



Decentralized Way for Keeping Transactional Record

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Abstract:

Due to the global financial crisis the world is in search for better way to handle the financial transactions as well as the banking sector with tighter rules and regulations. The demand is the way transactions occur should be public and transparent. So the above points lead to the Blockchain. Blockchain is an essential distributed network which works as a decentralized network with storing different records in nodes. It is a Distributed public ledger where all transactions, digital event shared among the node participants. Each peer to peer transfer of money or transactions is verified using consensus approach which refers to majority of nodes. The entered information cannot be erased or hacked. Block chain cut a significant amount of cost out of the process of post trade financial manufacturing and actually reduce risk because it reduces the time taken to complete a financial transaction once it has been agreed in the market. Our approach is making and decentralized application which implements the transactions using Blockchain Technology where the present participant enters the shared amount which is contributed and the other participants need to ensure the valid amount if yes then it is stored and shown in the network which is transparent, non-cheated thus entered if all are agreed. There are some key notes shown of blockchain reshaping banking sector and how blockchain could disrupt banking sector.

Keywords: Blockchain, Bitcoin, Decentralized, Distributed, Banking, SWIFT, ICOs, Transaction, Node.

1. Introduction

As due to the financial crisis occurred in 2009 the world was reeling in the financial and politicians were searching for alternatives what should and could be done. There came a Bitcoin which fumbled the world with technology it uses and marked its value Global stage. So this revolutionary new form of money was an end to the financial crisis. The best part bitcoin did is it sought out two major things: to make rules governing the money entirely predictable and transparent and provides people the way to transfer it without the need of corporate sectors. However, this is something much bigger the nucleus of bitcoin architecture is the structure called a Blockchain. This is the applications being designed which remove corporates from digital process while giving users more control towards the data. Blockchain from research into distributed systems, computer security, cryptography, distributed systems, and game theory which delivers new type of shared data. Blockchain can be beneficial in supply chain management, HR analytics, agriculture and many more. The database provided in blockchain is driven on multiple computers which needs the permission of nodes and is added securely. There are three phases where the blockchain technology have influenced the bitcoin technology as well as the financial law 1) Decreased Transaction Time and Cost 2) Security 3) Limited Inflation Concerns.

Blockchain provides features where the participant is allowed the following operation of a blockchain:

Collaboration among competitor- By this the companies which are in competition will have a common platform in which they can openly collaborate with no fear of one will impose surreptitiously break the rules.

Flexibility- it will not matter who participated in the blockchain or will they remain in network or not. Therefore, the apps are built in which composition of stakeholders is shifting continuously.

Resilience- this leads to an open invitation for participants each of which having a full copy of blockchain running application.

Distributed Verification- The data and programs residing in multiple location are verified by many parties which are independent of each other.

The Finance Industry is which were first blockchain application using cryptocurrency rolled. Bitcoin gave individual full possession over her/his money by making owner of a cryptographic key necessary for the transfer of funds. More complex transactions can be implemented that replicate the suite of financial instruments, like loans, bonds and stocks.

Blockchains increase the efficiencies behind the scenes at financial institutions especially in the field of interbank settlement. E.g., the Depository Trust and Clearing Corporation in New York City, a company that operates as a third party in the business of securities trading, has plans to begin recording \$11 trillion worth of credit default swaps in late 2018. Others in the blockchain space are hoping to use the technology to ensure that access to basic financial tools are equally distributed. To this end, companies are leveraging cryptocurrencies to provide low cost remittance service for immigrant population, and microloans and banking services for businesses and individuals in developing nations.

2. Blockchain Reshaping the Banking Sector

The banking industry is strict regulated in every jurisdiction, while banking sector representatives are differentiated by the conservative attitudes. But the wide application of blockchain in the recent years, the gained popularity of cryptocurrencies, and the Initial Coin Offering (ICO) boom has contributed to fact that the management of many banks and financial organizations no longer deny the future wide scope of blockchain technology. Blockchain can solve lot of problem which the banks and the financial organizations. Blockchain Technology has many interesting characteristics which is transparent. It provides high security level and data transmitting, transparent and open infrastructure of network, low cost operations and decentralized which is the impressive power of blockchain in gaining trust, in demand solution, even in conservative bank industry. Most financial institutions and the credit the participation of the services of this technology is expensive. Implementing blockchain will enable the unused mediators to be removed and they provide banks with cheaper facilities and services.

A. Popular Solutions.

The main area in which financial institutions and bank sectors will be able to implement the transfer of amount faster and making the bank to bank international as well as domestic transfer faster. The peer to peer transaction is a main factor of an decentralized transaction process which removes the access of third party.

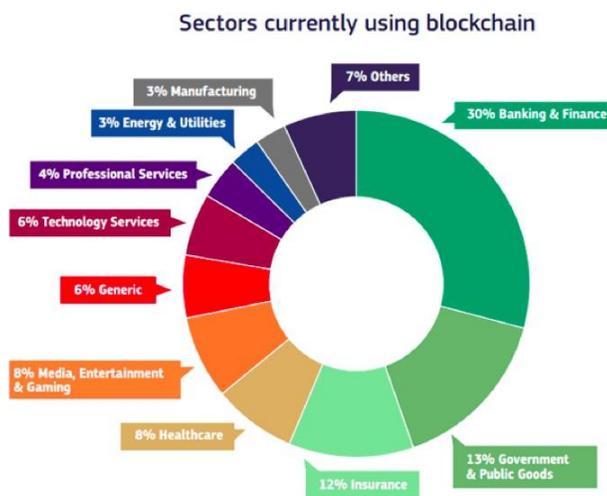


Fig. 1. Banks are the most active in adopting blockchain technology in comparison to other institutions

The large financial companies and independent analysts in financial view blockchain technology in the near future a possible alternative in SWIFT bank transfer system. SWIFT payments are type of international transfer sent through the SWIFT international payment network. SWIFT payment network is the largest financial messaging systems in the world. Transfer Wise can send or receive certain currencies through SWIFT payment.

Banks are the most active in adopting blockchain technology in comparison to other institutions. Another field of blockchain application in banking industry is for creation of a client identification system based on the distributed ledger technology. This is highly relevant as all credit organizations have to

perform KYC when processing applications. Blockchain enables users to be identified on a single occasion, and this information is stored securely, it is tamper proof with access granted to other banks in the network system. Financial activities and banking relates directly to insuring loans and deposits. Even in the developed countries most of these banking functions are often criticized for being unreliable, not trusty and vulnerable. If the system runs on smart contracts that perform automatically and they are not required with long administrative delays involving numerous managers, procedures, people will be able to receive payments immediately.

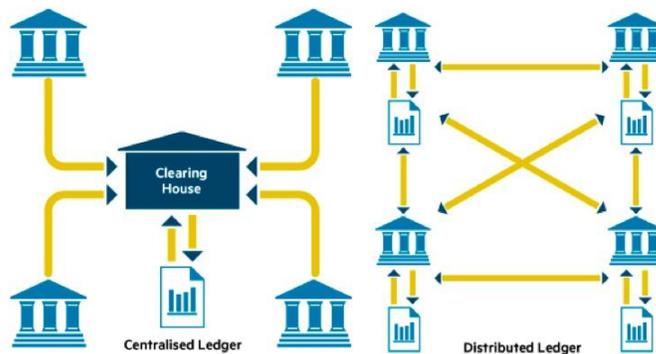


Fig. 2. Decentralized Ledger and Centralized Ledger

3. Banks Actively Testing and Implementing blockchain Technology

The Credit Data Processing Bureau (CDPB), which is lowly to the Polish Bank Association, records the credit histories for about 150 million European users. The British fintech company Billon Group, which received EUR 1 million of investments from the EU last year, implemented a unique blockchain based solution for the organization to process customer data.

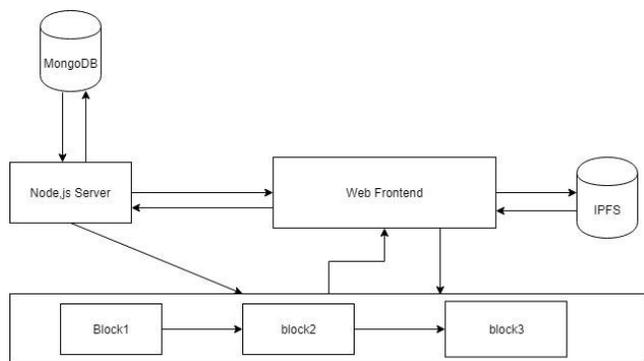
The bureau management believed that blockchain solution complies with the legal requirements, data integrity and data protection regulation, while also meeting the needs of industry and increasing the efficiency. The product that Billon Group offers is currently being tested and implemented by current eight major Polish banks, whose management is confident and fully influenced that blockchain will dynamically transform the way personal information are stored and transferred between banks and clients. A survey of Billon Group company an executive said that the company has continued in developing and introducing blockchain based solutions not only for data processing and storing, but also for operations involving in convertible paper money which is made legal tender by a government decree. The project's goal is to start are volition in data management that will allow users to control their personal data in a confidential, secure and tamper proof.

Blockchain technology provides a cryptographically secure way of sending digital assets, without the need of trusted third parties such as banks. Further, tools such as smart contract promise which would automate many of the monotonous processes within the banking industry, from agreement and claims processing. Currently Global banking is \$134 trillion industry. Bank help users in intermediate payments, make loans, and provides credit. The promise of blockchain as a trustless, non-intermediated technology is to disrupt all of that, including:

- **Payments:** By eliminating need to rely on intermediaries for approving transactions between consumers, blockchain technology will facilitate faster payments with lower fees on comparison with banks.
- **Clearance and Settlement System:** Blockchain technology and distributed ledgers will decrease operational costs and will bring us closer to real time transactions between the financial institutions.
- **Fundraising:** Providing blockchain companies with immediate access to liquidity through initial coin offering (ICOs), the blockchain is creating a new, crypto economic model of funding that un bundles access to a capital from traditional financial services.
- **Securities:** Doing tokenizing the traditional securities such as stocks, bonds, and another asset, the blockchain is changing the structure of capital markets.
- **Loans and credits:** By removing the need of gatekeeper in the loan and credit industry, the blockchain will make it more secure, transparent that would borrow money and will provide lower rates of interest.

4. Architecture

Fig. 3. Decentralized Transaction App Architecture



Architecture for Making Application Decentralize The application will allow us to record transaction history between peers, the application will contain a group of people, whose data will be taken from the web frontend and passed to the server side language (node.js) which will act as an intermediate between the GUI and the database. The database used is a NOSQL type because the type of data being stored is mostly non structured, this data collected will help in distinguishing users from one another and will allow taking backups of data. The transactions itself will use an IPFS which is a way of storing and sharing of files on a distributed file system. The part where the blockchain is used is here i.e. the history of transactions is stored on the blockchain. E.g. if 5 people are in a group and one of them has bought vegetables to split the expenditure among 5 people he will simply divide the bill amount by 5, if the total was rs500 then per head cost would be Rs 100, so to ensure that no false information is put up the people in the group will have to vote for the authenticity of the bill when the bill gets more than 51% of votes the bill amount can be considered to be valid and it'll be inserted into the blockchain, since the blockchain is immutable in nature the data once inserted cannot be removed thus keeping a permanent record of the information that cannot be edited by a malicious single entity.

Tools/Technologies used:

- 1) Web Frontend-A HTML, CSS, REACT
- 2) Backend-Node.js, MongoDB
- 3) File Sharing Protocol-IPFS
- 4) Ethereum Blockchain

5. Ethereum Blockchain

The Design of Ethereum is intended with following principles:

1) **Simplicity:** The Ethereum protocol ought to be as easy as potential, even at the price of some information storage or time unskillfulness. a mean programmer ought to ideally be able to follow and implement the whole specification, thus on totally notice the unprecedented democratizing potential that cryptocurrency brings and additional the vision of Ethereum as a protocol that's hospitable all. Any improvement that adds quality mustn't be enclosed unless that improvement provides very substantial profit.

2) **Universality:** a basic a part of Ethereum's style philosophy is that Ethereum doesn't have "features". Instead, Ethereum provides an inside Turing-complete scripting language, that a programmer will use to construct any good contract or transaction sort that may be mathematically out-lined. Need to create your own financial derivative? With Ethereum, you can. Need to create your own currency? Set it up as associate degree Ethereum contract. Need to line up an all-out Daemon or Skynet? You ought to have many thousand interlocking contracts, and make sure to feed them munificently, to do that, however nothing is stopping you with Ethereum at your fingertips.

3) **Modularity:** the elements of the Ethereum protocol ought to be designed to be as standard and divisible as possible. Over the course of development, our goal is to make a program wherever if one was to create a small protocol modification in one place, the appliance stack would still perform with none further modification. Innovations like Ethash ought to be, and are, implemented as separate, feature-complete libraries. this can be so even if they're employed in Ethereum, although Ethereum doesn't need sure options, such options are still usable in alternative protocols likewise. Ethereum development ought to be maximally done thus on profit the complete cryptocurrency scheme, not simply itself.

4) **Agility:** details of the Ethereum protocol don't seem to be set in stone. Though we are going to be very judicious regarding creating modifications to high-level constructs, for example with the sharding road map, abstracting execution, with only information accessibility enshrined in consensus. Computational tests presently within the development process could lead us to get that sure modifications, e.g. to the protocol design or to the Ethereum Virtual Machine (EVM), will considerably improve quantifiability or security. If any such opportunities square measure found, we are going to exploit them.

5) **Non-censorship and non-discrimination:** the protocol shouldn't decide to actively prohibit or prevent specific categories of usage. All regulatory mechanisms within the protocol ought to be designed to directly regulate the hurt and not attempt to oppose specific undesirable applications. A coder will even run an infinite

loop script on prime of Ethereum for as long as they're willing to stay paying the per-computational- step transactionfee.

6. Conclusion and Future Work

In this paper we have proposed an idea to make banking efficient through blockchain network. Implementation of P2P decentralized architecture is shown which overcomes a normal application having the functionality of distributing money over the members present in the network. This application is implemented and deployed using blockchain network which decentralizes the transactions and approved only when all network nodes are accepting the transaction. Further a how blockchain could disrupt banking sector is simplified and shown giving a wider application of blockchain technologies over the current banking sector. The banking sectors which are implementing this technology are shown with detailed analysis of old banking and after adopting blockchain network. This technology is making a far better effect on every part of day to day application from supply chains to banking through agriculture industry through recruiters finance every field is on race on adopting the blockchain technology.

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