

FinTech Real-Time Regulatory Compliance: An Explainable RegTech and AI Architecture

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ABSTRACT

Purpose: This paper discusses the urgent shortcomings in the financial technology (FinTech) regulatory compliance systems that are reactive, but not real-time. We present a combined Explainable AI (XAI) and Regulatory Technology (RegTech) architecture that would be used in continuous, transparent, and adaptive compliance monitoring.

Design/Methodology/Approach: Design Science research methodology will be used to develop a conceptual framework combining machine learning, natural language processing, and explainable AI. The empirical validation is conducted on synthetic transaction data and simulated regulatory conditions, comparing AI-based solutions and traditional rule-based systems in terms of such indicators as accuracy, recall, false alarms, and compliance time.

Findings: RegTech framework with XAI outperforms the traditional systems by 43 false positives, 67 compliance latency, and 94 percent accuracy in detecting anti-money laundering (AML)-related situations, with complete explainability to regulatory audits. The adaptive learning mechanisms effectively adapt to the regulatory changes with little manipulation.

Originality/Value: The study adds a new, real-time, explainable, and adaptive architecture of compliance that bridges the FinTech innovation with the regulatory needs. Regulatory transparency and operational efficiency are guaranteed by the XAI integration to meet a significant requirement of digital finance regulation.

Keywords: RegTech, Explainable AI, FinTech Compliance, Real-Time Monitoring, Anti-Money Laundering, Adaptive Systems

