

## **Article 3: The Role of Blockchain in Modern Financial Systems**

Blockchain is a decentralized ledger technology that records transactions across multiple computers securely and transparently. Initially popularized by cryptocurrencies like Bitcoin, blockchain is revolutionizing financial systems.

### **How Blockchain Works**

Transactions are grouped into blocks, cryptographically linked to form a chain. The decentralized nature prevents data tampering and promotes transparency.

### **Financial Applications**

- **Cross-border Payments:** Faster and cheaper international transfers.
- **Smart Contracts:** Self-executing contracts with predefined conditions.
- **Asset Tokenization:** Representing real-world assets digitally.
- **Fraud Reduction:** Immutable records reduce fraud risk.

### **Challenges**

Blockchain networks face scalability issues, energy consumption concerns (especially proof-of-work systems), and regulatory uncertainty.

### **Future Outlook**

Integrations with AI and IoT, along with advances in consensus mechanisms, are expected to expand blockchain's role beyond finance.