Majalah Ilmiah Bijak Vol 22 , No.2, September 2025, pp. 607-613
doi.org/10.31334/bijak.v22i2.5776

Implementation of Application Based Audits to Increase Auditor Effectiveness in Detecting Fraud

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ARTICLE INFO

Article history:
Received : May 6, 2026
Revised :May 8, 2026
Accepted : May 11, 2026

Keywords
Fraud;
Financial Reports;
Detection Effectiveness;
Application-Based Audit;
Auditor Effectiveness;

ABSTRACT

Fraud in the business world is a major problem that can undermine auditor credibility and reduce the quality of financial reports. Auditors are required to be able to detect indications of fraud more accurately, but the limitations of traditional methods often make fraud detection less than optimal. Digital transformation in audit practice, through the implementation of simple applications, presents new opportunities. This study aims to analyze the role of application-based auditing on auditor effectiveness in detecting fraud. Primary data was obtained from 60 auditors from Public Accounting Firms (KAP) in Central Java with a minimum experience of three years. Data analysis was conducted using descriptive statistics, instrument testing, classical assumption tests, and simple linear regression. The results show that the application of application-based auditing has a positive and significant effect on auditor effectiveness in detecting fraud. This study emphasizes the importance of utilizing digital audit technology to improve audit quality. Recommendations for further research include expanding the audit sample by expanding the research area and adding variables such as auditor competence, ethics, and independence.

1. INTRODUCTION

Fraud in the business world has become an increasingly complex and critical issue that threatens the credibility of auditors and the reliability of financial reporting. According to the Association of Certified Fraud Examiners (ACFE, 2023), organizations globally lose approximately 5% of their annual revenue due to occupational fraud. In Indonesia, several financial scandals involving public companies have highlighted weaknesses in internal control systems and audit practices. One prominent example is the case of PT Indofarma Tbk, where indications of financial statement manipulation and ineffective audit oversight resulted in significant financial losses (Sandi, 2024). These practical phenomena demonstrate that conventional audit procedures are often unable to detect increasingly sophisticated fraud schemes in a timely manner.

The rapid development of digital business transactions, electronic financial systems, and complex organizational data structures has created significant challenges for auditors. Traditional manual audit techniques that rely heavily on sampling methods are considered less effective in identifying anomalies hidden within large transaction datasets (Alles, Kogan, & Vasarhelyi, 2008). Consequently, auditors are required to adopt technology-based audit approaches that enable faster, more accurate, and more comprehensive data analysis. The implementation of application-based auditing has emerged as an innovative solution that supports auditors in evaluating transaction patterns, identifying irregularities, and detecting fraud indications more effectively (Janvrin, Bierstaker, & Lowe, 2009).

In practice, audit applications such as Atlas and other computer-assisted audit tools (CAATTs) provide auditors with analytical capabilities that improve audit quality and efficiency. Research conducted by Miranda (2024) found that the use of the Atlas application positively influences auditor performance. Dewi and Wilasittha (2024) also demonstrated that Atlas improves the effectiveness of risk assessment processes, while Pradana and Ardiami (2023) showed that the application enhances auditor performance, particularly in identifying misstatements and improving compliance with audit procedures. Furthermore, Siregar (2021) emphasized that digital audit technologies, including artificial intelligence and data analytics, significantly contribute to improving the effectiveness of modern audit practices.

Despite the growing implementation of digital audit applications, previous studies have predominantly focused on general audit performance, risk assessment, and auditor productivity. Limited studies specifically examine how application-based auditing affects auditors' effectiveness in detecting fraud. This condition indicates a research gap that requires further investigation. Moreover, the increasing number of fraud cases and the growing complexity of financial transactions create an urgent need for empirical evidence regarding the effectiveness of digital audit applications in fraud detection. Therefore, this research is important because it contributes theoretically to the development of fraud detection and technology acceptance theories, while practically providing insights for Public Accounting Firms (KAPs) in improving audit quality through digital transformation.

Fraud Detection Theory explains that fraud detection can be achieved by identifying abnormal patterns and behaviors that appear in financial data. The Fraud Triangle (Cressey, 1953) identifies three main factors causing fraud: pressure, opportunity, and rationalization. This model was later developed into the Fraud Diamond, which added capability, and the Fraud Pentagon, which included arrogance. In the context of technology implementation, application-based audits such as Atlas provide auditors with the opportunity to analyze data more quickly and in-depth. Several studies support this: Setiawan et al. (2023) stated that auditor competence and independence are more important determinants of audit quality than the mere use of the ATLAS application. Rahman & Azmiyanti (2023) found that ATLAS assists in risk assessment but is hampered by the readiness of the client's information system. Dewi & Wilasittha (2024) demonstrated that Atlas improves audit process efficiency. Stiawan & Keristina (2023) used TAM and TTF to find that perceived usefulness and task-technology fit significantly drive the use of ATLAS. Wardhana (2023) emphasized the role of self-efficacy in maximizing the use of audit technology.

The development of digital technology has brought significant changes to the audit field. Audits, previously conducted manually using traditional sampling techniques, are now shifting to using information technology-based audit applications. Audit applications enable auditors to process large amounts of data (big data), perform automated transaction analysis, and detect anomalous patterns that could potentially indicate fraud. According to Alles, Kogan, & Vasarhelyi (2008), the implementation of audit applications is part of continuous auditing, which emphasizes the ongoing monitoring of financial transactions. With this system, auditors are not limited to end-of-period work but can also detect fraud risks earlier. This strengthens audit effectiveness in organizations facing operational complexity and competitive business pressures. Furthermore, Siregar (2021) explains that modern audit applications are equipped with computer-assisted audit tools and techniques (CAATTs), artificial intelligence (AI), and machine learning, which are capable of pattern recognition on transaction data. This technology adds value to the audit process because auditors can identify transaction irregularities that were previously difficult to detect manually.

Audit effectiveness is measured by the extent to which auditors are able to detect material errors, non-compliance, and fraud. According to Arens, Elder, & Beasley (2014), audit effectiveness is related to the accuracy of audit procedures, the sufficiency of evidence, and the auditor's ability to evaluate data. Without the support of audit applications, this process is often time-consuming and can potentially miss early signs of fraud.

Fraud in organizations can take the form of asset misappropriation, corruption, and financial statement fraud. According to a report by the Association of Certified Fraud Examiners (ACFE, 2020), losses due to fraud globally reach 5% of organizational revenue annually. This fact emphasizes the importance of audit effectiveness supported by audit applications in preventing losses.

A study by Janvrin, Bierstaker, & Lowe (2009) found that audit effectiveness increases when auditors use audit applications to analyze the entire data population, not just a sample. This reduces the risk of undetected fraud and strengthens the credibility of audited financial reports. The relationship between audit application implementation and fraud detection can be explained through several theoretical frameworks. First, the Fraud Triangle Theory (Cressey, 1953), which states that fraud occurs due to pressure, opportunity, and rationalization. Audit applications play a role in reducing opportunities by increasing data transparency and tightening internal controls. Second, the Technology Acceptance Model (TAM) theory by Davis (1989) explains that auditor acceptance of audit applications will

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doi.org/10.31334/bijak.v22i2.5776

determine the effectiveness of their use. If auditors assess an application as easy to use (perceived ease of use) and useful (perceived usefulness), the audit's effectiveness in detecting fraud will increase significantly.Research by Mahzan & Lymer (2014) shows that organizations that implement data analytics-based audit applications have a higher success rate in detecting fraud than organizations that do not.

Based on the practical problems, research gap, and research urgency described above, this study is entitled "Implementation of Application-Based Audits to Increase Auditor Effectiveness in Detecting Fraud." Therefore, the objective of this study is to analyze the effect of application-based auditing on auditor effectiveness in detecting fraud and to examine whether the use of digital audit applications can improve auditors' ability to identify and respond to fraudulent activities more accurately and efficiently.

2. METHOD

This study employed a quantitative research approach using a survey method to examine the effect of application-based auditing on auditor effectiveness in detecting fraud. Quantitative research was selected because it enables the measurement of relationships between variables objectively through statistical analysis (Sugiyono, 2022). The research focused on auditors working in Public Accounting Firms (KAP) located in Central Java, Indonesia.

Research Data and Sources

The study used primary data collected directly from respondents through structured questionnaires. The questionnaire was distributed to auditors from several Public Accounting Firms in Central Java during the research period from January to March 2025. The questionnaire was designed using a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Secondary data were also used to support the research background and theoretical framework, including reports from the Association of Certified Fraud Examiners (ACFE), previous studies, academic journals, and audit-related literature.

Population and Sample

The population of this study consisted of auditors employed at Public Accounting Firms (KAPs) in Central Java. The sampling technique used was purposive sampling because respondents were selected based on specific criteria relevant to the research objectives (Sekaran & Bougie, 2016). The criteria for respondents were:

1. Auditors currently working at a Public Accounting Firm in Central Java;
2. Auditors with a minimum of three years of audit experience;
3. Auditors who had experience using digital or application-based audit systems.

Based on these criteria, 60 auditors were selected as research respondents. All distributed questionnaires were returned and declared suitable for analysis.

Research Variables and Measurement

This study consisted of two variables:

1. Independent Variable (X): Application Based Auditing Implementation
   The indicators used to measure this variable included:
   a. Frequency of application usage;
   b. Ease of use of audit applications;
   c. Perceived usefulness and effectiveness of audit applications.
2. Dependent Variable (Y): Auditor Effectiveness in Detecting Fraud
   The indicators included:
   a. Auditor knowledge regarding fraud detection;
   b. Auditor ability to identify fraud indications;
   c. Accuracy and speed in detecting irregularities in financial data.

The measurement indicators were adapted from previous studies related to audit technology adoption and fraud detection effectiveness (Davis, 1989; Janvrin et al., 2009; Mahzan & Lymer, 2014). Data Collection Technique Data collection was conducted through direct and online questionnaire distribution. Before distribution, the questionnaire items were reviewed and adjusted to ensure clarity and relevance to the research variables. Respondents were informed about the research objectives and confidentiality of their responses to ensure objective answers.

Data Analysis Technique

The data analysis process was conducted systematically using IBM SPSS Statistics software and consisted of several stages:

1. Descriptive Statistical Analysis Descriptive statistics were used to describe respondent characteristics and provide an overview of the research variables, including minimum values, maximum values, means, and standard deviations.
2. Instrument Testing
   a. Validity Test: Conducted using Pearson Product Moment correlation analysis. Questionnaire items were considered valid if the correlation coefficient was greater than 0.30 and the significance value was below 0.05.
   b. Reliability Test: Conducted using Cronbach's Alpha. Variables were considered reliable if Cronbach's Alpha values exceeded 0.70 (Ghozali, 2021).
3. Classical Assumption Tests

   Before regression analysis, classical assumption tests were performed to ensure that the regression model met statistical requirements:
   a. Normality test using Kolmogorov-Smirnov;
   b. Heteroscedasticity test using Glejser test;
   c. Autocorrelation test using Durbin-Watson analysis.
4. Simple Linear Regression AnalysisSimple linear regression analysis was used to examine the effect of application-based auditing implementation on auditor effectiveness in detecting fraud. The regression equation used was:
   $Y = a + bX + e$

   Where:

   a. Y= Auditor effectiveness in detecting fraud
   b. a= Constant
   c. b= Regression coefficient
   d. X= Application-based auditing implementation
   e. e= Error term

5. Hypothesis TestingHypothesis testing was conducted using:
   a. t-test to examine the partial effect of the independent variable on the dependent variable;
   b. F-test to evaluate the overall regression model significance;
   c. Coefficient of Determination (R^2) to measure the extent to which the independent variable explains variations in the dependent variable.

The significance level used in this study was 5% (α = 0.05).

3. RESULTS AND DISCUSSION

Results

Descriptive Statistics

Respondent characteristics show 35 male auditors (58.3%) and 25 female auditors (41.7%), with an average age of 35 years and 6-7 years of work experience. Descriptive statistics of the research variables

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are presented as follows: Implementation of Application-Based Audit: Min=3.00; Max=5.00; Mean=4.21; Std.Dev=0.47Auditor Effectiveness in Detecting Fraud: Min=3.00; Max=5.00; Mean=4.35; Std.Dev=0.51

Research Instrument Testing

Validity tests showed that all items had a correlation >0.30 ($p < 0.05$), thus valid. Reliability tests produced Cronbach's Alpha of 0.812 for variable X and 0.796 for variable Y, both >0.70, thus reliable. The results of the normality test (Kolmogorov-Smirnov) showed a sig=0.200 >0.05, indicating a normal distribution of the data. The Glejser test showed a sig>0.05, indicating no heteroscedasticity. The Durbin-Watson value of 1.894 is between 1.5–2.5, indicating no autocorrelation.

Hypothesis Testing

The simple regression model produced the following equation: $Y = 1.215 + 0.742X$. T-test: t count = 6.845, sig = 0.000 <0.05, indicating a significant effect. F-test: F = 46.9, sig = 0.000 <0.05, significant model. Coefficient of determination: Adjusted $R^2 = 0.425$, meaning that the application of application-based audits explains 42.5% of the variation in auditor effectiveness in detecting fraud.

The regression results show that the implementation of application-based auditing has a positive and significant effect on auditor effectiveness in detecting fraud ($\beta = 0.742$, $t = 6.845$, $p < 0.001$). This indicates that auditors who frequently use digital audit applications demonstrate greater accuracy and efficiency in identifying potential fraud patterns The coefficient of determination (R^2=0,425) indicates that the independent variables are able to explain most of the variation in the dependent variable, although there are still other factors outside the model that influence auditor ability.

These findings are consistent with Mahzan & Lymer (2014) and Dewi & Wilasittha (2024), who found that technology-supported audits enhance auditors' analytical capabilities. From the perspective of the Technology Acceptance Model (TAM), this result shows that perceived usefulness and ease of use of digital tools significantly influence audit performance. Practically, this implies that audit firms should prioritize digital transformation to strengthen fraud detection capabilities.

Disscusion

The findings of this study indicate that the implementation of application-based auditing has a positive and significant effect on auditor effectiveness in detecting fraud. The regression results demonstrate that auditors who utilize digital audit applications more intensively tend to have better capabilities in identifying irregularities, analyzing financial transactions, and detecting fraud indications. These findings confirm that the adoption of digital audit technology contributes substantially to improving audit quality and audit efficiency in modern organizations.

This result is consistent with the study conducted by Mahzan and Lymer (2014), which found that the use of computer-assisted audit tools and techniques (CAATTs) enhances auditors' analytical capabilities and improves fraud detection accuracy. Their study emphasized that technology-based audit systems enable auditors to examine larger volumes of transaction data more comprehensively than conventional sampling-based methods. Similarly, Janvrin, Bierstaker, and Lowe (2009) concluded that audit information technology improves auditors' effectiveness because it allows continuous monitoring and faster identification of suspicious transaction patterns.

The findings are also supported by the research of Alles, Kogan, and Vasarhelyi (2008), who explained that continuous auditing systems supported by digital applications allow auditors to detect anomalies in real time. In highly digitalized business environments, manual audit techniques are increasingly insufficient because fraud schemes have become more complex and difficult to identify through traditional procedures alone. Therefore, digital audit applications provide auditors with stronger analytical support and improve the reliability of audit evidence.

From the perspective of the Technology Acceptance Model (TAM) introduced by Fred Davis (1989), the results indicate that perceived usefulness and perceived ease of use influence auditors' acceptance of digital audit applications. Auditors who perceive audit applications as beneficial and easy to operate are more likely to use them effectively during the audit process. This finding aligns with the

study by Stiawan and Keristina (2023), which found that perceived usefulness and task-technology fit significantly encourage the adoption of ATLAS audit applications among auditors in Indonesia.

Furthermore, the results strengthen the Fraud Triangle Theory proposed by Donald Cressey (1953). Fraud generally occurs because of pressure, opportunity, and rationalization. Application-based auditing helps reduce opportunities for fraud by improving transaction transparency, strengthening monitoring systems, and enabling auditors to identify unusual transaction behavior more effectively. By utilizing digital audit applications, auditors can minimize weaknesses associated with manual procedures and increase the probability of early fraud detection.

The results are also in line with previous Indonesian studies. Miranda (2024) found that the use of the Atlas application significantly improved auditor performance in conducting audit procedures. Dewi and Wilasittha (2024) also reported that Atlas enhances the effectiveness of audit risk assessment processes, while Pradana and Ardiami (2023) demonstrated that application-based audits improve compliance with auditing standards and increase the accuracy of detecting material misstatements. These studies collectively support the argument that digital transformation in auditing contributes positively to audit effectiveness and fraud detection capability.

The coefficient of determination (Adjusted $R^2 = 0.425$) indicates that application-based auditing explains 42.5% of the variation in auditor effectiveness in detecting fraud, while the remaining variation is influenced by other factors not included in this study. This finding suggests that auditor effectiveness is not solely determined by technology adoption but is also influenced by auditor competence, professional skepticism, independence, ethics, experience, and organizational support. This interpretation is supported by Setiawan et al. (2023), who argued that auditor competence and independence remain critical determinants of audit quality even when digital audit tools are implemented.

Practically, these findings imply that Public Accounting Firms (KAPs) should strengthen digital transformation strategies by integrating audit applications into standard audit procedures. In addition, continuous training programs are needed to improve auditors' technological competencies and maximize the benefits of digital audit systems. Professional accounting organizations and regulators are also encouraged to develop digital audit guidelines and training frameworks to support the modernization of audit practices in Indonesia.

Overall, this study contributes to the literature on digital auditing and fraud detection by providing empirical evidence that application-based auditing improves auditors' effectiveness in detecting fraud. The study also expands prior research by specifically focusing on fraud detection effectiveness rather than general audit performance, thereby addressing the research gap identified in previous studies.

3. CONCLUSION

This study concluded that the implementation of application-based auditing had a positive and significant impact on auditor effectiveness in detecting fraud. The more frequently auditors used the application, the higher the fraud detection effectiveness. Practical suggestions Auditors need to improve their technological skills through training; Public Accounting Firms (KAPs) need to make app-based audits a standard operating procedure (SOP); professional associations can support the development of digital audit guidelines. Academic suggestions that Future research could expand the sample to other regions, add variables such as independence, ethics, or time pressure, and compare Atlas with other digital audit applications.

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