Strike Mission: El Salvador, Blockchain Technology, and Sustainable Development

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Abstract

Blockchain technology offers significant opportunities for sustainable development. In many countries, small businesses and citizens do not have access to traditional banking systems and services. In June 2021, El Salvador passed legislation to adopt Bitcoin as legal tender alongside the U.S. dollar. This move helped unleash the power and potential of Bitcoin for everyday use that benefits individuals, businesses, tourism, and the public sector. This policy brief focuses specifically on El Salvador and Strike, a Lightning Network startup helping to build a national Bitcoin-based payments system, a circular economy, and instant cheap decentralized financial transfers worldwide.

Introduction

Emerging blockchain technologies that support cryptocurrencies like Bitcoin and non-fungible tokens (NFTs) present possibilities and challenges. These decentralized innovations enable secure globalized transactions over the Internet that provide significant prospects for individuals, research scientists, corporations, nongovernmental organizations, countries, and multilaterals interested in fostering sustainable development. Blockchain has been implemented in many high-profile areas, such as financial services, insurance, healthcare, value chains, shipping and logistics, intellectual property rights, licensing, and crowdfunding (Zheng et al. 2018).

In the case of Bitcoin, transactions are registered on a synchronized, shared, append-only database (ledger) that is replicated across a distributed network of peers who only add new records to the existing ones after agreement using a consensus protocol (Cunha et al. 2021). Bitcoin is especially useful for remittances where distributed parties need trusted record keeping without involving a central authority but instead share control over a peer-to-peer (P2P) network (Christodoulou et al. 2020; Yaga et al. 2019).

A deeper analysis of these innovations demonstrates how blockchain technology, Strike, and Bitcoin provide a way to protect developing economies from high transaction fees and potential shocks of fiat currency inflation. A shift from a largely cash economy to an inclusive and transparent digital economy where your bank account is an app on your phone represents a significant model for other countries, especially those with limited financial services that rely on remittances for a large portion of their gross domestic product (GDP).

El Salvador

El Salvador is a small tropical developing country that runs along the Pacific Ocean in Central America with a population of about 6.5 million. According to World Population Review, it is the fifth-poorest country in North America with a per capita GDP of $4,131. It has a small elite population that became wealthy through coffee and sugar production. About 40% of the population falls below the poverty line. More than half of the country lives on less than $2 per day. The country is challenged by gangs, violence, and a weak education system.

Roughly 70% of people in El Salvador do not have bank accounts or credit cards. Remittances account for more than 20% of El Salvador's GDP. Traditional banking services can charge 10% or more in fees for international transfers that take days to arrive and must be collected from a physical location.

El Salvador's association with Bitcoin began in 2019 on Bitcoin Beach, in the town of El Zonte, where Mike Peterson, an American financial planner, teamed up with a local resident, Jorge Valenzuela, to transform the small coastal surf town into a circular economy where Bitcoin can be used to pay for almost everything. A couple years later, President Bukele saw potential for a nationwide application so he announced his Bitcoin Law (designed by the Central Bank of El Salvador and passed by the Legislative Assembly) at Bitcoin 2021, a cryptocurrency conference in Miami in June 2021. The law made El Salvador the first country to accept Bitcoin as legal tender and required businesses to accept it as payment.

To facilitate the roll-out, the government provides Salvadorians with a digital wallet and has also launched an ambitious educational program to inform the population about its details. This initiative has raised as much enthusiasm as skepticism (Brigida & Schwartz 2022) and opens the door for other countries to follow suit (Gorjón 2021).

Strike

All Bitcoin transactions require 6 confirmations in the blockchain from miners before they are processed.

Generally speaking, Bitcoin transactions usually take about 10 minutes to complete. However, there can be delays if there is a high volume of transactions taking place at the same time.

The Lightning Network (also referred to as Lightning or LN) is a second layer added to Bitcoin's blockchain that allows off-chain transactions, in other words, transactions between parties not on the blockchain network. Lightning is considered to be an off-chain Layer 2 solution, meaning that transfers are done via a new network of payment channels anchored in Bitcoin's blockchain (Seres et al. 2020).

Strike is the world's leading digital wallet that utilizes the LN to buy and sell Bitcoin, get paid in Bitcoin, tip on the web, send and receive micropayments, remit money, pay merchants for goods and services, and make payments with friends. By utilizing the LN, Strike is able to provide instant free transfers to anywhere in the world, rather than waiting for 10 minutes or more, or using a traditional centralized bank that charges high transaction fees.

Strike founder and CEO Jack Mallers was one of the earliest LN developers. He has also been instrumental in consulting with government officials in El Salvador to help build the country's modern financial infrastructure using Bitcoin technology and the Strike application.

At Bitcoin 2021, Mallers stated the following: "This is the shot heard 'round the world for Bitcoin. What's transformative here is that bitcoin is both the greatest reserve asset ever created and a superior monetary network. Holding bitcoin provides a way to protect developing economies from potential shocks of fiat currency inflation. Additionally, adopting a natively digital currency as legal tender provides El Salvador the most secure, efficient and globally integrated open payments network in the world" (Reynolds 2021).

Challenges and Limitations

There are still significant risks and hurdles to optimizing emerging blockchain technologies, especially in small developing countries like El Salvador. Experts often state that Bitcoin is still in an early adoption phase where the value of the cryptocurrency can fluctuate having significant impacts, especially on those with limited holdings and income. There are also limitations to Internet and smartphone access in developing countries that hinder wider adoption and utility.

Since its launch in El Salvador, the system has had technical glitches and tensions related to the decentralized nature of Bitcoin and the authoritarian government (Vivanco & Pappier 2021). Many believe

that President Bekele's interest in Bitcoin has more to do with his desire to boost his international notoriety rather than helping his citizens. The government claims that nearly everyone in their country has been verified as authentic users of the government's wallet; however, El Salvador's Chamber of Commerce and Industry recently reported that 86% of the businesses contacted said they had never conducted a transaction using Bitcoin.

Despite limited adoption, this initiative is a successful way of enabling instant cheap decentralized transfers that contribute to increased income, development, and circular economic models like Bitcoin Beach.

Policy Recommendations

Blockchain technology represents an intriguing opportunity for countries like El Salvador. More time and research is needed to explore the risks of Strike and Bitcoin, and the specific ways that they can be incorporated into policies and developing countries.

Bitcoin and Strike can be helpful for countries where populations have historically struggled to access financing and banking services to support their livelihoods. This is especially the case for countries that rely on remittances, tourism, public service, and small business for a large portion of their foreign direct investment and GDP.

Blockchain technology is also relevant for Sustainable Development Goal (SDG) 1 (no poverty), SDG 8 (decent work and economic growth), SDG 9 (industry, innovation, and infrastructure), SDG 10 (reduced inequality), SDG 11 (sustainable cities and communities), and SDG 17 (partnerships for the goals).

Further investment and development in information and communication technologies in developing countries such as El Salvador would foster wider adoption of blockchain technologies that could stabilize and boost the value and utility of Bitcoin, the Lightning Network, and Strike, thus contributing to a more sustainable and resilient future.

he COVID-19 pandemic, frontier technologies such as AI showed their usefulness. For example, by adopting AI, Republic of Korea was able to develop much needed diagnostic kits within a month in the. For another example, hospitals in Thailand adopted AI solutions and 5G tech to fight COVID-19. The ubiquitous applications of frontier technologies in Asia and the Pacific have been discussed in ESCAP (2020).

Moving forward, and in the context of 2030 Agenda for Sustainable Development, frontier technological breakthroughs such as AI, robotics, 3D printing, and the

Internet of Things amongst others carry the transformative potential. On the other hand, adoption of these technologies is tempered by increasing concerns about the potential negative impacts such as job losses to automation and increased inequalities.

This policy brief examines key opportunities and challenges of frontier technologies in relation to sustainable development. It proposes some key policy priorities that could form the basis of a next generation technology policy framework for the Fourth Industrial Revolution future and ensure that frontier technologies more deliberately align to the ambitions of the Sustainable Development Goals (SDGs).

References

Brigida, A-C., & Schwartz, L. (2022). Six months in, El Salvador's bitcoin gamble is crumbling. *Rest of World*.

Christodoulou, K., Iosif, E., Inglezakis, A., & Themistocleous, M. (2020). Consensus crash testing:

exploring Ripple's decentralization degree in adversarial environments. *Future Internet*, *12*(3), 53.

Cunha, P. R. D., Soja, P., & Themistocleous, M. (2021). Blockchain for development: A guiding framework. *Information Technology for Development*, 27(3), 417-438.

Gorjón, S. (2021). The role of cryptoassets as legal tender: the example of El Salvador. *Banco de Espana Article*, *35*, 21.

Reynolds, V. (2021). Strike Drives Bitcoin Forward as El Salvador Becomes World's First Country to Adopt Bitcoin as Legal Tender. *Business Wire.*

Seres, I. A., Gulyás, L., Nagy, D. A., & Burcsi, P. (2020). Topological analysis of bitcoin's lightning network. In *Mathematical Research for Blockchain Economy* (pp. 1-12). Springer, Cham.

Vivanco, J. M., & Pappier, J. (2021). The U.S. can stop El Salvador's slide to authoritarianism. Time to act. *The Washington Post*.

Yaga, D., Mell, P., Roby, N., & Scarfone, K. (2019). Blockchain technology overview. ArXiv Preprint, arXiv: 1906.11078.

Zheng, Z., Xie, S., Dai, H. N., Chen, X., & Wang, H. (2018). Blockchain challenges and opportunities: A survey. *International Journal of Web and Grid Services*, *14*(4), 352-375.