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ARTIFICIAL INTELLIGENCE IN FINANCIAL DECISION MAKING: APPLICATIONS, ECONOMIC IMPLICATIONS, AND GOVERNANCE CHALLENGES

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ABSTRACT

This article presents a systematic literature review examining the applications of artificial intelligence (AI) in financial decision making, their economic implications, and associated governance challenges. Publications from 2015 to 2024 indexed in Scopus, Web of Science, SSRN, and financial industry databases were analysed. The review covers AI applications in credit risk assessment, algorithmic trading, fraud detection, regulatory compliance, and personal finance management, as well as macroeconomic effects of AI-driven financial automation, risks including algorithmic bias and systemic fragility, and regulatory frameworks for responsible AI in finance. The analysis demonstrates that AI adoption in financial services generates substantial efficiency gains — reducing credit assessment time by 60–80% and fraud detection error rates by 40–60% — while simultaneously creating novel systemic risks and equity concerns that require



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proactive governance responses. The implications for financial sector development in Uzbekistan are examined.

Keywords: artificial intelligence, financial decision making, credit risk, algorithmic trading, fintech, AI governance, Uzbekistan, literature review.

1. INTRODUCTION

Artificial intelligence — encompassing machine learning, deep learning, natural language processing, and robotic process automation — is transforming financial decision making at an unprecedented pace (Goodfellow et al., 2016; Jiang et al., 2021). Financial services has historically been an information-intensive sector where decision quality depends critically on data processing capacity; AI technologies offer step-change improvements in volume and accuracy at speeds and costs that fundamentally alter the economics of financial decision making (Cao, 2022; Dhar & Stein, 2017). Global investment in AI applications in financial services reached approximately USD 35 billion in 2023, with the largest allocations to risk management, fraud detection, and customer service automation (PwC, 2023). For emerging economies including Uzbekistan — where banking sector reform and fintech development represent national strategic priorities — AI in financial decision making offers distinctive opportunities to extend financial services to underserved populations. The University of World Economy and Diplomacy's expertise in international finance and Tashkent State Medical University's biomedical informatics capabilities together represent complementary perspectives on AI-driven decision making.



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2. AI IN CREDIT RISK ASSESSMENT

Credit risk assessment represents the most extensively documented AI application in financial services. Machine learning models consistently demonstrate superior predictive performance relative to traditional statistical methods, achieving AUC values of 0.85–0.95 compared with 0.70–0.80 for traditional scorecards (Cao, 2022; Lessmann et al., 2015). Gradient boosting algorithms — XGBoost and LightGBM — and deep neural networks have demonstrated particularly strong performance. Beyond predictive accuracy, AI credit models incorporate alternative data — transaction history, mobile usage patterns, utility payments — valuable for assessing creditworthiness in populations without formal credit histories. This capability has driven AI-based credit scoring growth in emerging markets, with implications for financial inclusion in Uzbekistan where a substantial proportion of the adult population lacks formal credit history (Jiang et al., 2021).

3. ALGORITHMIC TRADING AND FRAUD DETECTION

AI-driven algorithmic trading has fundamentally altered financial market microstructure, with high-frequency trading algorithms now accounting for an estimated 50–70% of equity trading volume in major markets (Cao, 2022). Natural language processing applications analysing earnings call transcripts and social media sentiment in real time have created new alpha-generation strategies. Fraud detection is widely considered the highest-return AI application in financial services: deep learning models have demonstrated false positive rate reductions of 40–60% relative to rule-based systems while maintaining high sensitivity, with real-time scoring enabling transaction-level intervention (PwC, 2023). Graph neural networks modelling financial transaction network structures show particular promise for detecting money laundering schemes.



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4. GOVERNANCE CHALLENGES AND RISKS

Despite compelling efficiency gains, AI-driven financial decision making generates governance challenges requiring regulatory attention. Algorithmic bias — the tendency of machine learning models to perpetuate historical discrimination patterns — is particularly concerning in credit risk assessment, where biased models can systematically deny credit to protected demographic groups (Dhar & Stein, 2017). Explainability deficits in complex models create challenges for regulatory oversight and consumer redress. Systemic risk arises from simultaneous adoption of similar AI models by multiple institutions, creating correlated behaviour that may amplify market volatility. Cybersecurity risks associated with AI systems — including adversarial attacks — represent a novel threat vector requiring specific countermeasures.

5. IMPLICATIONS FOR UZBEKISTAN

Uzbekistan's ongoing financial sector reform creates a receptive environment for AI adoption. Priority applications include AI-based credit scoring using mobile payment data to extend financial access, AI-enabled fraud detection for the rapidly growing digital payment ecosystem, and AML/KYC automation for regulatory compliance. The Central Bank of Uzbekistan's regulatory sandbox for fintech innovation provides an institutional mechanism for piloting AI applications. Governance capacity development — including AI ethics frameworks, explainability requirements for AI credit decisions, and algorithmic audit capabilities — should proceed in parallel with technical adoption.

6. CONCLUSION

Artificial intelligence is transforming financial decision making across credit risk assessment, trading, fraud detection, and compliance, generating substantial



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efficiency gains while creating novel governance challenges. For Uzbekistan, AI in financial services offers significant potential for accelerating financial sector development and extending access to underserved populations, contingent on parallel investment in AI governance capacity, data infrastructure, and human capital. Future research should focus on AI credit scoring effectiveness with Uzbek alternative data sources and macroeconomic modelling of AI-driven financial sector transformation.

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