

Congress of the United States
U.S. House of Representatives
Committee on Small Business
2361 Rayburn House Office Building
Washington, DC 20515-6515

MEMORANDUM

TO: Members, Committee on Small Business
FROM: Chairwoman Nydia Velázquez
DATE: March 4, 2020
TITLE: Building Blocks of Change: The Benefits of Blockchain Technology for Small Businesses

The Committee on Small Business will hold a hearing entitled, “Building Blocks of Change: The Benefits of Blockchain Technology for Small Businesses” **on Wednesday, March 4th at 11:30 a.m. in Room 2360 of the Rayburn House Office.** Technology has changed every sector of the economy, increasing communications, changing how we buy products and services, and digitizing many transactions. Blockchain is a powerful new technology that creates a distributed digital ledger—a database—that allows multiple parties to engage in secure, trusted transactions with one another without an intermediary. Since blockchain is made up of a collection of underlying technologies, blockchains can be configured to serve different purposes from such as tracking goods in global supply chains or enabling peer-to-peer transactions between connected devices. This hearing will explore how innovators and entrepreneurs are using blockchain technology to help small businesses boost productivity, increase security, open new markets, and change the way business is done in different sectors of the economy.

Witnesses include:

- Mr. Shane Bigelow, CEO, Onum, LLC., Cleveland, OH, Testifying on behalf of the Chamber of Digital Commerce
- Ms. Dawn Dickson, Founder and CEO, PopCom, Columbus, OH
- Mr. Marvin Ammori, General Counsel, Protocol Labs, Wilmington, DE, Testifying on behalf of the Blockchain Association
- Mr. Jim Harper, Visiting Fellow, American Enterprise Institute, Washington, DC

Background

Small businesses are continually incorporating digital technologies into their daily operations. From managing workflow and payroll to processing orders and payments to accessing new customers, digital tools have increased opportunities for economic growth and cost efficiencies. However, despite the rapid technological transformation there are still many inefficient systems, procedures, and processes in many sectors of the economy. Often times, records and transactions

are still taking place on paper. For example, health care providers maintaining patient records, county deed registries cataloging real property ownership transfers, and government agencies keeping official records of births and deaths. Blockchain has the ability to lower barriers of entry entrepreneurs and small businesses by improving business processes, increasing efficiency, promoting transparency and reducing costs across numerous industries. Blockchain also allows small businesses to store digital data cheaper and a more securely than centralized cloud computing, reduce friction throughout their supply chain, and create more secure business to business dealings.¹

What is Blockchain

Blockchain is not a new technology, but rather an innovative way of using existing technologies to improve and streamline business processes, recordkeeping, and management.² By creating a digital database, or a distributed digital ledger, blockchain allows multiple parties to engage in secure, trusted transactions with one another without an intermediary.³ All parties have access to the same digital ledger and no party can make unauthorized changes. In blockchain, transactions are recorded, the transactions are authenticated, and the identities of the parties are verified as the transaction is added to the digital ledger as a block.

Blockchains contain three core parts⁴:

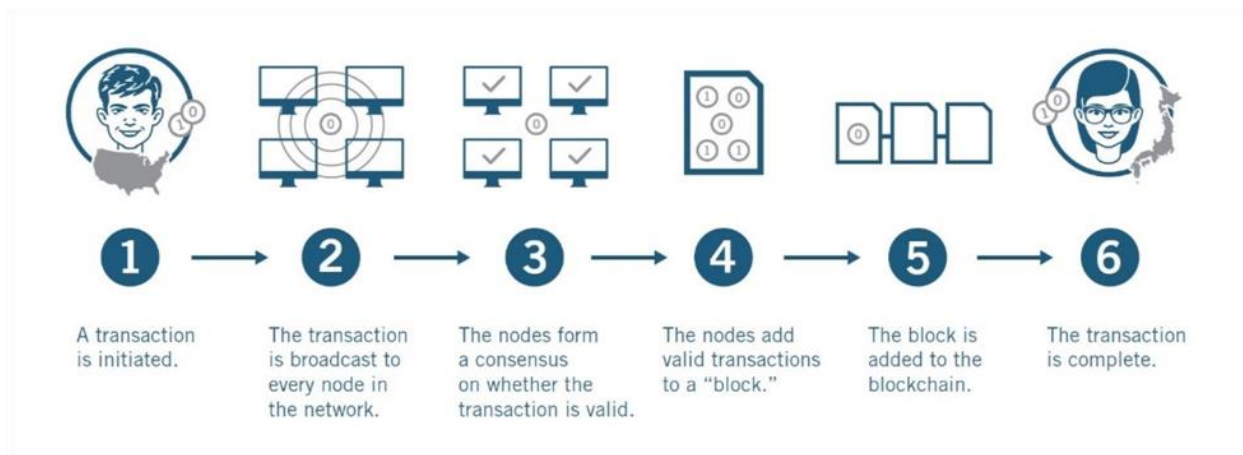
- **Block:** A list of recorded transactions over a period of time. Transactions can represent virtually any type of activity. Digital rules, such as the maximum number of transactions in a block or the size of each block can be limited based on the algorithms and computer programming that govern how the block functions.
- **Chain:** When the block reaches capacity, it is chained or linked to the preceding block through a hash, an algorithm that takes data and generates a fixed-length value that can be quickly calculated and distributed. The hash value of one block is inserted into the next block creating the chain that links the new block and the data in the previous block. If a block of data is altered, the resulting hash output will be different, letting users know that the original block has been altered and may no longer be trustworthy.
- **Network:** The network is made up of nodes, or clusters of computer servers running a blockchain. Each node containing a complete record of all transactions on a blockchain validates the blockchain integrity and verifies transactions. There is no centralized "official" copy and no node is "trusted" more than another. The data integrity is maintained by the blockchain being replicated on all nodes.

¹ TechHQ, How Can Blockchain be used by SMEs?, August 7, 2019.

² Chris Jaikaran, CRS, Blockchain: Background and Policy Issues, Feb 28, 2018, R45116.

³ Alan McQuinn and Daniel Castro, A Policymaker's Guide to Blockchain, Information Technology & Innovation Foundation, April 2019.

⁴ National Archives and Records Administration, Blockchain White Paper, February 2019.



Information Technology & Innovation Foundation, A Policymaker's Guide to Blockchain

Uses of Blockchain

Over the last decade, there has been a frenzy of investment and entrepreneurship around blockchain, including different digital currencies as well as unique services based on blockchains such as shared data services, digital identity, smart contracts, and decentralized processes. There are numerous applications for blockchain technology throughout the financial services sector (trade financing, dividends, know your client), the insurance sector (claim filing, fraud, payments), arts and media (ticketing, authentication, monetization, digital rights), healthcare (records, prescription data, compliance), asset titles (land title, car titles, diamond tracking, digital assets), cybersecurity (digital encryption, p2p networks), government (voting, licensing, copyrights), and supply chain management (pricing, logistics, tracking, safety, authentication). In many of these sectors, entrepreneurs and small businesses are leading the way in applying this technology to reduce costs, increase transparency, and reduce risk.

Cryptocurrencies

The most widely recognized use of blockchain has enabled the creation of "cryptocurrencies", a digital currency created without a central monetary authority that the public can use to send money electronically, without an intermediary such as a bank.⁵ Bitcoin is the most popular example. Cryptocurrencies allow the exchange of some digital assets of value (the cryptocurrency) for a good or service.⁶ The cryptocurrency is acquired (through mining, or purchase) and added as a transaction to the blockchain. If a user purchases something, they will then unlock the cryptocurrency, transfer it to the seller who then locks. This transaction is published to the blockchain, so all users can validate that the buying user has that much less of the cryptocurrency and the selling user has that much more of it, thereby ensuring transparency of the transaction. Just like traditional currency, cryptocurrency is traded on exchanges. Unlike

⁵ Alan McQuinn and Daniel Castro, A Policymaker's Guide to Blockchain, Information Technology & Innovation Foundation, April 2019.

⁶ Satoshi Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System," paper, October 2008, at <https://bitcoin.org/bitcoin.pdf>.

the traditional currency, cryptocurrency has a global reach, it is not pegged to countries' currency, and has low transaction fees.

Cryptocurrency has a direct impact on small businesses. Small businesses often have challenges when it comes to accessing capital. Even with the support of the SBA, loans can be a burden for new and small businesses. Private equity and venture capital can also elude many small businesses, especially women and/or minority-owned businesses. Many start-ups have used blockchains to raise capital by selling digital tokens to investors as an alternative to traditional venture capital funding or initial public offerings. Tokens can either represent goods or data on the blockchain. These tokens can be for real-world assets such as gold, shares in a company, or digital currency. Blockchain technology ensures the authenticity and ownership of these tokens by registration and recording changes—such as an item's value or when it changes hands.

Shared Data Services

Beyond cryptocurrency, blockchains allow many different entities that may have conflicting interests to contribute data to a shared database. By using shared data services, businesses can verify they have access to the exact same data, and no party is able to make unauthorized alterations to records. This is especially applicable in the financial services sector, where many companies are leading investment in blockchain technology. The use of a trusted private ledger for recordkeeping of financial transactions reduces the need for businesses to rely on third parties that charge fees for their services, such as clearinghouses, custodian banks, accountants, and auditors. Estimates of banks' cost savings from the use of permissioned blockchains range from \$20 to \$50 billion per year.⁷ Shared data services also have applications beyond financial services and can be utilized for supply chain management, logistics, public records like real estate and title management, food safety, and much more.⁸

Small businesses must often navigate government bureaucracy or deal with third-party intermediaries, when conducting business. Blockchain applications allow businesses to easily track asset ownership by providing a tamper-proof record within the blockchain. This means that changes are immediately apparent to all, participating entities can verify the accuracy of information passed along, and businesses can run analytics to prevent counterfeit goods, fraud, and theft.⁹ This process improves the overall transparency and traceability throughout the supply chain. For small businesses, this means that companies will not have to spend as much time and energy filing, verifying, and managing relationships with third-party intermediaries in order to conduct business.

Digital Identity and Cybersecurity

As more people around the world engage online and in e-commerce, many companies store and transmit personal data of consumers and businesses. As a result, Cyber criminals have turned their attention to small companies in recent years because an estimated 97 percent of small

⁷ David Yermack, Corporate Governance and Blockchains, National Bureau of Economic Research Working Paper (Dec. 2015)

⁸ Alan McQuinn and Daniel Castro, A Policymaker's Guide to Blockchain, Information Technology & Innovation Foundation, April 2019.

⁹ Alan McQuinn and Daniel Castro, A Policymaker's Guide to Blockchain, Information Technology & Innovation Foundation, April 2019.

businesses use e-mail and 74 percent have websites.¹⁰ Individuals and small businesses that utilize marketplaces such as Facebook, Google, and Amazon also have significant amounts of personal information stored with these technology companies. The National Cyber Security Alliance has reported annually that the majority of small firms underestimate their vulnerability to cyber-attacks and therefore, do not have some of the most basic cybersecurity precautions in place.¹¹

When data or personal information is gathered by a third-party, that company is generally responsible for the security of the identity data. Using blockchain, a decentralized identity framework can be developed, based on individual identifiers. This process can be used to protect personal information and give users direct control over how their data is used and shared online.¹² For small businesses, a decentralized identify framework, will allow a business to access and process customer information, like a credit card transaction, with the increased security of a specific identifier per transaction that provides increased security for the customer and the business. Overall this will allow small businesses to better protect their own intellectual property, trademarks, and customer data, along with their personal identification of their customers.

Smart Contracts

Because blockchains are computer programs, blockchain developers can require conditions and outcomes as part of the code. Often referred to as a “smart contract,” these are business rules coded into a computer protocol that can verify and facilitate the performance of an action on a blockchain.¹³ Like a series of digital if/then statements, the coding of a business agreement between parties means that when one party meets the terms of the agreement, the other party automatically executes their terms of the agreement. There is no need to have a third party execute those terms. For example, smart contracts remove the need for escrow services or title services, as the smart contracts themselves are entered on a blockchain network. These blockchains can hold and release funds upon digital completion and verification of a transaction. The use of smart contracts can help improve efficiencies in business applications, such as automated reporting, facilitating automatic payment, and automatically releasing or destroying data.¹⁴ For small businesses, this improves their operations by reducing fees, compliance costs, and inefficiencies associated with a third-party intermediary.

Blockchain and the Federal Government

Blockchain technology cuts across a wide variety of sectors, and many different federal agencies have a say in various ways that blockchain is being regulated. The Financial Crimes Enforcement Network (FinCEN) within Treasury has been engaged in numerous issues around

¹⁰ Federal Communications Commission, The National Broadband Plan, 2010.

¹¹ *Id.*

¹² Alan McQuinn and Daniel Castro, A Policymaker’s Guide to Blockchain, Information Technology & Innovation Foundation, April 2019

¹³ Alan McQuinn and Daniel Castro, A Policymaker’s Guide to Blockchain, Information Technology & Innovation Foundation, April 2019.

¹⁴ Alan McQuinn and Daniel Castro, A Policymaker’s Guide to Blockchain, Information Technology & Innovation Foundation, April 2019.

cryptocurrency businesses¹⁵, the Commodity Futures Trading Commission (CFTC) regulates commodities futures and swaps trading and has engaged in enforcement action around crypto-trading¹⁶, and Securities Exchange Commission (SEC) has been active in regulating blockchain-based financial applications¹⁷. Other agencies that oversee banking and monetary transmission laws, including the Comptroller of the Currency (OCC), the Federal Reserve Board, and the Federal Deposit Insurance Corporation (FDIC) and have started to focus on other types of blockchain financial services.¹⁸ The Financial Stability Oversight Council, which including the Secretary of the Treasury, Federal Reserve Board of Governors, and the chairmen of SEC and CFTC, have also formed a group on cryptocurrencies.¹⁹ Much like the early days of the Internet, there is a need for both public and private investment in research and development, and a clear regulatory framework that helps to promote growth and innovation for American businesses and entrepreneurs.

Beyond regulatory issues, there are numerous government entities that are exploring how to integrate blockchain technology into their operations. For example the military is exploring blockchain and cybersecurity issues²⁰, the Department of Agriculture is looking to use blockchain around food safety and the agricultural supply chain²¹, the Department of Health and Human Services has discussed using blockchain to address issues with health records and drug supply chains.²² Additionally, many government agencies are examining ways to integrate blockchain into their processes to better manage identities, assets, data, and contracts.²³

Conclusion

Blockchain technology has numerous opportunities for use in both business and government. For small firms, it has the ability to streamline processes, promote transparency, increase security, and decrease costs. Additionally, blockchain technology can be applied to cloud storage, cybersecurity, supply chain management, payment systems. Blockchain is already transforming industries such as finance, real estate, healthcare which are dominated by small businesses. This hearing will allow Members to discuss in more detail this emerging technological trend and ways small firms can utilize and benefit from it.

¹⁵ Know Your Exchange (KYE) Report” (Coinfirm, March 2019)

¹⁶ U.S. Commodity and Futures Tradition Commission, “CFTC Orders Bitcoin Options Trading Platform Operator and Its CEO to Cease Illegally Offering Bitcoin Options and to Cease Operating a Facility for Trading or Processing of Swaps Without Registering,” news release, September 17, 2015

¹⁷ Framework for ‘Investment Contract’ Analysis of Digital Assets,” U.S. Securities and Exchange Commission

¹⁸ Alan McQuinn and Daniel Castro, A Policymaker’s Guide to Blockchain, Information Technology & Innovation Foundation, April 2019.

¹⁹ Stan Higgins, “U.S. Finance Regulators Form Crypto Working Group, Says Mnuchin,” *CoinDesk*,

²⁰ Daniel Kuhn, Coindesk, US Defense Department to Develop Blockchain Cybersecurity Shield, July 29, 2019.

²¹ Benjamin Pirus, BeefChain Receives First USDA Certification for a Blockchain Company, Forbes, April 25, 2019.

²² Daniel Kuhn, Coindesk, Blockchain May be Used in FDA Medical Reviews and Recalls, Aug 23, 2019.

²³ For examples, see <https://emerging.digital.gov/blockchain-forum/>, <https://emerging.digital.gov/blockchain-programs/>, and <https://www.dhs.gov/science-and-technology/news/2017/09/25/news-release-dhs-st-awards-750k-virginia-techcompany>.