

Blockchain in Finance

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Recently, in technology and financial circles everyone has been talking about blockchain. In 2016 IBM theorized that in four years 66% of banks is expected to have blockchain in some form of commercial production (Shen 2016). The National Business Review describes blockchain as “a distributed database that maintains a continuously growing list of ordered records, called “blocks””. IBM takes it a step further to describe blockchain as a shared, distributed ledger that facilitates the process of recording transactions and tracking assets in a business network (Gupta, M 2017). This paper will discuss the use of blockchain in the financial industry, how it compares to current day processes companies and banks conduct transactions and store data without blockchain.

Blockchain can be used to keep track of both tangible and intangible assets. Anything of value can be tracked and traded with a blockchain network. Blockchain was originally developed as a response to needing a secure online system for recording financial transactions with cryptocurrencies (Gupta M, 2017). Even though financial transactions has become easier with mobile banking apps and online stores, they are also less secure. For example, some banks allow users to keep the default password that is provided to users when creating a mobile banking account. IBM provided a list of current transaction limitations (Gupta M, 2017).

1. The time between transaction and settlement can be long.
2. Duplication of effort and the need for third-party validation and/or the presence of intermediaries add to the inefficiencies.
3. Fraud, cyberattacks, and even simple mistakes add to the cost and complexity of doing business, and they expose all participants in the network to risk if a central system, such as a bank, is compromised.

4. Credit card organizations have essentially created walled gardens with a high price of entry. Merchants must pay the high costs of onboarding, which often involves considerable paperwork and a time-consuming vetting process.
5. Half of the people in the world don't have access to a bank account and have had to develop parallel payment systems to conduct transactions (Gupta M 2017).

With the growing use of online transactions because the world is more connected. A secure way of making those transactions will become an integral part of society. Blockchain seeks to supply the way for making secure transactions.

Bitcoin is an example of a solution that enables users to have secure transactions. Bitcoin was launched in 2009 by a group under the name Satoshi Nakamoto. It is a digital currency under no central authority. This new currency can be obtained by solving puzzles. IMB writes that "Rather than rely on a central monetary authority to monitor, verify, and approve transactions and manage the money supply, bitcoin is enabled by a peer-to-peer computer network made up of its users' machines" (Mills 2018). Bitcoin is built on the foundations of blockchain, providing a safe way to store the bitcoin transactions.

Traditional and current day methods for storing financial data and tracking assets can be compromised. Data breaches are a daily occurrence on a global scale. On July 2017, Equifax reported that over 143 million consumers had their personal information stolen. Social security number, birth dates, addresses had been compromised while over 209,000 users had their credit card data exposed (Amerding 2018). In September of 2014 Home Depot experienced a security breach that resulted in the loss of over 56 million customer credit and debit card information. The company's point-of sale systems were infected with malware that masked itself as a virus

protection to steal information (Amerding 2018). Having transactions secured by blockchains would provide more security than is present in current systems.

A Blockchain is more secure than current transaction systems because each block is connected to the data blocks that come before and after. Attackers would have to alter each block that is associated with the data they are attempting to steal or compromise to avoid detection. As an added point of security each participant in a transaction is given their own private key for further authentication. If a block of data is changed the digital signature assigned to the private key will be invalidated and the chain be alerted that something is wrong (Mills 2018). Curtis Miles, an IBM blogger writes on the subject of blockchain security;

“Because they aren’t contained in a central location, blockchains don’t have a single point of failure and cannot be changed from a single computer. It would require massive amounts of computing power to access every instance (or at least a 51 percent majority) of a certain blockchain and alter them all at the same time” (Gupta M 2017).

This use of peer-to-peer networks allow blockchains to be useful in many different applications.

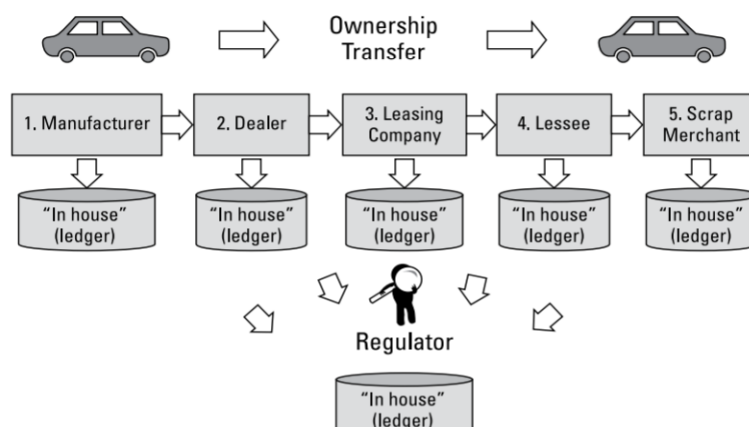


Image 1. Gupta, M. (2017). Blockchain for Dummies. Wiley & Sons Canada, Limited, John.

Blockchain could now be used to make assets easier to track for businesses. An example is purchasing a vehicle. Without the use of blockchain, each individual entity with a previous claim to the vehicle will have a different ledger. The image below is a representation of asset tracking without blockchain.

Through the use of blockchains there would be one centralized place to track the asset. All participants could access this one ledger with no wasted time of going back and forth between previous owners. Below is a representation of asset tracking using blockchain.

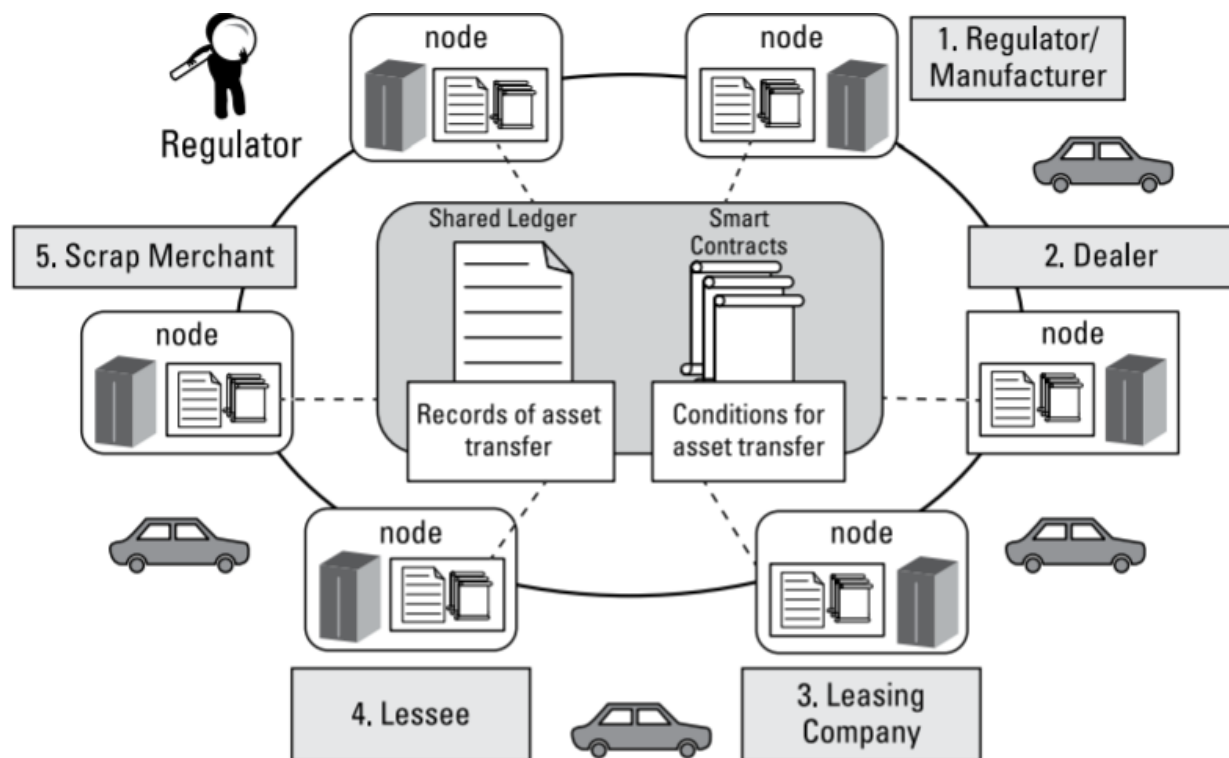


Image 2. A shared blockchain ledger. Gupta, M. (2017). *Blockchain for Dummies*. Wiley & Sons Canada, Limited, John.

With the use of a shared ledger between all parties. There might a concern of users having access to information that should be restricted to a certain group only. This is solved by making a permissioned blockchain network. A permissioned blockchain is a chain that is managed by a

group. They choose who act as validators to the information and the information is private (Piccolo 2017). This network offers enhanced privacy, improved auditability and increased operational efficiency. Explain each thing and then. Enhanced privacy is granted by using IDs and the special permissions. The chains gained improved auditability because it is shared by all so the ability to monitor and check the data is simple. Increased operation efficiency is granted because it will be easier to change ownership of data or physical assets because everything would be digital and easy to transfer (Gupta M 2017).

Blockchain will enable long distance purchases to be settled in days or hours instead of the days it takes to authenticate today. With this new way of managing the flow of goods there will be a new layer of trust between financial circles and the world. Having a secure way to make sure transactions are authentic will provide a sense of relief to many. There will be many different uses for blockchain that will help bring the world closer together. BitPesa is a blockchain app developed to help Africa to conduct business with other countries. It provides currency exchange for 85 countries including the US and China. Storj is a company focused on using blockchain to store assets in the cloud (Due.com 2017). It is already clear to envision the impact that blockchain will have on how the world conducts business.

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