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Distributed Ledger Technology (Blockchain) in the Financial Sector of Developing Economies: The Case of Afghanistan

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Abstract

This article explores the transformative potential of Blockchain and distributed ledger technologies (DLT) in Afghanistan's financial sector, amid a backdrop of systemic instability, infrastructural gaps, and geopolitical constraints. Drawing on an extensive review of digital banking development, expert interviews, and comparative global experiences, the study critically assesses Afghanistan's readiness to adopt Blockchain as a tool for financial inclusion, transparency, and institutional resilience. Although the formal banking system has largely regressed post-2021, grassroots crypto adoption reflects a latent readiness for decentralized solutions. The paper argues for a strategic, phased approach to Blockchain integration through regulatory reform, stakeholder engagement, and pilot implementations, particularly in land registration and remittance processing.

Keywords: Blockchain, Distributed Ledger Technology, Afghanistan, Financial Inclusion, Cryptocurrency, Developing Economies

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Introduction

Blockchain, initially synonymous with Bitcoin, has since evolved into a foundational technology for various financial and governance applications. As a form of distributed ledger technology (DLT), it enables secure, immutable, and transparent data storage and exchange, promising major efficiencies in systems traditionally reliant on centralized oversight. While high-income countries often lead Blockchain experimentation, its benefits may be even more profound in developing economies where infrastructural deficits and governance issues have left large populations unbanked or underbanked.

Afghanistan, a post-conflict nation with a fragile institutional environment and rapid but uneven technological growth, presents a unique test case. This article investigates how Blockchain can contribute to reforming Afghanistan's financial ecosystem; offering not only practical tools for secure transactions and record-keeping but also broader systemic value in terms of trust-building, decentralization, and citizen empowerment.

Literature Review

The discourse surrounding Blockchain has expanded beyond financial speculation to encompass applications across multiple domains, including real identity ownership and control, arts and music profitability, land titling, supply chains, and humanitarian aid. Tapscott and Tapscott (2016) argue that Blockchain will fundamentally reshape value exchange by disintermediating middlemen, thereby empowering individuals across global contexts. Similarly, the United Nations Development Programme (2021) emphasizes Blockchain’s potential to improve transparency in aid distribution, especially in fragile states.

UNCTAD (2024) aligns Blockchain with the United Nations Sustainable Development Goals (SDGs), suggesting it can democratize access to economic resources, improve property rights, and modernize financial inclusion strategies, particularly through microfinance initiatives. Blockchain is increasingly being viewed not merely as a technological novelty but as an enabler of inclusive growth.

From a technical and operational perspective, Cocco et al. (2017) highlight Blockchain's comparative advantage in developing countries; offering efficiency and cost reductions by circumventing the need for extensive hardware infrastructure typical of legacy banking systems. Their assessment contrasts sharply with traditional Automated Teller Machine (ATM)-heavy models, advocating for a leaner, digital-first approach.

Sarjiyus (2021), examining the Nigerian banking sector, finds that Blockchain integration into e-banking platforms enhances security and transparency. Meanwhile Nigeria’s experience highlights that e-banking ecosystem will be vulnerable in absence of proper infrastructure and it will surge the chance of misconducts systemic risk such as hacking and cybercrimes, but Blockchain will help to mitigate these risks.

In global contexts, central banks have also begun experimenting Blockchain-based Central Bank Digital Currencies (CBDCs). The Bahamas’ Sand Dollar and China’s e-CNY illustrate national attempts to modernize financial systems using DLT and the European Central Bank is already evaluating similar initiatives, according to Sisodia (2024).

However, most of the existing research centers on high-income or upper-middle-income economies. There is a significant gap in literature analyzing Blockchain in fragile and conflict-affected settings like Afghanistan, where cryptocurrencies are often confused with the broader infrastructure and utility of Blockchain. The current article addresses this gap.

Historical Context: The Digitalization of Banking in Afghanistan (2002–2022)

Following the fall of the Taliban regime in 2001, Afghanistan underwent rapid technological modernization, particularly in telecommunications and financial services. The introduction of private banks and wireless internet connectivity as a first move in the history of the country marked a digital leap from 19th-century infrastructure to contemporary services. It was definitely ensured that digital governance will rapidly improve and digital national identity card (e-Tazkira) holders would increase to five million by September 2021 which would gradually lead to planned usage of digital currency in the following year nationwide, insists Ghani (2025).

Afghanistan banking and finance sector also had a parallel growth in this decade. The constitutional amendment allowed private commercial banks to operate for the first time. The number of such banks increased to 17 in 2009 with 359 ATMs in 2019, FRED (2025) notes.

Mobile banking also witnessed remarkable growth. In 2008, Afghanistan became the second country after Kenya to implement mobile money platforms; i.e., M-Paisa-the so-called digital wallet, promoting financial inclusion in rural and remote areas, for various wireless fund transfers, including salary payment in more than 320 cities and towns of the country via 500 thousand transactions, Roshan Telecommunication (2025) reports.

After all these key advancements, progress stalled following the Taliban's return to power in August 2021. Banking services collapsed, deposits were frozen, and trust in financial institutions plummeted.

Bitcoin as a Workaround

The 2021 collapse of formal banking mechanisms prompted increased reliance on Bitcoin and other cryptocurrencies. With the freezing of over $9 billion of the Afghan central bank reserves abroad, the inability of citizens to access funds catalyzed the adoption of decentralized digital currencies.

Cryptocurrencies enabled Afghans; particularly the youth, to receive remittances and conduct transactions outside traditional banking and financial systems and crypto ecosystem adoption operated beyond expectation. This country was ranked 20th in crypto adoption among 154 countries of the world, starting from almost scratch in less than one year time, highlights CCI (2022). This grassroots adaptation demonstrates both need and technical feasibility.

Meanwhile, World Bank data show (2017) that only 15% of adults in Afghanistan had access to formal financial services, compared to 70% in South Asia.

Potential Use Cases for Blockchain in Afghanistan

Land Registration and Ownership

Land title fraud and duplication have long plagued Afghanistan's financial and judicial systems. Blockchain could enable immutable records for real estate, reducing fraud, boosting bank lending, and improving public trust in financial documents. Land usurpation is a lasting challenge and a rolling snow ball in the country traced to 1978 due to major factors including lack of proper land administration system, AAN (2025).

Though a dedicated government body (Arazi) was established in 2010 for land management, but it was soon dissolved by a presidential decree due to lack of capacity and other complexities, World Bank (2025) confirms, but all this was still followed by some other initiatives such hiring an investigation team "the Commission" as well as promising creating a broader structure; Ministry of Land and Recovery of Usurped Property. The above assigned team claims that more than 49 million acers state owned land has been identified and over 37 thousand acers land is reclaimed in one month, Tolo News (2025).

Yet, all these endeavors are being conducted probably through a traditional paper-based traditional administrative and documentation or vulnerable computer system. Benefiting thus, Blockchain to verify titles and streamline operations will increase efficiency, transparency as well as security of the whole ecosystem.

Hawala Regulation

Despite government attempts since 2018 to regulate hawala networks as well as the relevant pool of unregistered money brokers, transparency remains low. Blockchain-based tracking could address illicit financial flows and increase accountability in this informal remittance system. Majority of the general public prefers this system of fund transfer than formal remittance channels for its cost effectiveness, speed and accessibility, especially in remote and unbanked areas, Pezhand (2018). Introducing of Blockchain technology will, therefore, not only further strengthen the above three characteristics of this tool, but it will also help the Gross Domestic Product (GDP) growth via mitigating the risk of underground financial activities, ending up with shadow economy.

Agricultural Supply Chains

As a major exporter of dry fruits, nuts, pine nuts in particular and herbs, Afghanistan's agroeconomy suffers from supply chain inefficiencies and lack of confidence and recognition. Blockchain can provide traceability, improve trade logistics, and enhance value chain credibility.

Expert Insights

Interviews with some Afghan banking professionals as well as international experts provided valuable insights into feasibility:
Ahmad Tariq Mansoor (former CEO, Afghanistan Commercial Bank):
Mansoor views Blockchain as promising under sanctions but cautions about trust, awareness, and consumer protection issues. He emphasizes current banks operate with minimal standard

banking services and he argues that most of current Afghan commercial banks resemble hawala networks, rather than banks.
Farhad Sallihi (former Finance Manager, Gazanfar Bank):
Sallihi highlights Blockchain's potential in transparency, efficiency, and financial inclusion, especially in remittances. However, he underscores infrastructure, regulation, and capacity challenges.
Basir Ahmad Minhaj (Entrepreneur):
Minhaj is skeptical about immediate implementation, citing political instability and poor infrastructure. He proposes Blockchain as a long-term goal after incremental progress through automation and e-banking.

Hicham Ziadi (CIO, Attijariwafa Bank):

Ziadi explores expanding the recent success story and experience of his group's project in Marraco and some other Africans countries, to the platform of Afghanistan in transforming the traditional banking and finance models through Blockchain implementation. He reaffirms that it will help Afghanistan to benefit the emerging opportunities and move forward to efficiency and collaboration.

Aymen Soufi (CEO, Sun Contract):

Soufi, the one active in Blockchain innovation in Investment Banking and Private Equity is confident that usage of this technology will have lasting impact in the Afghan banking and finance sector as well as other areas such as solar energy if the state gives enough space to the private sector through a developing goals harmonization.

Discussion

Afghanistan's partial digitalization, youth-led crypto adoption, and familiarity with mobile finance form a compelling case for Blockchain integration. However, such efforts must be embedded within broader strategies encompassing regulatory reform, digital infrastructure investment, and capacity-building.

Institutional and political instability remains the greatest barrier. A functioning legal system, consistent rule of law, and international engagement are critical to the trust necessary for Blockchain-based systems to thrive. Nonetheless, small-scale pilot projects, especially in land titling and regulated remittances can demonstrate impact and gradually build confidence and can yield economic, social, and governance dividends.

Conclusion

Blockchain is no silver bullet, but in Afghanistan's unique context, it offers an avenue toward rebuilding trust, enabling inclusion, and modernizing financial systems in ways that traditional methods have failed to achieve. The post-2021 financial collapse exposed both the fragility of central institutions and the resilience of grassroots innovation. Harnessing Blockchain through a structured, multi-stakeholder approach can help Afghanistan leapfrog

institutional bottlenecks and join a growing global movement toward decentralized finance and governance.

Strategic focus areas should include legal reform, public awareness campaigns, technical training, and pilot implementations in remittance tracking, land registration, and agro-supply chains. International donors and the Afghan diaspora can play a catalytic role. With careful planning and broad participation, Blockchain can be more than a technological fix; it can be a step toward rebuilding a fractured state.

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