a proposed research framework. *Accounting Research Journal*, 35(1), 55-70. <https://doi.org/10.1108/ARJ-04-2020-0078>
- Hammersley, J. S. (2011). A review and model of auditor judgments in fraud-related planning tasks. *Auditing: A Journal of Practice & Theory*, 30(4), 101-128. <https://doi.org/10.2308/ajpt-10145>
- Hilbert, M. (2012). Toward a synthesis of cognitive biases: how noisy information processing can bias human decision making. *Psychological bulletin*, 138(2), 211. <https://doi.org/10.1037/a0025940>
- Hosban, A., & Hamdan, M. N. (2015). Role for internal auditor to cope with IT risks and IT infrastructure in Jordan commercial banks. *International Journal of Business and Management*, 10(3), 295. <https://doi.org/10.5539/ijbm.v10n3p295>
- Iguma, M. K., & Riccio, E. L. (2020). Factors influencing Brazilian internal auditors' behavioural intention to adopt big data analytics. *International Journal of Auditing Technology*, 4(3), 217-239. <https://doi.org/10.1504/IJAUDIT.2020.115929>
- Irawati, S. A., & Solikhah, B. (2018). The factors affecting audit judgment. *Accounting Analysis Journal*, 7(1), 34-42.
- Joshi, P. L., & Marthandan, G. (2020). Continuous internal auditing: can big data analytics help? *International Journal of Accounting, Auditing and Performance Evaluation*, 16(1), 25-42. <https://doi.org/10.1504/IJAAPE.2020.10028479>
- Kadous, K., & Zhou, Y. (2019). How does intrinsic motivation improve auditor judgment in complex audit tasks? *Contemporary Accounting Research*, 36(1), 108-131. <https://doi.org/10.1111/1911-3846.12431>

- Kang, Y. J., & Piercey, M. D. (2020). Would an Audit Judgment Rule Improve Audit Committee Oversight and Audit Quality? *Current Issues in Auditing*, 14(1), P16-P25. <https://doi.org/10.2308/ciia-52644>
- Lee, I., & Mangalaraj, G. (2022). Big data analytics in supply chain management: A systematic literature review and research directions. *Big data and cognitive computing*, 6(1), 17. <https://doi.org/10.3390/bdcc6010017>
- Logie, J., & Maroun, W. (2021). Evaluating audit quality using the results of inspection processes performed by an independent regulator. *Australian accounting review*, 31(2), 128-149. <https://doi.org/10.1111/auar.12328>
- Lombardi, D. R., Sipior, J. C., & Dannemiller, S. (2023). Auditor judgment bias research: A 50-year trend analysis and emerging technology use. *Journal of information systems*, 37(1), 109-141. <https://doi.org/10.2308/ISYS-2020-079>
- Lotlikar, P., & Mohs, J. (2021). Examining the Role of Artificial Intelligence on Modern Auditing Techniques. <https://doi.org/10.15640/smq.v9n2a1>
- Louis, R. R., Sulaiman, N. A., & Zakaria, Z. (2022). Accounting firms' talent management practices: perceived importance and its impact on auditors' performance. *Pacific Accounting Review*, 34(2), 274-292. <https://doi.org/10.1108/PAR-12-2020-0206>
- Maradona, A. F. (2020). A qualitative exploration of heuristics and cognitive biases in auditor judgements. *Accountability*, 9(2), 94-112. <https://doi.org/10.32400/ja.30634.9.2.2020.94-112>
- Memon, M. A., Jun, H. C., Ting, H., & Francis, C. W. (2018). Mediation analysis issues and recommendations. *Journal of Applied Structural Equation Modeling*, 2(1), i-ix. [https://doi.org/10.47263/JASEM.2\(1\)01](https://doi.org/10.47263/JASEM.2(1)01)
- Memon, M. A., Ting, H., Cheah, J.-H., Thurasamy, R., Chuah, F., & Cham, T. H. (2020). *Journal of Applied Structural Equation Modeling*.
- Mohammed Ismail, I. H., & Abdul Hamid, F. Z. (2024). A systematic literature review of the role of big data analysis in financial auditing. *Management & Accounting Review (MAR)*, 23(2), 321-350. <https://doi.org/10.24191/MAR.V23i02-14>
- Nasta, L., Magnanelli, B. S., & Alessi, G. (2024). Beyond the numbers: exploring the multifaceted impact of big data analytics on auditing. *International Journal of Auditing Technology*, 5(1), 40-58. <https://doi.org/10.1504/IJAUDIT.2024.139976>
- Parker, D. W., Dressel, U., Chevers, D., & Zeppetella, L. (2018). Agency theory perspective on public-private-partnerships: International development project. *International Journal of Productivity and Performance Management*, 67(2), 239-259. <https://doi.org/10.1108/IJPPM-09-2016-0191>
- Pertiaz, S. O., & Sunaryo, S. P. (2023). Penggunaan media sosial oleh pt kai dalam meningkatkan komunikasi dengan pelanggan. *Jurnal Penelitian Inovatif*, 3(2), 385-394. <https://doi.org/10.54082/jupin.169>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, 88(5), 879. <https://doi.org/10.1037/0021-9010.88.5.879>
- Pratama, F. W., & Komariyah, E. F. (2023). Examining the auditors' acceptance of big data analytics technology platform: Evidence from government auditors in Indonesia. *The Indonesian Journal of Accounting Research*, 26(2), 273-302. <https://doi.org/10.33312/ijar.714>
- 15.1 Ramayah, T., Cheah, J., Chuah, F., Ting, H., & Memon, M. A. (2018). Partial least squares structural equation modeling (PLS-SEM) using smartPLS 3.0. *An updated guide and practical guide to statistical analysis*, 967-978.

- Sahidah, S., Putra, R. R., & Julito, K. A. (2023). The Effect of Good Corporate Governance and Auditor Performance on Audit Quality with Integrity as a Moderating Variable. *JASa (Jurnal Akuntansi, Audit dan Sistem Informasi Akuntansi)*, 7(2), 345-356. <https://doi.org/10.36555/jasa.v7i2.2316>
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modeling. In *Handbook of market research* (pp. 587-632). Springer. https://doi.org/10.1007/978-3-319-05542-8_15-2
- Saud, I. M., Sofyani, H., Utami, T. P., Haq, M. M., & Fathmaningrum, E. S. (2025). Big data analytics-based auditing adoption in public sector: Indonesian evidence. *Cogent Business & Management*, 12(1), 2454320. <https://doi.org/10.1080/23311975.2025.2454320>
- Sekaran, U., & Bougie, R. (2019). *Research methods for business: A skill building approach*. John Wiley & Sons.
- Sethibe, T., & Naidoo, E. (2022). The adoption of robotics in the auditing profession. *South African Journal of Information Management*, 24(1), 1441. <https://doi.org/10.4102/sajim.v24i1.1441>
- Sofyani, H., & Darma, E. S. (2024). Effect of architecture and efficiency of mobile banking application on the intention to continue using Islamic bank: does data security matter? *Journal of Islamic Marketing*, 15(6), 1479-1497. <https://doi.org/10.1108/JIMA-07-2023-0220>
- Thottoli, M. M., Ahmed, E. R., & Thomas, K. (2022). Emerging technology and auditing practice: analysis for future directions. *European Journal of Management Studies*, 27(1), 99-119. <https://doi.org/10.1108/EJMS-06-2021-0058>
- Tiron-Tudor, A., & Deliu, D. (2022). Reflections on the human-algorithm complex duality perspectives in the auditing process. *Qualitative Research in Accounting & Management*, 19(3), 255-285.
- Úbeda-García, M., Claver-Cortés, E., Marco-Lajara, B., Zaragoza-Sáez, P., & García-Lillo, F. (2018). High performance work system and performance: Opening the black box through the organizational ambidexterity and human resource flexibility. *Journal of Business Research*, 88, 397-406. <https://doi.org/10.1016/j.jbusres.2017.12.045>
- Wedemeyer, P. D. (2010). A discussion of auditor judgment as the critical component in audit quality—A practitioner's perspective. *International Journal of Disclosure and Governance*, 7(4), 320-333. <https://doi.org/10.1057/jdg.2010.19>
- Widuri, R., Handoko, B. L., & Prabowo, I. C. (2019). Adoption of information technology in public accounting firm. Proceedings of the 4th International Conference on Big Data and Computing, <https://doi.org/10.1145/3335484.3335500>
- Xing, Z., Yuan, S., & Xiongzhi, C. (2020). Study on the Impact of Big Data Technology on the Audit and its Application. 2020 IEEE International Conference on Power, Intelligent Computing and Systems (ICPICS), <https://doi.org/10.1109/ICPICS50287.2020.9202383>
- Zhang, D., Mohsin, M., Rasheed, A. K., Chang, Y., & Taghizadeh-Hesary, F. (2021). Public spending and green economic growth in BRI region: mediating role of green finance. *Energy Policy*, 153, 112256. <https://doi.org/10.1016/j.enpol.2021.112256>