

Research Paper

## AUDITING CLASS REFERENCE: LITERATURE REVIEW OF THE STANDARD ANALYTICAL PROCEDURES FOR AUDITING

Hendi<sup>1\*</sup>, Budi Harsono<sup>2</sup>, Averina Zoraya<sup>3</sup>, Alvina<sup>4</sup>, Tedia Sari<sup>5</sup>

<sup>1,2,3,4,5</sup>Accounting, Business and Management, Universitas Internasional Batam, Indonesia

\* Corresponding Author: [hendi.luo@uib.ac.id](mailto:hendi.luo@uib.ac.id)<sup>1</sup>

### ABSTRACT

**Purpose** – This research aims to summarize the work of existing scientific articles and review literature on the standard analytical procedures for auditing, to serve as additional guiding literature that can be used as a reference for learning and research ideas related to analytical procedures in auditing classes or courses.

**Research Method** – Through qualitative analysis using a systematic literature study with a meta-analysis of 10 accredited international articles, this research summarizes and identifies research results and lessons learned, implications, and future research directions from the existing literature on standard analytical procedures for auditing. This research is expected to provide a foundation for further learning and research on aspects of analytical procedures in the audit process.

**Findings** – The results of this study indicate that research directions that can be considered on the topic of standard analytical procedures for audits are the integration of the latest technology, automation of procedures, comparative application analysis, and ways to improve auditor competence in an audit environment that is constantly required to evolve with the times and the industry. This study confirms that the topic of standard analytical procedures for auditing has a lot of room and potential to be explored and evaluated in the future.

**Implication** – This study has important implications for academics, universities, educators, and students as users of teaching and learning materials about the field of auditing, as well as developers of research and policy in the audit sector.

Keywords: Auditing, Class, Analytical Procedure, Standard Analytical Procedure, Literature Review

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## **INTRODUCTION**

Analysis is certainly necessary to know and understand various information, to investigate the validity or truth of the information, in order to provide conclusions, views, opinions, and/or assessments on a matter. Analysis in the field of audit or information examination is conducted using various methods and tests, referred to as "Analytical Procedures." Audit analytical procedures have been regulated by the International Standards on Auditing (ISA) and Indonesian Audit Standards (SA), both numbered 520. ISA and SA 520 explicitly require auditors to perform analytical procedures as an integral part of a quality audit process.

In general, analytical procedures can provide strong audit evidence regarding the fairness of financial statement presentation by analyzing the relationships between various data. Auditors can identify anomalies or irregularities that may indicate misstatements by performing analytical procedures. Analytical procedures can help auditors identify high-risk areas so that auditors can allocate audit resources more effectively. Through analytical procedures, auditors can gain a better understanding of the business of the audited entity, including significant trends, patterns, and relationships (Hirst & Koonce, 1996; Elisabeth, 2019; Anisa & Novita, 2023).

Reviewing from several decades until now, there have certainly been many types of scientific writings that research and discuss standard analytical procedures for audits. Most of the existing research has discussed the basic theoretical concepts that support the use of analytical procedures (Hirst & Koonce, 1996; Elisabeth, 2019), the role, effectiveness, and application of analytical procedures in the audit process both in general and specific contexts (Biggs et al., 1999; Colbert, 1994; Samaha & Hegazy, 2010; Elisabeth, 2019), analytical procedures for detecting fraud, and ways to improve the quality of analytical procedures in various audit scopes.

Nevertheless, upon reviewing and delving into existing scientific writings, there are still several potential issues that may arise within the scope of analytical procedures in audits, in line with the development of technology, industry, and the demands of the accounting profession, which can be explored and researched (Appelbaum et al., 2018; Trompeter & Wright, 2010). In addition, there is certainly a wealth of information that can be inferred and re-examined from various existing scholarly writings on audit analytical procedures (Appelbaum et al., 2018; Messier et al., 2013). Further and more in-depth discussions presented in the form of summaries will be elaborated in this literature review.

This research aims to summarize existing works and scientific articles as well as literature reviews on standard analytical procedures, analytical procedures and their standards for the audit process, to serve as additional guideline literature that can be used as a reference for learning and research ideas related to analytical procedures in audit classes or courses. Therefore, this research is structured based on the following questions:

1. What conclusions can be drawn and learned from existing research on standard analytical procedures for audits?
2. What are the identified issues that can be used as a direction for research ideas related to standard analytical procedures for the audit process?

## **LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

### **History of the Development of International and Indonesian Analytical Procedure Standards**

Internationally, since the 1970s, there have been more than 60 research projects completed to study analytical procedures (Biggs et al., 1999; Elisabeth, 2019; Nuraziza et al., 2023). The analytical procedures were first officially recommended for audits by the American Institute of Certified Public Accountants in 1978 (Hirst & Koonce, 1996; Anisa & Novita,

2023). Analytical procedures at that time were mandated for the purposes of planning and overall audit review. (Messier et al., 2013) explained that before the issuance of the clarified standards on analytical procedures, the standard guidance for analytical procedures in audits was found in the Statement on Auditing Standards (SAS) No. 56, Analytical Procedures (AU 329) created by the American Institute of Certified Public Accountants (AICPA). After that, in 1994, the International Auditing Practices Committee (IAPC), which later became part of the International Auditing and Assurance Standards Board (IAASB), published ISA 520, which is the initial version that became the foundation for analytical procedure standards in audits. ISA 520 was developed to expand and refine the concepts introduced in SAS 56 to meet the needs of international audits. In 2007, ISA 520 was redrafted as part of the Clarity Project, which aimed to enhance clarity and consistency in international auditing standards. ISA 520 was also subsequently updated to align with the developments in modern auditing practices. The redraft of ISA 520 underwent significant revisions until 2009. This revision became effective for audits of financial statements ending on or after December 15, 2009. The redrafted version of ISA 520 was globally adopted and began to be implemented in many countries in 2010, following the harmonization of international audit standards. As part of the adjustment of international standards in the United States, AU-C 520 (Analytical Procedures) was issued by the AICPA based on the revised international audit standard ISA 520.

Indonesia began adopting International Standards on Auditing (ISA) in the early 2010s to improve audit quality in line with global practices. SA 520 was first issued in Indonesia within the framework of the Professional Standards for Public Accountants (PSPA), which underwent revision in 2013, in line with the adoption of ISA. The implementation of SA 520 is effective for the audit of financial statements of issuers starting from January 1, 2013, and for non-issuers on January 1, 2014.

The process of adopting ISA 520 in Indonesia aims to fulfill Indonesia's membership obligations in the International Federation of Accountants (IFAC) and to enhance transparency and accountability in the financial sector. Before the implementation of ISA-based SA, the local audit guidelines used tended to refer to practices from international accounting bodies, but had not yet been fully integrated with ISA.

### **Definition of Analytical Procedures for Audit**

In the United States, AU 520 defines analytical procedures as "the evaluation of financial information through analysis of plausible relationships among financial and non-financial data," and these procedures are an integral part of the audit process (Messier et al., 2013; Appelbaum et al., 2018). Preliminary or planning analytical procedures are required to be part of the auditor's risk assessment process. Analytical procedures are also used as one of the substantive audit procedures, guided by AU 520, to evaluate account balances and as a final quality control check on the audited financial statements to assist the auditor in drawing an overall conclusion about whether the financial statements are consistent with the auditor's understanding of the entity (Hirst & Koonce, 1996; Anisa & Novita, 2023).

In Australia, the Audit Standard (AUS 512.03) defines analytical procedures as "investigation and analysis of fluctuations and relationships to determine whether there are inconsistencies with other relevant information or deviations from estimated amounts" (Biggs et al., 1999; Elisabeth, 2019).

Meanwhile, in Indonesia, according to SA 520, analytical procedures mean the evaluation of financial information conducted through the analysis of relationships between financial data and non-financial data. Analytical procedures also include investigations as necessary of fluctuations or identified relationships that are inconsistent with other relevant information, or that differ from expected values in a significant amount. Analytical procedures include the consideration of comparing the entity's financial information with, for example:

- a. Comparable information for the previous period;
- b. The anticipated results from the entity, such as budgets or forecasts, or the auditor's expectations, such as depreciation estimates;
- c. Similar industry information, such as the comparison of the entity's sales-to-receivables ratio with the industry average or with other entities of comparable size in the same industry.

### **The Purpose and Function of Audit Analytical Procedures**

The main objective of analytical procedures in an audit is to assist the auditor in developing an understanding of the client's business and its financial environment. These procedures help identify areas that may pose risks and facilitate a more focused audit approach. By using analytical procedures, auditors can detect patterns and anomalies that may require further investigation. The importance of this technique lies in its ability to provide a cost-effective way to gather evidence and enhance the overall effectiveness of the audit (Taniono et al., 2022). AUS 512 also indicates that analytical procedures are used for three purposes:

- a. to assist the auditor in planning the nature, timing, and extent of other audit procedures;
- b. as substantive testing to obtain evidence regarding specific assertions related to account balances or transaction groups; and
- c. as an overall review of financial information in the final audit review stage (AUS 512.07).

### **Categories and Types of Audit Analytical Procedures**

There are various types of analytical procedures that can be used by auditors. Analytical procedures in auditing encompass various types of techniques designed to help auditors identify anomalies or unexpected fluctuations in financial statements. (Colbert, 1994; Taniono et al., 2022) explains three main categories and types of analytical procedures, each of which can have derivative types, namely:

#### **1. Fairness Test**

The fairness test involves the expertise of rapid careful reading and the development of reasonable quantity or balance checks using non-financial or operational data, which are then compared with the actual book figures. Significant differences require further investigation. This method is very effective for accounts that can measure cash flows, such as income and expenses.

#### **2. Trend Analysis**

There are two types of general trend analysis: simple trend analysis and regression trend analysis. Simple trend analysis compares current figures with historical data, while regression analysis uses statistical methods to predict values based on independent variables. Both methods are more applicable to revenue and expense accounts than to asset and liability figures.

#### **3. Ratio Analysis**

Ratio analysis examines the relationship between accounts through various financial ratios and the analysis of common-size statements. Cross-sectional and time-series approaches are very important in analyzing financial performance using financial ratios.

Each type of procedure can have specific objectives or orientations, ranging from detecting pattern changes, describing data characteristics, to testing the accuracy of financial data. By utilizing various types and techniques of analytical procedures, auditors can gain a

deeper and more comprehensive understanding of the financial condition of the audited entity. This diverse approach not only enhances the effectiveness of audit procedures but also strengthens the auditor's ability to assess risks more comprehensively.

### **The Use of Audit Analytical Procedures**

Auditors utilize analytical procedures at three key stages of the audit process, as outlined (Hirst & Koonce, 1996). During the planning stage, these procedures are employed to gain an understanding of the client's business and to identify areas in the financial statements that may pose significant risks. This initial stage helps auditors establish expectations for the financial accounts, enabling them to adopt a more targeted approach by focusing on potentially problematic areas.

In the substantive testing phase, analytical procedures play a crucial role in gathering evidence and assessing the reasonableness of amounts and balances recorded in the financial statements. By comparing actual results with established expectations, auditors can detect discrepancies or anomalies. This phase is critical to ensuring that the financial data is accurate and free from material misstatements.

In the overall review or final review stage, auditors perform analytical procedures to comprehensively evaluate the financial statements and confirm their alignment with expectations. The primary aim of this stage is to assist auditors in forming a professional opinion regarding the fairness and reliability of the audited financial statements. Analytical procedures are essential in carrying out the three main stages of an audit to enhance the effectiveness and quality of the audit process and results.

### **Hypothesis Testing Related to Analytical Procedures by Previous Literature**

There has been much previous literature demonstrating the effectiveness of various analytical procedures in achieving audit objectives, supported by findings consistent with research from politically unstable environments. The use of analytical procedures has proven to be very important and effective in identifying inconsistencies and ensuring the reliability of financial statements (Abu Alia et al., 2024). Analytical procedures are useful for reinforcing assertions in financial statements, thereby providing reasonable evidence during the audit (Pinho et al., 2022). This is in line with the increasing complexity of transactions faced by the audited entities.

Some lists of hypotheses related to audit analytical procedures by previous literature, namely:

- a. The application of analytical procedures in external audits can improve the reliability of financial statements and enhance audit efficiency.
- b. The use of analytical procedures in audits can enhance audit effectiveness by identifying areas that require more attention.
- c. Analytical procedures based on period comparison are effective in detecting financial statement deviations
- d. The use of financial ratios as an analytical procedure is more effective in identifying bankruptcy risk compared to traditional analysis.
- e. Analytical procedures based on budget comparison and realization can detect discrepancies in the budget and direct financial improvements.

### **RESEARCH METHODOLOGY**

This research uses a qualitative research method in the form of a literature review to gain a comprehensive understanding of the analytical procedure standards in the financial statement audit process. The literature review method is used to collect, evaluate, and synthesize various literature sources relevant to the article's topic, as well as to explore the variables (Niam et al.,

2024) of analytical procedures in auditing. To obtain information relevant to the researched topic, a literature study method was conducted, focusing on the analysis and interpretation of written materials (Ahyar, 2019; Mahanum, 2021). This research uses secondary data from relevant and published journals (Kaharuddin, 2021; Taherdoost, 2021), which in detail consists of 10 journals.

In selecting relevant journals, we conducted a selection process by limiting the search to publications published in Scopus-accredited journals within the last five years (2019 – 2024). We also ensure that the selected journals contain keywords that support the research topic such as "Analytical Procedures," "Standard Analytical Procedures," and "Audit." The analysis method in this study evaluates data sources from previously conducted studies, resulting in conclusions that are current and relevant to the research topic (Adlini et al., 2022). The results of this evaluation are used to compile a comprehensive synthesis of various perspectives and findings in the literature. This research method allows us to present a deeper understanding of analytical procedure standards in the financial statement audit process through the integration of various perspectives and empirical evidence found in the literature. Through this literature review, this article aims to provide a holistic and informed perspective on analytical procedure standards in the financial statement audit process, supported by various references and findings in the literature. By analyzing findings from various previous studies, this research can identify areas that need further investigation and contribute to future research.

## RESULTS AND DISCUSSION

In the literature review, there are 10 journals used as samples to analyze analytical procedures, specifically regarding the role of analytical procedures in the audit process. The journals used as research samples adopt both qualitative and quantitative approaches as research models.

**Table 1.** 10 Journals Used as Samples to Analyze Analytical Procedures

No.	Authors/ Researchers	Journal Status	Journal Name, Edition, Volume, No., Page	Title of Research Article	Research Results and Findings
1	Barr-Pulliam et al., 2024	Q1	Journal of International Financial Management & Accounting. 2024; 35: 36–67	Audit evidence, technology, and judgement A review of the literature in response to ED-500	This study shows that the sequence of evidence, documentation, and behavioral factors influence the effectiveness of the auditor's analytical procedures. Contradictory evidence at the end can increase risk assessment, but good documentation can reduce bias. Auditors also face challenges in handling complex estimates, where comfort depends on management's support evidence.

				Deadline pressure and client dynamics can hinder risk response. Therefore, better guidance is needed to integrate technology and professional scepticism to enhance the quality of analytical evidence.
2	Emett et al., Q1 2023	Contemporary Accounting Research, Volume 40, Issue 4	Auditing with data and analytics: External reviewers' judgments of audit quality and effort	This study found that external reviewers often use the effort heuristic in assessing audit quality, where data and analytics (D&A) audit procedures are rated lower in quality compared to traditional procedures because they are perceived to require less effort.
3	Austin et al., Q1 2021	Contemporary Accounting Research, Volume 38, Issue 3	The Data Analytics Journey: Interactions among Auditors, Managers, Regulation, and Technology	The main findings of this study indicate that the use of data analytics in audits creates significant challenges. Obstacles arise due to the lack of clear regulatory guidelines regarding the use of data analytics in audits. Auditors have different preferences regarding these regulations, which creates challenges for standard setters in establishing appropriate rules.
4	Li et al., Q1 2021	Meditari Accountancy Research, Volume 29, Issue 6	The effectiveness of artificial neural networks applied to analytical	The ANN approach results in far fewer incorrect acceptances compared to other methods, indicating that ANN can enhance the

				procedures using high level data: a simulation analysis	performance of analytical procedures, especially when reliability is a primary concern for auditors.
5	Abu Alia et al., 2024	Q2	International Journal of Islamic and Middle Eastern Finance and Management	Small firm auditing using the analytical procedures (APs) in a politically challenging context	This research highlights that the client's business culture, particularly in Palestine, affects the adoption of analytical procedures (AP), with a focus on reactive audits due to weak governance. Despite technological advancements, local auditors often exhibit a suboptimal audit culture, and the implementation of formal audit standards for SMEs can enhance audit quality (AQ). Big-4 firms are more effective in using AP compared to non-Big-4, especially in the planning phase. AP has proven to be important in identifying inconsistencies, although its implementation is hindered by a lack of resources, training, and social influence. This research uses a mixed-methods approach to provide comprehensive insights into the challenges and practices of AP.
6	Tušek et al., 2021	Q2	Economic Research-Ekonomska	The importance and	This research found that the application of advanced analytical



		Istraživanja, Volume 34, No 1	differences of analytical procedures' application for auditing blockchain technology between external and internal auditors in Croatia	procedures in auditing new technologies such as blockchain enhances the operational efficiency and effectiveness of companies, with external auditors being more prepared to face digitalization than internal auditors. Additionally, the use of analytical procedures in blockchain technology audits enhances transparency, accountability, and automation, and has the potential to drive the implementation of continuous auditing in the future.
7	Pinho et al., Q3 2022	International Journal of Economics and Finance Studies Vol: 14 No: 03 Year: 2022	Analytical Procedures - Are They Useful for Auditing Purposes? An Iberian Peninsula Approach	This research shows that analytical procedures are widely used by auditors, especially during the planning and opinion formation stages, with 92.9% of respondents reporting their use. These procedures are most often applied to the Income Statement, considered effective in reinforcing financial statement assertions, and relevant in dealing with complex transactions. With a survey of audit partners at Big4 firms, these findings have a strong and representative

					statistical basis.
8	Bezverkhyy et al., 2023	Q4	Financial and Credit Activity: Problems of Theory and Practice Volume 3 (50), 2023	Analytical Procedures of the Audit of Integrated Reporting of Corporate Enterprises	<p>This research develops analytical indicators to assess the efficiency of various types of capital in integrated reporting, helping independent auditors evaluate the transparency of companies.</p> <p>Comparative analysis, such as comparing current performance with historical data and industry benchmarks, has been identified as an important approach to enhancing audit reliability.</p> <p>Additionally, understanding the cause-and-effect relationship between capital components and company value is considered crucial for assessing the effectiveness of capital utilization. This indicator system is designed to enhance auditors' competence in meeting the increasing demands for transparency and accountability.</p>
9	Al Qtaish et al., 2021	Q4	Vol. 40 No. 1 (2022): Sports Analytics within Sports Economics and Management	The Effect of Auditors' Use of Analytical Procedures in the Light of ISA 520 on Audit Quality: Evidence from Jordan	<p>This research found that the use of analytical procedures and financial ratios significantly improves audit quality through the evaluation of the fairness of financial statements, detection</p>

					of deviations, and assessment of operational efficiency. However, the educational qualifications and experience of auditors do not affect the effectiveness of these procedures.
10	Qushtom, 2020	Q4	Research in World Economy Vol. 11, No. 6; 2020	The Effect of Applying Analytical Procedures on Understanding Business Environment in Light of Using Accounting Information Systems in Auditing	This study found that the use of the client's accounting information system by auditors does not enhance the effectiveness of analytical procedures in assessing going concern and may limit the reliability of the results. Although there is a relationship with the estimation of potential misstatements, the limitations of the client's system become a hindrance. Therefore, it is recommended that auditors encourage clients to use more effective systems, enhance information technology skills, and equip the systems with additional resources to ensure the reliability of audit results, especially in the assessment of going concern.

### Research Implications

Analytical procedures (AP)-based substantive testing in audits frequently concentrates on processing patterns and connections among financial statement elements to ascertain the statements' overall reasonableness. According to auditors interviewed, their main goal is to make sure the financial statements are fair, which necessitates analyzing data patterns and relationships. Although this has been a component of audit planning, there is a lack of

documentation regarding the use of analytical techniques in the overall assessment of the financial statements. Therefore, more study is required to confirm whether auditors employ the same methodology at this point. Research should examine how auditors' expertise influences their involvement in financial statement analysis at various levels, as experienced auditors also have varying degrees of involvement in this information processing (Hirst & Koonce, 1996; Tjahjono & Adawiyah, 2019; Fauziah & Dwindya Yanthi, 2021; Evia et al., 2022).

Furthermore, it's critical to comprehend how auditors generate expectations about account balances before seeing unaudited data and how they use past data to do so. In order to increase efficiency, auditors are also encouraged to conduct less substantive testing in low-risk regions that have been determined using analytical methods. This suggests that efficiency can be increased without sacrificing audit quality using an analytical procedure-based approach (Biggs et al., 1999; Nuraziza et al., 2023).

Applying principle-based analytical techniques presents a problem in how auditors handle the intricacy of integrating audit evidence, which frequently entails a large amount of data that may be biased. To address this, more detailed guidelines about the kind of audit evidence that must be provided are needed, along with the division of labor in the audit process to prevent the impact of human factors. The efficiency and efficacy of audit processes may also be increased by utilizing technologies like automation and big data analytics. But according to (Barr-Pulliam et al., 2024), these technologies ought to be utilized in addition to auditors' professional judgment rather than in place of it. Thus, more study is required to examine how auditors incorporate technology and non-financial data into their audit process and how this might help to improve audit quality, particularly in small and medium-sized businesses (SMEs) (Abu Alia et al., 2024).

As a result, this study has important ramifications for a number of stakeholders, including researchers, universities, students, educators, academics, and those who make financial decisions. The findings of this study can be used by academics and universities to enhance the body of knowledge on analytical techniques in auditing and to build curricula that are more pertinent to the demands of the contemporary audit sector. This study offers educators and students fresh perspectives that can help them develop acceptable and useful analytical abilities to support the audit process. Furthermore, this study is important for researchers and policymakers because it can spur innovation in the development of a more effective, honest, valuable, and high-quality audit process, all of which will help to improve the audit ecosystem going forward.

## CONCLUSION AND SUGGESTION

The study concludes that analytical processes in auditing are a growing field with significant potential for exploration, playing a strategic role in assessing the fairness of financial statements, identifying irregularities, enhancing audit quality, and understanding the business environment (Hirst & Koonce, 1996). Despite challenges such as judgment bias, limited regulatory guidelines, and client resistance, modern technologies like artificial neural networks (ANN), data analytics, and blockchain show promise in improving audit automation, accountability, and transparency (Austin et al., 2021; Tušek et al., 2021). Factors such as deadline pressure, client business culture, and auditor qualifications influence the efficacy of analytical methods, emphasizing the need for auditors to enhance their technological skills (Bezverkhyi et al., 2023; Barr-Pulliam et al., 2024). However, the study is limited by its small sample size, reliance on interviews, and focus on auditors' perceptions rather than actual AP usage, as well as the lack of exploration of external factors like regulations and emerging technologies (Abu Alia et al., 2024).

These limitations highlight the need for future research to examine the frequency and effectiveness of various AP strategies, the impact of big data analytics and audit software,

ethical and legal considerations, and variations in technological adoption across different countries and industries. Expanding research to include small and medium-sized businesses, diverse regulatory environments, and mixed-method approaches will provide deeper insights into how technology and auditor experience influence audit efficiency and effectiveness (Qushtom, 2020; Trompeter & Wright, 2010). The findings have significant implications for scholars, institutions, and policymakers, emphasizing the importance of curriculum revision, audit technique enhancement, and policy development to create more effective and valuable audit processes in the future.

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