

## Audit and Assurance Program for AI-Based Technologies

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**Abstract :** The rapid development of artificial intelligence (AI) has transformed various industries, enabling faster and more accurate decision-making processes. However, with these advancements come increased risks, including data privacy issues, systemic biases, and challenges related to transparency and accountability. As AI technologies become more integrated into business processes, there is a growing need for comprehensive auditing and assurance frameworks to manage these risks and ensure ethical use. This paper provides a literature review on AI auditing and assurance programs, highlighting the importance of adapting traditional audit methodologies to the complexities of AI-driven systems. **Objective:** The objective of this review is to explore current AI audit practices and their role in mitigating risks, ensuring accountability, and fostering trust in AI systems. The study aims to provide a structured framework for developing audit programs tailored to AI technologies while also investigating how AI impacts governance, risk management, and regulatory compliance in various sectors. **Methodology:** This research synthesizes findings from academic publications and industry reports from 2014 to 2024, focusing on the intersection of AI technologies and IT assurance practices. The study employs a qualitative review of existing audit methodologies and frameworks, particularly the COBIT 2019 framework, to understand how audit processes can be aligned with AI governance and compliance standards. The review also considers real-time auditing as an emerging necessity for influencing AI system design during early development stages. **Outcomes:** Preliminary findings indicate that while AI auditing is still in its infancy, it is rapidly gaining traction as both a risk management strategy and a potential driver of business innovation. Auditors are increasingly being called upon to develop controls that address the ethical and operational risks posed by AI systems. The study highlights the need for continuous monitoring and adaptable audit techniques to handle the dynamic nature of AI technologies. **Future Directions:** Future research will explore the development of AI-specific audit tools and real-time auditing capabilities that can keep pace with evolving technologies. There is also a need for cross-industry collaboration to establish universal standards for AI auditing, particularly in high-risk sectors like healthcare and finance. Further work will involve engaging with industry practitioners and policymakers to refine the proposed governance and audit frameworks. **Funding/Support Acknowledgements:** This research is supported by the Information Systems Assurance Management Program at Concordia University of Edmonton.

**Keywords :** AI auditing, assurance, risk management, governance, COBIT 2019, transparency, accountability, machine learning, compliance

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