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### **Blockchain's Impact on Securing Online Transactions**

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**Claudia Moniaga\***

**Department of Computer Science,**

**Bina Nusantara University,**

**Jakarta, Indonesia**

***E-mail:*** moniagaclaudia@gmail.com

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#### **Description**

The security of online transactions has become a difficult concern for both businesses and consumers. With the increasing volume of transactions occurring online, the need for robust security measures has never been more pressing. Blockchain technology, initially developed to support cryptocurrencies like Bitcoin, has emerged as a powerful tool in enhancing the security of online transactions.

#### **Understanding blockchain technology**

Blockchain is a decentralized, distributed ledger technology that records transactions across multiple computers in such a way that the registered transactions cannot be altered retroactively. Each transaction is added to a "block," and these blocks are linked together in a "chain," hence the name blockchain. The decentralized nature of

blockchain ensures that no single entity has control over the entire chain, making it inherently secure and resistant to tampering.

The transparency and immutability of blockchain records are what set it apart from traditional centralized systems. Each participant in the network has access to the entire ledger and any attempt to alter a transaction would require the consensus of the majority of participants. This makes fraudulent activities extremely difficult, if not impossible.

Unlike traditional banking systems where transactions are processed by a central authority, blockchain operates on a peer-to-peer network. This decentralization eliminates single points of failure and reduces the risk of hacking. Every transaction on a blockchain is recorded and visible to all participants in the network. Once a transaction is added to the blockchain, it cannot be altered or deleted, ensuring the integrity of the data.

Transactions on a blockchain are secured using advanced cryptographic techniques. While the transactions are transparent, the identities of the individuals involved are encrypted, providing a high level of privacy and security. Blockchain uses consensus algorithms, such as Proof of Work (PoW) or Proof of Stake (PoS), to validate transactions. This ensures that all participants in the network agree on the validity of transactions before they are added to the ledger, preventing fraudulent activities.

### **Blockchain's impact on online transaction security**

The application of blockchain technology in online transactions offers several advantages over traditional systems. One of the most significant impacts is the reduction of concealment. Since blockchain records are immutable and transparent, it becomes nearly impossible for malicious actors to alter transaction data or create false records.

Additionally, blockchain can help in reducing the cost of securing online transactions. Traditional banking systems require multiple layers of security, involving various intermediaries that add to the overall cost. Blockchain's decentralized nature eliminates the need for these intermediaries, reducing both costs and potential vulnerabilities.

Another critical impact of blockchain on online transactions is in cross-border payments. Traditional cross-border transactions are often slow and expensive, involving multiple banks and intermediaries. Blockchain can streamline this process by providing a secure, transparent, and fast method of transferring funds across borders without the need for intermediaries.

### **Challenges and considerations**

While blockchain offers significant advantages in enhancing online transaction security, it is not without challenges. One of the primary concerns is scalability. The process of validating and recording transactions on a blockchain can be slow and resource-intensive, particularly as the number of transactions increases.

Moreover, the integration of blockchain technology into existing systems can be complex and costly. Businesses may need to overhaul their infrastructure and retrain staff to effectively use blockchain, which could be a barrier to widespread adoption.

Finally, regulatory issues surrounding blockchain remain a concern. As blockchain operates on a decentralized network, it can be difficult to regulate, leading to potential legal challenges. Governments and regulatory bodies are still grappling with how to effectively oversee blockchain transactions, which could impact its adoption in certain sectors.

Blockchain technology holds immense potential in enhancing the security of online transactions. Its decentralized, transparent and immutable nature provides a robust framework for preventing fraud, reducing costs and streamlining cross-border payments. However, challenges such as scalability, integration and regulatory concerns need to be addressed for blockchain to fully realize its potential in the digital economy. As the technology continues to evolve, it is likely that blockchain will play an increasingly vital role in securing online transactions and shaping the future of digital commerce.