

Reconstructing Indonesia's State Financial Oversight Policy Through Artificial Intelligence for an Accountable Continuous Auditing System

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ABSTRACT

The digital transformation of public administration has reshaped public financial oversight through the growing use of artificial intelligence and continuous auditing. In Indonesia, however, the legal framework for state financial oversight remains largely rooted in conventional auditing, which emphasizes periodic examination, manual verification, and retrospective accountability. This study aims to identify the normative weaknesses of Indonesia's existing oversight framework and to formulate a policy reconstruction model for integrating artificial intelligence into an accountable continuous auditing system. This research employs a normative juridical method supported by statutory, conceptual, and limited comparative approaches. Primary materials consist of Indonesian laws and regulations on state finance and auditing, while secondary materials include scholarly literature and international reports on artificial intelligence governance, digital auditing, and public sector oversight. The findings show three main problems. First, Indonesian positive law does not yet provide an explicit legal basis for the use of artificial intelligence in public financial oversight, creating uncertainty regarding algorithmic transparency, accountability, and data protection. Second, the absence of integrated audit standards and interoperable data governance hinders the implementation of continuous auditing. Third, institutional readiness remains uneven. The Audit Board of Indonesia is relatively more prepared than the Government Internal Supervisory Apparatus, but both still face capacity and coordination constraints. The novelty of this study lies in its integration of public financial law, artificial intelligence governance, and continuous auditing into a single legal reconstruction model. The proposed model places artificial intelligence as a decision support instrument within a human-centered oversight framework, strengthens legal standards for transparency and data governance, and clarifies institutional roles. This model contributes to future legal reform and offers practical implications for more preventive, adaptive, and accountable financial governance in Indonesia.

Keywords: Artificial Intelligence, Continuous Auditing, Public Accountability, Policy Reconstruction, State Financial Oversight.

INTRODUCTION

Over the past decade, the governance of public administration has undergone significant transformation as digital technologies increasingly shape the manner in which governments manage information, implement policies, and oversee the use of public finances (Diar, et al., 2025). Digital governance is no longer limited to the introduction of electronic administration systems. Contemporary public administration increasingly relies on advanced computational tools such as artificial intelligence, large-scale data analytics, and automated monitoring systems that operate continuously within governmental information infrastructures. These developments have altered the institutional context in which administrative decisions are made and implemented.

The integration of algorithmic systems into public administration introduces a new layer of complexity to the relationship between technology and legal accountability.

Administrative processes that were traditionally based on written documentation and human evaluation are now increasingly influenced by algorithmic analysis and automated recommendations. While such systems may enhance administrative efficiency and improve the capacity of governments to process large volumes of data, they simultaneously raise fundamental legal questions regarding transparency, responsibility, and institutional accountability. When algorithmic systems influence administrative decisions related to public resources, determining the locus of responsibility within existing legal frameworks becomes increasingly difficult (Minkinen et al., 2022).

Within the field of public financial governance, these developments create particularly significant challenges. Public sector auditing has historically relied on a model based on periodic examination of financial documents, manual verification procedures, and retrospective evaluation of fiscal activities after transactions have occurred. This model developed within administrative environments characterized by relatively slow information flows and stable financial processes. In contrast, contemporary digital governance systems generate vast volumes of financial and administrative data in real time. Financial transactions related to public procurement, public expenditure, and government service delivery now occur within integrated digital platforms that operate continuously. Under such conditions, irregularities in financial management may develop rapidly and may remain undetected until substantial financial losses occur if oversight systems continue to rely solely on periodic auditing procedures (Mökander & Floridi, 2021).

These technological developments require reconsideration of the institutional design of public financial oversight. Continuous auditing has emerged in auditing scholarship as an approach capable of responding to the dynamics of digital governance. Continuous auditing utilizes automated data analysis, integrated information systems, and continuously updated financial information to enable oversight institutions to identify risks more quickly and intervene before irregularities escalate. Through the use of automated monitoring and advanced analytical techniques, auditing practices may move from retrospective examination toward proactive risk detection (Eulerich et al., 2020).

However, the incorporation of artificial intelligence into public sector auditing raises issues that extend beyond technical efficiency. Algorithmic decision systems may produce outputs that are difficult to explain, potentially reducing the transparency of administrative decision making. In addition, the use of automated analytical systems may obscure the distribution of administrative responsibility within governmental institutions. Without appropriate legal safeguards, the adoption of artificial intelligence in public oversight systems may create new forms of administrative opacity that weaken democratic accountability (Bracci, 2023).

These issues are particularly relevant within the Indonesian system of public financial governance. Indonesia possesses a complex legal framework governing the management and oversight of public finances. The constitutional basis for public financial accountability is established in Article 23 of the Constitution of the Republic of Indonesia, which mandates that state finances shall be managed in an accountable and transparent manner for the greatest prosperity of the people. This constitutional mandate is further elaborated through several statutory instruments, including Law Number 17 of 2003 concerning State Finance, Law Number 1 of 2004 concerning State Treasury, Law Number 15 of 2004 concerning the Examination of the Management and Responsibility of State Finance, and Law Number 15 of 2006 concerning the Audit Board of the Republic of Indonesia.

Through these legal instruments, Indonesia establishes a multi-layered system of public financial oversight involving several institutional actors. External oversight is conducted by the Audit Board of the Republic of Indonesia, while internal governmental supervision is exercised through internal supervisory units within ministries and governmental agencies, including the Government Internal Supervisory Apparatus. In addition, the Government Internal Control System provides mechanisms intended to ensure compliance with financial management standards across public institutions. This architecture reflects a system of checks and balances designed to safeguard public financial integrity.

Nevertheless, the legal and institutional framework of public financial oversight in

Indonesia was largely designed for administrative environments in which financial documentation and auditing processes were conducted primarily through manual procedures and periodic reporting systems. As public financial management increasingly relies on digital platforms, electronic procurement systems, integrated financial information systems, and large-scale administrative databases, the limitations of oversight systems based primarily on retrospective examination become increasingly apparent. The speed and complexity of digital financial transactions may exceed the capacity of traditional oversight mechanisms to detect irregularities in a timely manner (Zuiderwijk et al., 2021).

Despite the growing adoption of digital governance systems in Indonesia, the legal framework governing public financial oversight has not yet fully addressed the implications of artificial intelligence based monitoring and automated analytical processes. Existing legal provisions primarily regulate institutional authority, audit procedures, and financial accountability mechanisms within conventional administrative structures. They provide limited guidance regarding the governance of algorithmic decision systems, the legal status of automated monitoring tools, the allocation of responsibility when algorithmic outputs influence oversight decisions, or the standards of transparency required for artificial intelligence-based audit systems.

In academic literature, discussions on artificial intelligence in public governance have expanded significantly. Scholars have examined the ethical implications of algorithmic governance, the challenges of transparency in automated decision making, and the need for regulatory frameworks that ensure responsible use of digital technologies in the public sector. However, relatively limited attention has been devoted to the reconstruction of legal policies governing public financial oversight in the context of artificial intelligence supported continuous auditing systems. Existing research on continuous auditing has primarily developed within corporate and private sector internal audit environments and has not sufficiently addressed the institutional and legal complexities of public financial oversight within developing countries that possess multi-layered governance structures such as Indonesia (Eulerich et al., 2020; Mergel et al., 2023).

This condition reveals a clear research gap within legal scholarship. While technological studies emphasize the potential efficiency of artificial intelligence and auditing literature highlights the operational benefits of continuous auditing, there remains limited normative analysis concerning how public financial oversight law should be redesigned in order to integrate artificial intelligence while preserving principles of legality, transparency, audit independence, and public accountability. In the absence of such normative reconstruction, technological innovation may develop without adequate legal safeguards, thereby creating governance risks rather than strengthening public financial integrity (Genaro-Moya et al., 2025).

Therefore, the central challenge is not merely technological but fundamentally legal and institutional. Artificial intelligence must be positioned as an instrument that strengthens human oversight rather than replacing it. Oversight frameworks must ensure algorithmic transparency, accountability of public institutions, protection of public financial data, and the preservation of meaningful human responsibility in administrative decision making. Based on these considerations, this research entitled *Reconstruction of Public Financial Oversight Policy in Indonesia Based on Artificial Intelligence in Realizing an Accountable Continuous Auditing System* seeks to develop a normative framework capable of integrating artificial intelligence into the system of public financial oversight while maintaining the fundamental principles of accountable governance.

From a theoretical perspective, the study contributes to the development of interdisciplinary scholarship connecting public financial law, governance of artificial intelligence in the public sector, and continuous auditing theory. From a practical perspective, the study aims to provide policy recommendations for strengthening Indonesia's public financial oversight system so that oversight institutions may detect financial risks earlier, anticipate potential irregularities, and enhance the protection of public finances within an increasingly digital administrative environment (Choi & Park, 2023).

Based on this background, the research formulates three principal problems. First,

what normative weaknesses exist within Indonesia's current legal framework of public financial oversight when confronted with the development of artificial intelligence-based continuous auditing systems. Second, how may an explicit legal basis for the use of artificial intelligence in state financial oversight be established. Third, how may the institutional condition of the Audit Board of Indonesia and the Government Internal Supervisory Apparatus be analyzed in the context of capacity constraints and readiness for the transition toward artificial intelligence-based continuous auditing.

Based on these research questions, the study aims to analyze the normative weaknesses in Indonesia's legal framework of public financial oversight in relation to the development of artificial intelligence-based continuous auditing, to formulate an explicit legal basis for the use of artificial intelligence in state financial oversight, and to examine the institutional condition of the Audit Board of Indonesia and the Government Internal Supervisory Apparatus in addressing capacity constraints and readiness for the transition toward an artificial intelligence-based continuous auditing system.

METHOD

This study employs a normative juridical approach supported by conceptual analysis and an interdisciplinary perspective that integrates law and public governance studies (Hamzani et al., 2024). This approach is selected because the primary focus of the research is to reconstruct state financial oversight policy based on artificial intelligence in order to establish an accountable continuous auditing system. Accordingly, the analysis is not limited to existing positive legal norms but also considers developments in public audit theory, artificial intelligence governance, and state financial oversight.

The research applies several principal approaches. First, a statutory approach is used to examine the legal framework governing state financial oversight in Indonesia, including Law Number 17 of 2003 on State Finance, Law Number 15 of 2004 on Audit of the Management and Accountability of State Finance, Law Number 15 of 2006 on the Audit Board of Indonesia, and Government Regulation Number 60 of 2008 on the Government Internal Control System. This approach is employed to assess the compatibility and limitations of the existing normative framework in supporting the concept of continuous auditing. Second, a conceptual approach is undertaken through the examination of doctrines and theories within international literature concerning continuous auditing, digital auditing, artificial intelligence governance, and public sector audit governance. This approach is used to construct a theoretical framework capable of explaining the transformation of auditing methods from a periodic model toward a data-driven and technology-based continuous auditing model. Third, a limited comparative approach is applied to compare the development of continuous auditing practices within public sector oversight across several countries and international audit institutions. This approach aims to identify best practices that may serve as references for the reconstruction of state financial oversight policy in Indonesia.

The legal materials used in this research consist of primary legal materials in the form of statutory regulations, as well as secondary legal materials including reputable national and international journal articles, scholarly books, and reports from international audit institutions. All legal materials are analyzed qualitatively through prescriptive and systematic analytical methods, with the objective of formulating a model for reconstructing artificial intelligence-based state financial oversight policy that is capable of supporting the implementation of accountable continuous auditing (Beloucif et al., 2025).

RESULTS AND DISCUSSION

Weaknesses of Indonesian Positive Law in the Oversight of State Finances

From a normative perspective, the statutory and regulatory framework governing the oversight of state finances in Indonesia has, in principle, yet to provide an adequate legal foundation for accommodating digital technological developments, particularly the use of artificial intelligence in public financial oversight systems (F. Arifin et al., 2025). The existing

legal system remains rooted in a conventional administrative paradigm characterized by document-based supervision, manual verification processes, and periodic audit mechanisms conducted only after financial activities have taken place. In the context of advances in information technology and data analytics that enable continuous oversight through continuous auditing, the current normative approach demonstrates considerable limitations (Sagara & Akbar, 2021).

Law Number 17 of 2003 on State Finance and Law Number 1 of 2004 on State Treasury have, in principle, affirmed that the management of state finances must be carried out in an orderly, efficient, economical, transparent, and accountable manner. Both statutes place the principles of accountability and transparency at the core of state financial governance. Nevertheless, the normative provisions contained in these two laws remain general in nature and do not explicitly regulate technology-based oversight mechanisms, including the use of artificial intelligence-driven analytic systems to support the oversight of state finances (Putri, 2025).

Conceptually, the principles of transparency and accountability enshrined in those statutes do in fact create space for the use of technology to enhance the effectiveness of oversight. However, the absence of provisions that explicitly regulate the use of modern analytic technologies means that the implementation of artificial intelligence-based oversight innovations remains within the realm of administrative policy rather than a clearly defined legal framework. This condition has the potential to create legal uncertainty when such technologies are employed in oversight processes that affect administrative decision-making and the assessment of accountability in the management of state finances (F. Arifin et al., 2025).

A normative weakness is also evident in Law Number 15 of 2004 on the Audit of the Management and Accountability of State Finances, which regulates audit mechanisms for the management of state finances. This law affirms that audits are conducted by the Audit Board of Indonesia through three types of examinations, namely financial audits, performance audits, and audits for specific purposes. Although the law grants the audit institution relatively broad authority to determine audit methods, the existing regulatory framework nonetheless remains grounded in the assumption that the audit process is carried out through conventional audit techniques that rely on document evaluation, transaction testing by sampling, and the professional judgment of auditors (J. Arifin & Hartadi, 2020).

In the context of digital technological developments that enable comprehensive data analysis of all government financial transactions, the sampling-based audit approach embedded in conventional audit practice has become increasingly limited. Artificial intelligence-based analytic systems make it possible for oversight to be conducted more comprehensively by analyzing the entirety of transaction data in real time. Nevertheless, the absence of normative provisions that explicitly recognize the use of automated data analysis methods in the audit of state finances creates uncertainty regarding the legal status of such technologies in public sector auditing practice (El Natsir & Sundjaja, 2025).



Figure 1. Normative Weaknesses of Indonesian Positive Law in the Oversight of State Finances

A similar normative weakness can also be found in Law Number 15 of 2006 on the Audit Board of Indonesia, which regulates the authority of the state's external audit institution. This law affirms the position of the Audit Board of Indonesia as an independent state institution in conducting audits of the management and accountability of state finances. Nevertheless, the provisions concerning the audit methods employed by the institution remain centered on a conventional audit framework and do not explicitly accommodate the development of artificial intelligence-based analytical technologies (Hardiningsih et al., 2019).

The absence of normative regulation concerning the use of artificial intelligence in the oversight of state finances gives rise to several important legal implications. First, there is no legal standard governing algorithmic transparency in public financial analysis systems. In artificial intelligence-based oversight systems, data analysis is carried out through algorithmic models that are often complex and not easily understood by users (Almond & Van Erp, 2020). In the absence of legal standards requiring algorithmic transparency, the use of such technology has the potential to create accountability issues in oversight-related decision-making (Wachter et al., 2021).

Second, the existing legal framework does not clearly regulate the allocation of responsibility when oversight decisions are influenced by automated analytical systems. In conventional oversight systems, responsibility for audit findings clearly rests with the auditor conducting the examination. In artificial intelligence-based oversight systems, however, risk analysis and anomaly detection may be performed automatically by analytical systems. This condition raises the question of who should bear responsibility if the system produces erroneous conclusions or if the recommendations generated by the system influence administrative decisions that affect the management of state finances (Mahardhika et al., 2023).

Third, the existing statutory and regulatory framework does not adequately govern the protection of public financial data used in artificial intelligence-based analytic systems. The development of data-driven oversight systems requires the integration of various sources of government financial data distributed across multiple institutions. In the absence of a clear legal framework governing data governance in digital oversight systems, the use of such data may give rise to risks related to data security, the confidentiality of state financial information, and the misuse of data by unauthorized parties (Shahrullah et al., 2024).

In addition, this normative weakness is also related to the absence of regulations governing data interoperability standards among oversight institutions. Indonesia's state financial oversight system involves multiple institutions, including the Audit Board of Indonesia as the external audit institution and the Government Internal Supervisory Apparatus as the internal oversight body. In an artificial intelligence-based oversight system, the effectiveness of data analysis depends heavily on the system's ability to integrate various data sources originating from different institutions. However, to date, the legal framework governing state financial management has not explicitly regulated the obligation of data integration among oversight institutions.

The absence of normative regulation concerning data interoperability has the potential to hinder the development of continuous auditing systems, which require sustained access to transaction data. Without a clear legal framework governing data exchange among oversight institutions, artificial intelligence-based oversight systems will be difficult to implement effectively within a complex system of public administration.

Beyond these various weaknesses, the legal framework governing state financial oversight in Indonesia also faces other normative issues related to differing interpretations of existing regulations. In law enforcement practice, particularly in corruption cases involving state financial losses, various types of audits are often used by different institutions, such as investigative audits, special purpose audits, audits for the calculation of state financial losses, and internal audits conducted by the Government Internal Supervisory Apparatus. However, the current statutory framework does not provide a clear standard regarding which type of audit should be used in a particular situation or case.

This condition gives rise to differences in interpretation among oversight institutions

as well as law enforcement authorities regarding which audit method is legally valid and may serve as the basis for determining the existence of state financial losses. In some cases, audit results produced by different institutions may not lead to identical conclusions, thereby generating debate over the validity and legitimacy of those audit findings in legal proceedings. This lack of clarity in audit standards reflects a normative weakness in the state financial oversight system, as there is no legal guideline that explicitly regulates the harmonization of audit standards in the context of state financial examinations and the enforcement of corruption-related offenses.

This weakness becomes even more significant when considered in relation to the potential implementation of artificial intelligence-based oversight systems. Data-driven analytical systems require clear methodological standards so that the results they generate can be held legally accountable. Without integrated audit standards that are normatively recognized, the use of artificial intelligence in oversight processes may create new problems concerning the validity of analytical outcomes, the admissibility of digital evidence in legal proceedings, and the legitimacy of oversight decisions produced by automated systems.

In addition, a further normative weakness can be seen in the absence of regulation concerning ethical standards for the use of artificial intelligence in state financial oversight. Artificial intelligence technology has substantial potential to improve the effectiveness of oversight, yet its use also raises a number of ethical concerns, such as the potential for algorithmic bias, excessive reliance on automated systems, and the diminishing role of the professional judgment of human auditors. Without normative guidelines governing the ethical use of such technology, the implementation of artificial intelligence in oversight systems may create new problems in the governance of state finances (Nouri et al., 2024).

It may therefore be concluded that the legal framework governing state financial oversight in Indonesia still faces fundamental normative weaknesses in responding to the development of artificial intelligence and continuous auditing systems. The absence of legal norms concerning the governance of analytical technologies in the state financial oversight system, differing interpretations of existing regulations, and the lack of integrated audit standards indicate that the current oversight system is not yet fully prepared to respond to the digital transformation of state financial governance. Accordingly, a reconstruction of legal policy is required in order to integrate the use of artificial intelligence into the state financial oversight system while at the same time ensuring the principles of accountability, transparency, audit independence, legal certainty, and the protection of public financial data (Utomo, 2025).

Establishing an Explicit Legal Basis for the Use of AI in State Financial Oversight

The reconstruction of state financial oversight policy in the era of digital transformation requires the establishment of an explicit legal basis that recognizes the use of artificial intelligence as an official instrument within the public financial oversight system. Such normative recognition is essential because the legal framework governing state financial oversight has generally been developed within a conventional administrative paradigm that positions human auditors as the primary actors in document-based audits, transaction testing through sampling, and the periodic evaluation of financial statements. The advancement of data analytics and artificial intelligence technologies has significantly transformed the landscape of public oversight, as these technologies enable the rapid analysis of large volumes of transactional data, the automated detection of anomalies, and the continuous monitoring of transactions through continuous auditing mechanisms. Nevertheless, in the absence of a clear legal basis, the use of such technologies may create legal uncertainty regarding the legitimacy of their application in the process of state financial oversight (Sagara & Akbar, 2021).

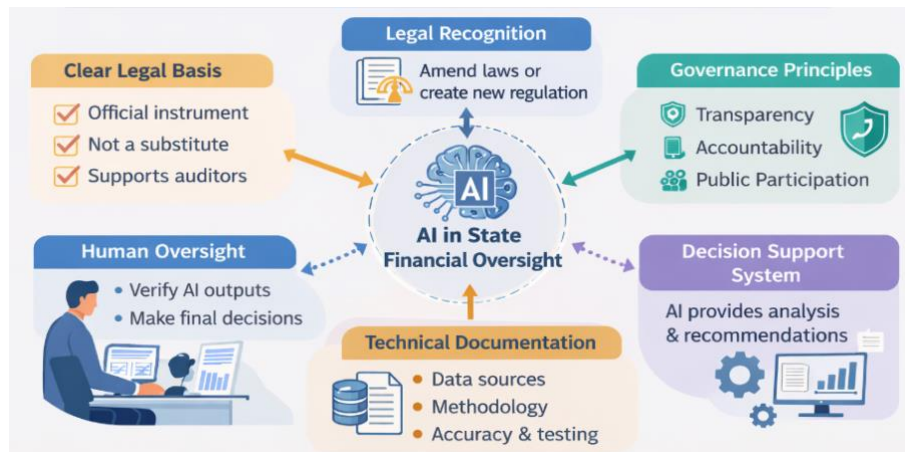


Figure 2. Conceptual Scheme of the Reconstruction of State Financial Oversight Policy in the Era of Digital Transformation

The first step in reconstructing the legal policy framework for state financial oversight is to incorporate explicit provisions into legislation stating that artificial intelligence, data analytics, and continuous auditing systems may be used as official instruments within the state financial oversight system. Such provisions may be introduced either through amendments to laws governing the management and audit of state finances or through the enactment of a new statute specifically regulating the governance of digital technologies in public financial administration. This regulatory framework must clearly stipulate that artificial intelligence functions as a supporting tool in the oversight process rather than as a substitute for the constitutional authority of state auditors. Accordingly, final decisions regarding audit findings, risk assessments, and oversight recommendations must remain in the hands of human auditors who possess the legal authority to evaluate and validate audit outcomes (El Natsir & Sundjaja, 2025).

Legal recognition of the use of artificial intelligence in state financial oversight serves not only as a means of legitimizing the technology, but also as an instrument for ensuring that its use remains subject to the principles of good governance (Wardana & Setiyawan, 2025). Studies on the legal framework of artificial intelligence in Indonesia's legislative process indicate that the integration of artificial intelligence into governmental systems requires clear regulation concerning algorithmic transparency, decision-making accountability, and public participation in the development of digital government technologies (De Almeida et al., 2021). In the absence of a clear legal framework, the use of artificial intelligence in public decision-making processes may give rise to issues of democratic legitimacy as well as uncertainty in the allocation of legal responsibility (Aulia Rahman et al., 2022).

Third, the legal framework that is developed must establish the principle of human oversight as an indispensable element in the use of artificial intelligence. This principle affirms that every recommendation or analysis generated by an artificial intelligence system must be verified by a human auditor before it may be used as a basis for decision-making in the state financial audit process. Such regulation is essential to prevent what the artificial intelligence literature describes as automation bias, namely, the tendency of users to accept the outputs of automated systems without conducting a critical evaluation of their validity. Therefore, the law must ensure that artificial intelligence functions as a decision-support system rather than as the final decision-maker within the state financial oversight system (Covilla, 2025).

In addition, legislation must also regulate the obligation to maintain technical documentation for artificial intelligence systems used in state financial oversight. This documentation must include information on the data sources used to train the artificial intelligence model, the analytical methodology employed by the system, the model's level of accuracy, and the mechanisms for testing and validating the system before it is deployed in an operational environment. Regulating such technical documentation is essential to ensure

that artificial intelligence systems used in state financial oversight can be independently audited and that the results of their analyses can be legally accounted for (Li & Goel, 2025).

This normative approach is consistent with the development of the international literature on artificial intelligence accountability, which emphasizes that the use of algorithmic technologies in the public sector must be grounded in the principles of answerability, oversight, and enforceability. Under this framework, artificial intelligence systems must be able to explain the analytical basis used in generating a recommendation, public institutions must have oversight mechanisms governing the use of such technologies, and clear legal enforcement mechanisms must exist where artificial intelligence systems produce decisions that harm the public interest. Without these three elements, the use of artificial intelligence in state financial oversight risks reducing public accountability to mere technical outputs generated by algorithmic systems (Novelli et al., 2024).

International practice shows that the integration of artificial intelligence into state financial oversight can be carried out in an accountable manner when supported by a clear legal framework (Otia & Bracci, 2022). One example frequently cited in the digital governance literature is the use of artificial intelligence by Supreme Audit Institutions in the United States. The Government Accountability Office employs AI-based data analytics to detect potential fraud in federal government spending programs (U.S., 2021). These analytical systems are used to examine millions of government financial transactions in order to identify unusual patterns or potential irregularities in the use of public funds (Zhang et al., 2015). Although the technology is used to enhance the effectiveness of oversight, the determination of whether a transaction constitutes an indication of a violation remains with human auditors through a subsequent audit process (Ruschemeier & Hondrich, 2024).

Another example may be found in the United Kingdom's National Audit Office, which has developed data analytics systems to support the state financial audit process (Ferry et al., 2025). The institution uses advanced analytical technologies to examine large volumes of government transaction data in order to identify potential risks of budget misuse and inefficiencies in the management of public programs. The use of such technologies is supported by a governance framework that emphasizes the principles of methodological transparency, human oversight of system outputs, and independent auditing of the analytical systems employed by the audit institution (Midgley et al., 2024).

The comparison between the two countries demonstrates a consistent approach in utilizing artificial intelligence as a supporting instrument in the oversight of state finances, without diminishing the central role of human auditors in normative decision-making, as illustrated in Table 1.

Table 1. Comparative Practices in the Use of Artificial Intelligence for State Financial Oversight in the United States and the United Kingdom and Policy Implications for Indonesia

Aspect	United States	United Kingdom	Comparative Insight	Implication for Indonesia
Institution	Government Accountability Office.	National Audit Office.	Both institutions function as Supreme Audit Institutions responsible for state financial oversight.	Indonesia can strengthen the role of its national audit institutions through digital capacity.
Use of Artificial Intelligence	AI based data analytics used to detect potential fraud in federal government spending programs.	Advanced data analytics systems used to support the state financial audit process.	Artificial intelligence expands the analytical capability of audit institutions in examining large financial datasets	Artificial intelligence should be adopted to enhance the analytical capacity of financial oversight bodies.

Aspect	United States	United Kingdom	Comparative Insight	Implication for Indonesia
Main Function of Technology	Examination of millions of government financial transactions to identify unusual patterns or potential irregularities.	Analysis of large volumes of government transaction data to identify risks of budget misuse and inefficiencies.	Technology is used to process large scale data that cannot be efficiently handled through manual auditing.	AI can assist Indonesian auditors in monitoring large volumes of public financial data.
Role of Human Auditors	Final determination of violations remains with human auditors through subsequent audit procedures.	System outputs remain subject to human review and evaluation.	Artificial intelligence supports but does not replace human decision making in auditing.	Human oversight must remain central in the auditing process.
Governance Framework	Supported by legal and institutional frameworks governing the use of data analytics in oversight.	Governance framework emphasizes methodological transparency, human oversight, and independent auditing of analytical systems.	Both countries integrate technology with accountability and governance principles.	Indonesia must ensure legal certainty and accountability in AI based oversight.
Oversight Objective	Detection of fraud and irregularities in government spending.	Identification of financial risks and inefficiencies in public programs.	Artificial intelligence enhances the effectiveness of state financial supervision.	AI can strengthen preventive and risk based oversight in Indonesia.
Preventive Potential	Predictive analysis helps identify risk patterns before major irregularities occur.	Analytical tools support early identification of financial management weaknesses.	AI supports a preventive approach in public financial management.	Preventive supervision can reduce the risk of state financial losses.
Policy Lesson	Technology enhances audit effectiveness while preserving human accountability.	Institutional governance frameworks maintain transparency and control over analytical systems.	Balance between technological innovation and democratic accountability is essential.	Indonesia should adopt AI as a supporting instrument under a clear legal and governance framework.

Source: Adapted and compiled from Otia and Bracci 2022; U.S. Government Accountability Office 2021; Zhang et al. 2015; Ruschemeier and Hondrich 2024; Ferry et al. 2025; Midgley et al. 2024; Maulana et al. 2022.

From a comparative perspective, practices in the United States and the United Kingdom demonstrate a relatively consistent pattern in the integration of artificial intelligence into state financial oversight systems. The technology is used to expand the analytical capacity of audit institutions in processing large-scale data, but it does not replace the role of human auditors in making normative decisions. This approach reflects a balance between technological innovation and the principle of public accountability, which constitutes a fundamental pillar of democratic governance.

In addition to enhancing the effectiveness of oversight, the use of artificial intelligence also has the potential to strengthen a preventive approach in the management of state finances. Through predictive analytical capabilities, such systems can assist audit institutions in identifying risk patterns before significant irregularities occur. This enables

oversight bodies to provide preventive policy recommendations to government institutions, thereby minimizing the potential for state losses from the early stages of public program implementation.

Based on the experiences of those countries, the reconstruction of financial oversight policy in Indonesia should adopt a similar approach by positioning artificial intelligence as a supporting instrument in the process of auditing and supervising public finances. The integration of this technology must be implemented through a legal framework that ensures algorithmic transparency, effective human oversight, and institutional accountability for the analytical outcomes produced by artificial intelligence systems. In this way, the use of digital technology will not only enhance the effectiveness of public financial oversight but also strengthen the legitimacy of public supervision within the framework of a democratic rule of law (Maulana et al., 2022).

Institutional Analysis of BPK and APIP in the Context of Capacity Constraints and Readiness for the Transition toward AI-Based Continuous Auditing

Institutionally, both the Audit Board of Indonesia and the Government Internal Supervisory Apparatus are moving toward the digitalization of oversight, but they remain at different levels of readiness (Naim et al., 2022). Within the framework of internal government oversight, the Government Internal Supervisory Apparatus encompasses the Financial and Development Supervisory Agency, Inspectorates General/Inspectorates/Internal Supervisory Units within ministries, agencies, and regional governments, as well as internal supervisory units within other public legal entities. Within this structure, the Financial and Development Supervisory Agency also occupies a strategic position as the government's internal auditor, operating under and accountable to the President, while simultaneously carrying responsibility for the development of the Government Internal Control System and the nationwide enhancement of the capacity of the Government Internal Supervisory Apparatus. Accordingly, when strengthening the Government Internal Supervisory Apparatus is discussed, the scope extends not only to the Financial and Development Supervisory Agency, but also to the entire network of inspectorates and internal supervisory units at both the central and regional levels (Hidayat, 2021).

At present, the Audit Board of Indonesia possesses a relatively more advanced institutional foundation because its digital transformation has been formally institutionalized through several strategic initiatives. These include the Information and Communication Technology Master Plan, the digital by default approach, the development of the BPK Big Data Analytics System known as BIDICS, the Standardized and Integrated Audit Process referred to as SIAP, and the planned establishment of PUSAKA as a national financial data analysis center (Mubiroh, 2019). The 2024 peer review report also indicates that the information technology strategy of the Audit Board of Indonesia is aligned with the strategic objectives of the institution (Republik Indonesia, 2024). For the period from 2025 to 2029, the institution has planned the continuation of process automation as well as the integration of artificial intelligence into the BIDICS platform (Haq & Sofyani, 2024). In 2026, the Audit Board of Indonesia explicitly placed the strengthening of thematic continuous audits and the integration of artificial intelligence into the audit process as part of its broader digital transformation agenda (Republik Indonesia, 2026).

Nevertheless, the readiness of BPK to fully transition toward artificial intelligence enabled continuous auditing cannot yet be considered fully mature. The 2024 peer review report noted that as of 30 April 2024, BPK had 8,517 employees, whereas the information technology bureau consisted of only 103 personnel, representing approximately 1 percent of the total workforce (Republik Indonesia, 2024). This structure indicates that while digital capacity within BPK has been established, it remains highly centralized within specific technical units. The peer review also highlighted several human resource management challenges, including the need to improve recruitment systems, address the distribution of senior and junior staff, manage personnel rotation, strengthen capacity development, and enhance internal organizational communication. In the area of information technology, BPK

was assessed as having achieved a good level of institutional maturity. However, the review recommended strengthening the consistency of information technology audit approaches and increasing the utilization of SIAP as well as improving information security. This indicates that the challenge facing BPK is no longer the absence of a digital foundation, but rather how to expand that capacity evenly across all audit functions and operationalize it at the institutional scale rather than limiting it to platforms and specialized support units.

From the perspective of substantive readiness, BPK may be categorized as moderately prepared but not yet fully prepared. This assessment is based on the fact that BPK already possesses a digital architecture, analytical instruments, institutional training support, and a clear strategic direction toward data driven auditing. In 2024, the BPK State Finance Education and Training Agency organized international training programs in big data analytics and data science based on BPK institutional experience. In addition, the training calendar for 2025 already includes programs focused on optimizing the use of big data analytics and SIAP in the examination of government financial statements. However, the fact that artificial intelligence integration is still positioned as a development agenda in the Information and Communication Technology Master Plan for 2025 to 2029 indicates that BPK remains in a transitional phase moving from digital audit support toward artificial intelligence enabled continuous auditing rather than having fully reached a mature and standardized implementation stage across all institutional units.

In contrast to BPK, the institutional challenges faced by the Government Internal Supervisory Apparatus or APIP are significantly more fundamental because they involve not only technological readiness but also the uneven quality of oversight effectiveness across organizational units. Performance data from the Financial and Development Supervisory Agency or BPKP for 2024 shows that the percentage of ministerial, institutional, and regional APIP units reaching at least Level 3 capability was 72.73 percent, which fell below the target of 92.57 percent. Furthermore, internal analysis and evaluation conducted by BPKP concerning APIP capability development indicated that by the third quarter of 2024, approximately 86.08 percent of regional APIP units had formally achieved Level 3 capability. However, the effectiveness of oversight in supporting strategic decision making remained low. Oversight results used by regional leaders as a basis for policy decision making accounted for only 5.18 percent. The same document also emphasized that current capability assessments remain overly focused on formal and administrative compliance based on documentation, which does not fully reflect the actual quality and added value of internal oversight.

These findings are highly significant for institutional analysis because they indicate that the weaknesses of APIP are structural in nature. In other words, the primary issue facing APIP is not merely limited digital tools but rather a gap between formal capability status and the substantive capacity of oversight institutions. Performance reports from regional BPKP offices also show that APIP units that have not yet achieved Level 3 capability generally exhibit weaknesses in human resource development, risk-based audit planning, performance auditing, assurance related to governance risk and control systems, and the provision of consulting services. This means that before discussions concerning artificial intelligence and continuous auditing can be meaningfully advanced, many APIP units still face basic challenges related to methodological capability, audit planning, and professional competence. Within this context, the introduction of artificial intelligence could risk becoming merely an additional technological layer placed upon an institutional foundation that remains unstable.

Despite these challenges, the direction of APIP development toward digital oversight has begun to emerge. The strategic plan of the BPKP Center for Supervisory Information Systems for the period 2025 to 2029 explicitly includes the adoption of artificial intelligence and robotic process automation, the strengthening of cyber security, the development of data warehouses and data lake house architectures, the creation of data driven platforms, and the integration and interoperability of government data through service integration systems. The document also openly acknowledges that the digital capability of BPKP human resources still requires significant improvement in terms of knowledge, technical skills, digital literacy, and the ability to adapt to technological change. In early 2026, BPKP also

strengthened training capacity through the development of a learning center at the supervisory training institution and through leadership training programs for APIP officials that explicitly emphasize the use of digitalization and data analytics in oversight activities. These developments indicate that APIP has not yet entered a mature phase of artificial intelligence implementation but has begun to build the institutional prerequisites necessary for such transformation.

When compared directly, BPK appears to be more prepared to function as the central orchestrator of artificial intelligence-enabled continuous auditing, whereas APIP in its current condition is more realistically positioned as a first-line oversight network that still requires substantial capacity strengthening. BPK already possesses analytical infrastructure, a data strategy, plans for artificial intelligence integration, and an emerging organizational culture that increasingly internalizes digital auditing practices. In contrast, APIP continues to face fragmented institutional capacity, variations in quality among inspectorates, strong reliance on administrative compliance, and limited use of oversight results in strategic decision-making. Therefore, the transition toward artificial intelligence-enabled continuous auditing cannot proceed under the assumption that BPK and APIP operate at the same level of institutional readiness.

From this analysis, an important institutional weakness that emerges as a central finding is the presence of asymmetry between the envisioned design of digital financial oversight and the actual capacity of oversight institutions to operationalize such systems. Within BPK, this asymmetry manifests in the continued reliance on a relatively small digital unit when compared with the extensive national audit mandate, as well as the uneven distribution of auditor competencies required for increasingly analytics-centered audit models. Within APIP, the asymmetry is even more pronounced because formal capability indicators do not necessarily correspond with substantive oversight effectiveness, while digital transformation remains largely focused on the development of infrastructure, data interoperability, and training initiatives.

These findings reinforce the broader argument that weaknesses in the oversight of state finances in Indonesia are not solely related to normative or regulatory gaps but also involve institutional readiness, the distribution of professional competencies, data governance structures, and the ability of oversight institutions to transform technological tools into consistent, reliable, and impactful oversight processes.

From an academic perspective, the most appropriate conclusion is that both BPK and APIP demonstrate a general direction toward data-driven oversight, yet their starting points differ significantly. BPK is currently in a consolidation phase moving toward artificial intelligence-enabled continuous auditing, whereas APIP remains in an earlier stage focused on strengthening foundational institutional capacity in order to participate effectively within that oversight ecosystem. Consequently, legal and institutional policy reconstruction should not merely authorize the use of artificial intelligence in public oversight but must also reorganize institutional design, human resource competencies, data interoperability systems, the division of roles between external and internal oversight bodies, and mechanisms of human oversight so that artificial intelligence-enabled continuous auditing evolves beyond a technological ambition into a fully operational institutional capability.

CONCLUSION

The findings of this study indicate that the public financial oversight system in Indonesia is not yet fully prepared to respond to the ongoing digital transformation characterized by the use of artificial intelligence and continuous auditing. The primary weakness lies in the absence of an explicit legal framework governing the use of artificial intelligence in the processes of auditing, financial analysis, and public financial oversight. Existing regulations continue to reflect a conventional auditing paradigm that emphasizes periodic examination, manual verification, and administrative accountability mechanisms. Consequently, legal uncertainty arises regarding the status of automated analytical results, the allocation of responsibility for algorithmic errors, the protection of public financial data, and the standards of transparency required in digital oversight practices.

From an institutional perspective, the Audit Board of Indonesia demonstrates a relatively higher level of readiness compared with the Government Internal Supervisory Apparatus. The Audit Board has developed digital infrastructure, analytical platforms, and strategic policies that support the transition toward data driven auditing. Nevertheless, this readiness remains transitional because digital capabilities are not yet evenly distributed across all audit functions within the institution. In contrast, the Government Internal Supervisory Apparatus continues to face more fundamental challenges, including disparities in institutional capacity across oversight units, limited substantive effectiveness of oversight activities, and the insufficient use of audit results in strategic policy decision making. These conditions indicate that the transformation of public financial oversight cannot rely solely on technological innovation but must also involve comprehensive institutional strengthening.

Based on these findings, policy reform should focus on establishing an explicit legal foundation that recognizes artificial intelligence as an official supporting instrument in the public financial oversight system while maintaining the authority of human auditors as the final decision makers. In addition, regulatory frameworks should address algorithmic transparency, data governance, institutional interoperability, and the protection of public financial information. Institutional reform should also prioritize the development of auditor competencies in digital auditing and data analytics, the integration of national financial data systems, and the clarification of roles between the Audit Board of Indonesia and the Government Internal Supervisory Apparatus. These reforms will support the development of a public financial oversight system that is adaptive, accountable, transparent, and consistent with the principles of democratic rule of law.

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AUTHOR CONTRIBUTIONS

Iskandar Zulkarnain: Conceptualization, methodology, legal analysis, investigation, writing of the original draft, and supervision. Fauzi Syam: Conceptualization, methodology, validation, legal interpretation, and review and editing of the manuscript. A Zarkasi: Investigation, statutory analysis, literature review, validation, and review and editing of the manuscript. Adithiya Diar: Literature review, comparative analysis, data and institutional information collection, visualization, and review and editing of the manuscript. All authors contributed to the discussion of the findings, critically reviewed the manuscript, approved the final version, and agreed to be accountable for the integrity and accuracy of the work.

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CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this article.

DATA AVAILABILITY

The materials and sources supporting the findings of this study are derived from publicly available legal documents, statutory regulations, scholarly publications, books, and institutional reports cited in the manuscript. No primary dataset was generated or analyzed in this study. All relevant sources are identified in the reference section of the article.

AI USE DECLARATION

The authors declare that generative artificial intelligence tools were used solely to assist with language refinement, grammatical correction, and improvement of readability during the preparation of this manuscript. All scholarly arguments, legal analyses, interpretations, conclusions, and references were developed, verified, and approved by the authors. The authors take full responsibility for the accuracy, integrity, and originality of the final manuscript.

ETHICAL CLEARANCE

Ethical clearance was not required for this study because the research employed a normative juridical approach and did not involve human participants, personal data collection, clinical intervention, or animal experimentation. The study relied exclusively on publicly available legal materials, statutory regulations, scholarly publications, and institutional reports.

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