

ABSTRACT

This research aims to explore the application of machine learning and deep learning in enhancing credit card fraud detection and identifying gaps in knowledge that could serve as a foundation for future research. The study utilized the systematic literature review (SLR) method to analyze various articles published in Scopus-indexed journals between 2020 and 2024. Article selection followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, resulting in the inclusion of twenty top-tier articles based on predefined keywords. The findings indicate that machine learning and deep learning significantly improve the accuracy and efficiency of fraud detection by effectively identifying complex fraud patterns that are challenging to detect using traditional methods, thereby reducing false alarms. Several algorithms such as Random Forest, XGBoost, Convolutional Neural Network (CNN), and Long Short-Term Memory (LSTM) demonstrated high performance in classifying transactions as legitimate or fraudulent. The integration of these algorithms also has the potential to enhance overall system performance. The implementation of machine learning and deep learning not only strengthens the security of current fraud detection systems but also prepares financial institutions to tackle future challenges. Further adaptation to increasingly complex fraud patterns is crucial for enhancing financial transaction security in the digital era. Therefore, the development of more innovative and adaptive algorithm combinations is necessary to meet the growing security demands in the modern financial world.

Keywords: machine learning, deep learning, credit card fraud detection, financial industry, SLR

