

ABSTRACT

This research aims to explore the critical role of big data analytics, machine learning, and artificial intelligence in detecting financial fraud within financial institutions. The research based on published research articles.

Utilizing a Systematic Literature Review with the PRISMA protocol, an analysis was conducted on 20 articles published between 2020 and 2024, sourced from the Scopus database. The findings were categorized into three areas: the role of big data analytics in financial fraud detection, the role of machine learning in financial fraud detection, and the role of artificial intelligence in financial fraud detection.

The results indicated that financial fraud detection systems employing big data analytics (BDA) demonstrated a significant average strength (76.67%), particularly in detection effectiveness, accuracy, and data processing speed. The implementation of artificial intelligence (AI) in detection also showed significant strength scores. In contrast to BDA and AI, some machine learning algorithms exhibited substantial weaknesses. Addressing these weaknesses in financial fraud detection at financial institutions, future research on the integration of machine learning algorithms is deemed crucial.

Keywords: artificial intelligence, big data analytics, machine learning, financial fraud, SLR