

# Blockchain Technology and Financial Security

## The Role of Nonprofits and User Centricity in Charting the Course

*This brief is part of an ongoing series on emerging technology and its role in improving financial security and opportunity for all Americans. [Read our other briefs, Machine Learning and Financial Security: Defining the Problem & Machine Learning and Financial Security: Selecting and Using Data, to learn more.](#)*

Blockchain technology has the potential to bring about new, unique financial services products. In 2018, the financial services industry spent \$1.7 billion on blockchain, rapidly moving beyond the proof of concept stage to bring commercial products to market. It's critical that those in the financial security and nonprofit sectors understand the applicability of blockchain to the financial landscape in order to influence its direction to serve and prioritize the needs of financially vulnerable Americans. To do this we must understand this developing technology, highlight its opportunities and challenges, and articulate the possible use cases for promoting financial security.

As blockchain moves from proof of concept to early adoption, much research and discussion within the financial services industry has focused on how it might revolutionize payments, settlements, cross-border transfers, and more. As with the introduction of any new technology, a new set of opportunities as well as risks and security concerns can arise. Early movers are shaping the direction of this technology and influencing whether it will help promote positive social change or further entrench existing inequalities in access. To achieve the former, the needs of financially vulnerable people must be a part of early discussions shaping the uses of blockchain. The nonprofit financial security and fintech social impact fields have a valuable opportunity to influence the course of this technology toward positive social impact.

Commonwealth is committed to strengthening the financial opportunity and security of financially vulnerable people. As part of our vision, we are engaging with emerging technologies that are influencing financial services. The early adopters of blockchain are developing the standards and first viable production test cases, which will have major implications for whether or not blockchain will make a meaningful difference in improving financial security in the United States.

First, we will start with the basics of blockchain. From there, we will identify the importance of articulating use cases relevant to financial security. Next, we will note potential limitations and challenges of leveraging the technology. Finally, we will articulate a vision for the path forward.

### Blockchain Basics

Blockchain is a “distributed ledger” of electronic data that is maintained, shared, and synchronized by participants in a network. In other words, they are collections of databases spread out over multiple computers at once. The participants in the network verify that a transaction of value takes place between two parties. These transactions are immutable, meaning that they cannot be changed or corrupted. The ledger is “distributed” - the network of participants are spread across a geographic area. Once a transaction is verified, it is wrapped in a “block.” The block is unchangeable once added to a record of time-stamped transactions, where they are linked to older blocks, forming a continuous “chain.” This creates a singular trusted, public document that records every transaction and everyone who has interacted with it. By relying on a network of participants to verify transactions, blockchain removes the intermediary authentication and recordkeeping role traditionally performed by institutions like banks because programs are self-executing. In doing this, it enables immediate value transfer between peers. Blockchain can offer a combination of anonymity, transparency (because records are public), and security (because it is virtually impossible to hack) that makes the technology truly revolutionary. For a detailed introductory explanation of blockchain, [see here](#).



Common use cases for blockchain go far beyond cryptocurrencies like Bitcoin. “Smart contracts,” electronic voting, digitally recorded property assets, patient health records management, and proof of ownership for digital content are just a few of the ways blockchain can and is revolutionizing services across diverse sectors. In the insurance industry, the new efficiencies offered by blockchain could reduce claims processing times and eliminate paperwork through smart contracts. Smart contracts are lines of code that provide rules and criteria that must be met for transactions to take place. When those criteria are met, the transactions occur instantaneously, without a human being needing to approve it or the transmission of paper documents. The time it takes to settle a claim could be reduced from days or weeks to hours or minutes.<sup>1</sup>

## Blockchain and Financial Security

### *Identifying Use Cases for Financial Security*

A first step in ensuring that blockchain technology is addressing the needs of financially vulnerable people is defining uses for the technology that are directly addressed by the features and functionality of blockchain. Some use cases potentially relevant to financially vulnerable people include:

- Lowering the costs associated with international payments, which are relevant, for example, to workers in the US who are sending funds to their families in other countries in the form of remittances.
- Improving credit history and reporting, in that transactions must be verified by multiple parties which, once verified, cannot be altered. This use case could help people with credit histories that have been damaged by incorrect information.
- Reducing identity fraud and the subsequent negative financial consequences by creating a verified identity database that would be difficult to compromise.

These examples highlight just some of the opportunities for blockchain to address issues faced by financially vulnerable people. There are many other use cases that have yet to be identified. Furthermore, there is the question of how the above examples are implemented and whether the voice of financially vulnerable people has been included in the process. Financial security nonprofits and financial social impact organizations have a critical role to play in ensuring that the voices of financially vulnerable people are included in the process and in identifying relevant use cases for blockchain technology to address financial security and opportunity.

## Cryptocurrency

*A cryptocurrency is a digital or virtual currency that uses cryptography for security and operates independently from a central bank. It is the first and most widely adopted use case for blockchain technology.*

*Cryptocurrencies like Bitcoin allow for cross-border transfers of money instantly. They also give billions of un- and underbanked people around the world potential access to the financial system because the need for banks as intermediaries is eliminated.*

*Concerns with cryptocurrency include its volatility without a central authority to guarantee its value, and inequality inherent in a distribution system that rewards computing power.*

<sup>1</sup> <http://insurancethoughtleadership.com/how-will-blockchain-insurance-industry/>



### Identifying the Challenges and Limitations

A second step for charting the course forward for blockchain is to acknowledge the risks with the technology and how they might impact financially vulnerable people. There are many considerations to take into account when assessing the challenges presented by distributed ledger technology, including:

1. The governance structure
2. Immutability
3. User centrality in the blockchain conversation

#### The Importance of a Governance Structure

One key feature of blockchain technology is whether it is public or permissioned. In a public blockchain, anyone can read the data, make changes, and add to the chain, as long as they follow the rules. Bitcoin is one of the most popular examples of a public blockchain. In a permissioned blockchain, the types of parties who can read and add to the blockchain is limited. The financial services industry has made investments in these private blockchains for use cases ranging from making global payments to processing insurance claims.

In both cases, some governance structure is necessary to establish the rules of engagement. The importance of governance is paramount when data is immutable. When decision making is automated, a strong and principled governance structure that vets participants and allows for dispute resolution and arbitration is a key requirement for a permissioned blockchain. Nonprofits and social impact organizations who familiarize themselves with these different structures and the rules that govern them will be better prepared to make recommendations, implement features, and/or raise concerns that are relevant to financially vulnerable people.

#### Immutability Has its Tradeoffs

Immutability is undermined when bad or biased data is entered into the blockchain—it may be unchangeable, but that does not mean it is accurate. When hackers exploit loopholes in a smart contract, as happened in the now infamous DAO case<sup>2</sup>, hackers can get away with massive sums of money which can be difficult to remedy due to the technology's immutability. In addition, immutability can mean that consumers may never achieve redemption for mistakes they have made in their financial lives. For example, a financial misstep on a person's credit history that is recorded on the blockchain cannot be simply erased from the record. Immutability presents a scenario where one's past might follow them in perpetuity, which could be both financially and psychologically damaging for financially vulnerable people trying to move up the ladder. This is another example in which nonprofits and social impact organizations who understand the risks and concerns of features like immutability can prevent unintended consequences.

### How might blockchain technology benefit consumers?

*By allowing the transactions' participants to record and validate a transaction in one shared ledger, implementation of blockchain removes the need for replication of transaction data in multiple, individual ledgers. This leads to fewer paper trails, less manual work, and less room for error - which then translates into greater efficiency and accuracy with a lower associated cost.*

*These benefits are transferred to the end consumer, and for the everyday individual, these can mean lower fees and minimal time consumed managing the process trail.*

*- Beralda Kokoshi, Vice President, Digital Product Development, State Street*

<sup>2</sup> <https://capitalmarketsblog.accenture.com/smart-contracts-the-debate-around-the-dao>



### *Ensuring User-Centricity*

The needs of financially vulnerable Americans are commonly excluded from most conversations in financial services innovation. For emerging technologies like blockchain, this risk may be greater as discussions about blockchain are far removed from the day to day experiences of individual financial lives. Significant risk exists that the deployments and use cases for blockchain in financial services will be technology-led vs. user-centric. This may jeopardize the advantages touted by technologists, and blockchain might fail to meet the needs of the majority of Americans who are financially vulnerable.

### **Where do we go from here**

Because of its transformational nature, blockchain technology presents the opportunity to tackle the financial security challenges of Americans in new, creative ways. To achieve this, the needs of financially vulnerable people must be at the center of conversations. Nonprofits, social impact organizations like financial technology firms, and others in the financial security and asset building fields have an important role to play in charting the course of blockchain toward positive social impact. By exploring and recommending truly innovative applications of blockchain technology, these organizations have the opportunity to help solve the financial security challenges faced by Americans today, such as the fact that 4 of 10 households cannot come up with \$400 in emergency savings.

What steps can we take to ensure that blockchain implementation is strategically positioned to improve the financial security and opportunity of all Americans, especially those who are financially vulnerable? Contact us at [info@buildcommonwealth.org](mailto:info@buildcommonwealth.org) to start a conversation.

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