ABSTRACT

The rapid advancement of Industry 4.0 has caused traditional audit methods, which rely on retrospective sampling of historical data, to lose relevance amid the surge of big data in terms of volume, velocity, and complexity. This study aims to examine the impact of the convergence of Artificial Intelligence (AI) and Blockchain technology on systemic audit quality and auditors' professional skepticism. This study employs the Systematic Literature Review (SLR) method combined with bibliometric analysis, following the PRISMA 2020 protocol in the article screening process from the Scopus database (2020–2026), resulting in 22 final articles used to address three research questions. Descriptive analysis shows that most studies employ quantitative and model development/simulation approaches (36.36% and 27.27% respectively), with a sharp publication surge in 2025 (45.45%), and that Machine Learning-based analytics such as XGBoost, Random Forest, and Neural Networks dominate as the primary analytical method (45.45%). The synthesis results show that the synergy between blockchain and AI gives rise to the Triple-Entry Accounting paradigm, in which blockchain functions as a trust infrastructure layer that provides immutable, cryptographically verified data, while AI serves as a transparent analytic layer capable of processing entire data populations in real time, thereby transforming auditing into continuous, population-based auditing. In terms of fraud detection and audit quality, ensemble algorithms consistently outperform traditional rule-based systems in accuracy and false-positive reduction, though their contribution to systemic audit quality depends heavily on the implementation of Explainable AI (XAI) for regulatory transparency, adaptive thresholding to prevent exception overload, and the strength of audit committee oversight. Regarding auditor behavior, the findings reveal a cognitive paradox: AI can strengthen professional skepticism by providing full-population evidence, yet simultaneously risks inducing automation bias that weakens auditors' questioning mind, an effect moderated by auditors' IT competence and organizational learning culture. To address this, the study proposes a Socio-Technical Governance Framework that integrates technical interventions (XAI, smart contracts, adaptive thresholding) with social interventions (algorithmic literacy training, procedural autonomy, and independent audit committee oversight) to preserve human-in-the-loop control. This study contributes theoretically by bridging the gap between technology research and behavioral accounting, and practically by providing guidance for Public Accounting Firms (KAP) and regulators in navigating the digital audit ecosystem.

Keywords: Artificial Intelligence, Blockchain, Audit Quality, Professional Skepticism, Triple-Entry Accounting, Systematic Literature Review, Explainable AI.