Securing and Optimizing Blockchain Performance in Financial Services Using Artificial Intelligence and Deep Learning

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1. Round 1

1.1 Reviewer 1

Reviewer:

The introduction states, "Blockchain Technology has risen in popularity due to its benefits such as decentralization, transparency, and immutability..." but does not sufficiently contextualize its historical development. Consider providing a clearer transition from Bitcoin's creation to broader blockchain applications.

The paragraph discussing AI in financial services lacks citations for claims such as "AI has the ability to forecast future scenarios by analyzing historical behaviors." Including supporting references would strengthen the argument.

The phrase "Smart contracts aim to reduce the risk and cost of businesses" is vague. Consider adding more technical depth, such as how smart contracts automate verification and execution without intermediaries.

The section on AI's role in fraud detection lacks direct empirical evidence. Including recent studies or statistics on AI-driven fraud detection accuracy would improve credibility.

The section discussing AI and blockchain convergence states that AI enhances security and efficiency but does not provide specific use cases. Adding real-world applications (e.g., KYC verification, anomaly detection) would strengthen the discussion.

The phrase "Blockchain's decentralized and transparent ledger allows financial services to meet legal requirements" lacks discussion on potential regulatory challenges, such as data privacy laws and compliance issues.

Author revised the manuscript and uploaded the updated document.

1.2   Reviewer 2

Reviewer:

The discussion on blockchain generations is informative but overly descriptive. The long paragraph explaining blockchain generations (first to fifth) would be clearer if it were broken into distinct sentences per generation, with a stronger analytical approach rather than a historical recount.

The "Training" row in Table 1 includes "Supervision" for deep learning, which may be misleading since deep learning can be either supervised or unsupervised. Clarify whether the table refers only to supervised deep learning models.

The sentence "Blockchain stores information in a way that makes it very difficult for hackers to change, manipulate, or delete data" needs elaboration on the cryptographic mechanisms, such as hash functions or consensus algorithms, that enforce security.

The reference to "Figure (1) shows the evolution of blockchain technology..." is useful but should explicitly mention key milestones depicted in the figure for readers who may not view the image.

The explanation of Proof of Work (PoW) and Proof of Stake (PoS) lacks a comparative discussion. It would be beneficial to include a table or brief analysis of the trade-offs between these mechanisms in financial applications.

Figure (2) is referenced without clearly explaining how the depicted method enhances blockchain security. Consider adding a discussion clarifying its relevance to AI-driven security improvements.

While Table 2 outlines the benefits of blockchain for AI, the term "Convergence Importance" lacks clarity. Consider specifying how each factor, such as "Decentralized intelligence," directly benefits financial services.

The application layer discussion briefly mentions financial transactions and identity verification. Expanding on how AI-powered fraud detection and transaction monitoring integrate into this layer would be beneficial.

Author revised the manuscript and uploaded the updated document.

2.   Revised

Editor's decision after revisions: Accepted.

Editor in Chief's decision: Accepted.