

Review of: "A Proposed Secure Wearable Device Payment System Based on Blockchain Technology"

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Potential competing interests: No potential competing interests to declare.

Strengths:

1. **Relevance of Topic:** The focus on wearable devices in financial transactions using blockchain technology is highly relevant given the growing interest in secure, decentralized payment systems in fintech and banking.
2. **Clear Problem Statement:** The paper highlights critical security issues with IoT-based wearable payment systems and presents blockchain as a potential solution. This provides a strong motivation for the research.
3. **Well-Structured:** The paper is organized with distinct sections, including a clear conceptual framework that outlines the system's architecture and functionality.
4. **Literature Review:** The literature review is extensive, covering prior research on wearable devices, IoT, and blockchain, which establishes the foundation for the proposed solution.
5. **Innovative Approach:** The integration of blockchain with wearable device payment systems for enhanced security is a novel application in the IoT and fintech space.

Weaknesses:

Over-reliance on Literature: While the literature review is thorough, the paper could benefit from a more focused discussion on how the proposed system advances the field beyond what is already established. The paper heavily cites past studies but could better highlight its own contribution in terms of practical improvements or innovations.

Lack of Practical Implementation: The proposed system remains largely theoretical. While the paper discusses a conceptual framework, there is no working prototype or real-world data to validate the claims. Future versions could greatly benefit from including empirical testing or simulation results.

Technical Depth: The explanation of blockchain technology is somewhat generic and could be expanded with more technical depth. For instance, a detailed analysis of how blockchain addresses specific IoT vulnerabilities (such as jamming, DDoS, or data integrity issues) in the context of wearable payments would strengthen the argument.

Scalability Concerns: The paper mentions the scalability challenges of IoT but does not sufficiently address how the proposed blockchain system will handle these challenges, especially in terms of processing overhead and transaction speed when scaled up.

Security Mechanisms: While blockchain's security properties are mentioned, the paper could elaborate on how the blockchain will manage encryption keys and ensure user anonymity without performance degradation.

Recommendations for Improvement:

Empirical Validation: To strengthen the impact of the work, a prototype or case study demonstrating the proposed system's effectiveness would be valuable. Testing the solution on a real wearable payment device and providing performance metrics (e.g., latency, throughput, security breach handling) would substantiate the theoretical claims.

Clearer Contributions: The contributions of the paper should be made clearer. In addition to addressing security flaws, how does this system improve usability, cost efficiency, or adoption in the real world? Highlighting specific advantages over existing solutions would clarify the novelty of the approach.

Address Scalability and Efficiency: Future versions should provide a more detailed discussion on how the system can scale in real-world applications without compromising efficiency and user experience. The paper could also consider the energy consumption of wearable devices running blockchain processes.

Explore Alternatives: While blockchain is presented as a comprehensive solution, the paper could briefly explore alternative technologies (e.g., advanced encryption methods or hybrid systems) that may complement blockchain for enhanced efficiency.