

ENHANCING SCALABILITY IN THE FINANCIAL SECTOR: IMPLEMENTING BLOCKCHAIN TECHNOLOGY

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ABSTRACT— The Blockchain is an encrypted database that stores information statistics, or in different words, it is a virtual ledger of any transactions, contracts - that needs to be independently recorded. One of the key capabilities of Blockchain is that this virtual ledger is out there throughout several masses and heaps of computer and isn't always sure to be stored in a single place. Blockchain chain has already commenced disrupting the financial offerings area, and it's far this technology which underpins the virtual currency- bitcoin transaction. The aim of the paper is to conduct research on the effect of blockchain technology on the financial sector. There is no doubt that the world is curious to see how this promising technology will influence or shape the future of banking. Blockchain enhances safety in data storage and transmutation, avails a decentralized and transparent network infrastructure and significantly reduces the costs in operations. These remarkable attributes make blockchain a very promising and in-demand solution even in an industry as restricted as the banking sector.

Keywords—Applications of blockchain, benefits from blockchain, features of blockchain, security of blockchain.

I. INTRODUCTION

A blockchain is a distributed digital ledger where transactions can be recorded and checked electronically over a network of computers in the absence of a central ledger. Cryptography is used to protect the data from deception or hackers[1]. Blockchain is being called “the new internet”, and is expected to transform

businesses across various sectors, most importantly the financial sector.

It was invented by “Satoshi Nakamoto” in 2008. A blockchain helps to record all the transactions made so that no alterations can be made later on so as to maintain the security of the data. Today, entities maintain records in their own traditional ledgers for transactions between them. This sometimes leads to transfer or exchange of a considerable amount of data between entities, resulting in an increase in time and cost for them. It also makes the process of any asset transfers inefficient, costly and vulnerable. The duplicated shared ledger concept in blockchain technology can help remove these weaknesses[2]. The use of smart contracts, an application of blockchain technology, can enhance efficiency through event-triggered mechanisms. Most credit and budgetary organizations can't do their work without various go-between, while their interest makes the administrations of these establishments substantially more costly. The execution of blockchain will empower pointless arbiters to be relinquished and give clients and banks less expensive administrations. The fundamental zones in which banks and other budgetary organizations will probably actualize blockchain innovation: Payment, Client Identification framework, Loans, and Credits protection[4].

II. LITERATURE REVIEW

Blockchain is still in its relative infancy, but it is increasingly becoming a solution that will result in an essential advantage in the context of the switch of belongings within business networks.

A. Invention and importance of blockchain

Satoshi Nakamoto sketches out a new method for peer-to-peer digital cash gadget, the use of a cryptocurrency known as bitcoin. It became an appreciable improvement. Cryptocurrencies (virtual currencies) aren't constructed or aren't in fee of the government. They have got their own set of policies to follow. This type of association has come to be the very new blockchain era, which was the bottom for the growing numbers of authorizing expended blockchain[1]. Blockchain era permits exchange cash without intermediaries. Thus, humans ship cash immediately and correctly and with none trouble at ten same times. It's miles one of the maximum promising and revolutionizing inventions. Attested to be as large to the internet or energy. Sadly, very few have heard of the era but significant social media coverage is assisting. It is one of the maximum promising and positive new era for the coming era. It's an allotted ledger generation that roots bitcoin[3]. Presenting a new manner to record, preserve the records and transfer the records. Even greater incredible is the transparent, and secure statistics, this is auditable and proof against blackout.

B. Blockchain an underlying technology of bitcoin

Many humans count on that blockchain and bitcoin are identical. Blockchain is the underlying generation of bitcoin. They're intently associated, however, they're no longer the same factor. In 2008, bitcoin turned into introduced as a form of unregulated virtual currency created through Satoshi Nakamoto. Blockchain was the ledger answer used to safely record facilitating using this new forex when you consider that there has been no bank or government involved to reveal or police the transactions. The confusion between blockchain and bitcoin regularly arises because those two concepts have been introduced at the identical time. The blockchain era as for instance the only used for bitcoin allows for the recording of

transactions on an allotted ledger across a community of users. The open-source era allows for the garage of records from the transactions into blocks. Each block consists of a time-stamped report of the transactions with each block related to the previous one, for that reason developing a series[10]. The records saved at the blockchain is absolutely obvious and everlasting without the potential to trade or take away previous transaction facts from the dispensed ledger. This characteristic and answer can be used to resolve many inefficiencies in unique packages and industries.

III. PROPOSED SYSTEM

Blockchain is an era that strengthens an awesome manner to have huge-undertaking implications so that it will now not genuinely transform financial offerings, but many other commercial enterprise and industries. Billions of humans and groups are served and trillions of bucks are moved around the previous worldwide financial device every and every day. Nevertheless closely reliant and dependent on paper, despite the fact that dressed up with a virtual appearance, there are various problems with this era. Motive brought price and delays as well as make it much less complicated for crime and fraud to cripple it. In spite of the monetary employer's resistance to trade, blockchain and its anticipated benefits make it worthwhile. Blockchain, not like traditional structures, is dynamic enough to come to be a pacesetter in implementation in a chargeable market situation. In a blockchain, the best advantage it guarantees is that every celebration has a report that is maintained in a ledger to be had to everyone. It is a ledger extensively surpassed between special users thereby developing a shared database that is replicated to those users and who can get right of entry to it simplest when they have the get admission to the right for it.

A. Things blockchain can do for the financial sector

a). On-chain settlement

Blockchain is a pioneering technology based on a distributed ledger. It has a capability to lower the fraud rates in the international bank system and it is also capable of providing On-chain settlement. Blockchain can be used in the financial sector specifically in banking sector providing a platform for banks to reduce fraud as well as On-chain settlement to the users that also helps in reducing the processing time. DLT is capable of providing a platform on Ethereum blockchain. The user will don't have to rely on the centralized system for the confirmation of the transaction.

b.) Low transfer fees

The user will have a transparent cost model for sending a certain amount of money for overseas transactions. The traditional system has a number of intermediaries which results in the high transfer fees. The banks have to rely on the centralized system for verifying the transactions. The process is complicated and takes a lot of time to verify the transactions. The platform proposed will have a transparent cost model for sending the money cross border that will provide ease to the user and they have to pay only the negligible cost for sending money.

c.) 24*7 Availability

The platform is accessible anytime from anywhere from the world. The nodes in the distributed network will verify the transaction and if more than 75% verifies the transactions, the process will be completed and the user on the side will receive the funds. The nodes will have certain amount of price to verify and block creation.

d.) Transparency

The bank system presently changes the conversion rate without informing the users which results in high transaction cost. The platform proposed will have a transparent conversion rate that will be visible to the user for sending the money overseas with ease. This will also allow the user to seek in his ledger and see the transaction history and conversion rate.

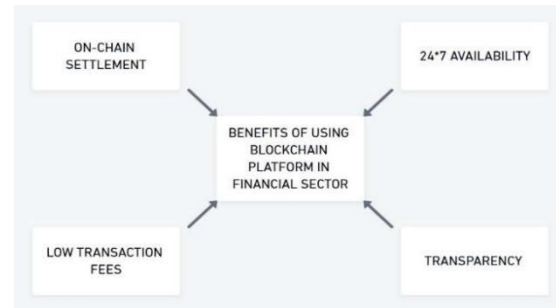


Fig. 1. Benefits of Using Blockchain

B. Proposed working of platform

Every bank registered on this blockchain platform will have to update the ledger by uploading customer data in encrypted form which allow security to the user's data. By registering to this platform every bank will have the same ledger for the customer data and transaction history. DLT will provide a full transparency model to the user to send money overseas along with 24*7 availability. This will also reduce the time for the transaction to process as every node present in the network will verify the transaction and store the transaction history in the blockchain database. This distributed ledger will also vanish the double spending problem present in the centralized system. This platform also provides on-chain settlement with the negligible cost for a transaction.

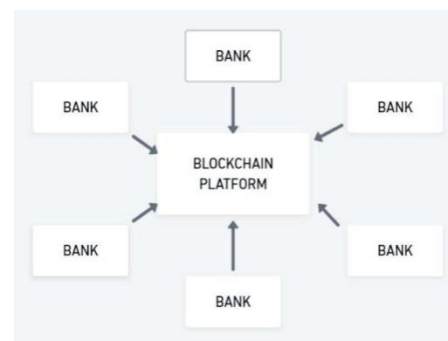


Fig. 3. Banks on the Blockchain Platform.

If a user wants to send money to the other user, the platform will provide some features over the centralized system. The banks registered within the blockchain platform will interact with each other in the ledger. The user can only send money to the banks registered on the platform

that will carry all the information of other users in the distributed ledger.

The user sending the money via this platform will have transparency for the transaction made with the negligible fees. The user on the receiver side will get the funds after more than 75% nodes verifies the transaction. However, the availability of the platform is easily accessible and they don't have to visit banks for sending money overseas. The transaction made has to undergo a consensus mechanism that will be carried out by nodes in the network.

The platform will have a certain advantage over the centralized system as the transactions made will be immutable which reduce the rate of frauds conversions.

IV.CONCLUSION

Although the potential of blockchain is widely claimed to be at par with early commercial interest, banking firms need to understand the key features of the technology and how it can solve the current business issues as on one hand, internet enabled the exchange of data while on other, the blockchain can involve the exchange of value. Banks need to identify opportunities, determine feasibility and impact and test proof of concepts. However, the questions around emulations will have to be resolved through focused discussions with competent regulatory authorities and incorporation of their thought-process.

Further we will research how we can provide off-chain settlement for the banks which are not listed on the platform, one of the alternate to do it is to access its database with the permission, due to which further transaction can be taken place (between listed and non-listed banks) so that both can have equal ledger maintained.

REFERENCES

[1] Tejal Saha, Shalilak Jani, "Applications of Blockchain Technology in banking and finance", Parul CUniversity, Vadodara, India,

February 2018 DOI:
10.13140/RG.2.2.35237.96489

[2] DUSKO KNEZEVIC, "Impact of blockchain technology platform in changing the financial sector and other industries., University Union Belgrade, Serbia, Montenegrin Journal Of Economics, Vol. 14, No. 1(2018), p.p(109-120).

[3] Lin William Cong Zhiguo He Working Paper 24399

<http://www.nber.org/papers/w24399>

NATIONAL BUREAU OF ECONOMIC RESEARCH 1050 Massachusetts Avenue Cambridge, MA 02138 March 2018, Revised April 2018

[4] Soonduck Yoo, (2017) "Blockchain based financial case analysis and its implications", Asia Pacific Journal of Innovation and Entrepreneurship, Vol. 11 Issue: 3, pp.312-321 <https://doi.org/10.1108/APJIE-12-2017-036>

[5] C. Miguel and L. Barbara, "Practical byzantine fault tolerance," in Proceedings of the Third Symposium on Operating Systems Design and Implementation, vol. 99, New Orleans, USA, 1999, pp. 173–186.

[6] Underwood, S. (2016), Blockchain beyond Bitcoin, Commun. ACM, Vol. 59, No. 11, pp. 15–17. <https://doi.org/10.1145/2994581>

[7] Digital currencies", IEEE Commun. Surv. Tutorials, Vol. 18, No. 3, pp. 2084–2123.

<https://doi.org/10.1109/COMST.2016.2535718>.

Greenspan, G. (2015), "MultiChain Private Blockchain", White Paper Founder and CEO, Coin Sci-ences Ltd, <https://www.multichain.com>

[8] M. Vukoli'c, "The quest for scalable blockchain fabric: Proof-of-work vs. bft replication," in International Workshop on Open Problems in Network Security, Zurich, Switzerland, 2015, pp. 112– 125.

[9] D. Kraft, "Difficulty control for blockchain-based consensus systems," Peer-to-

Peer Networking and Applications, vol. 9, no. 2, pp. 397–413, 2016.

[10] I. Eyal, A. E. Gencer, E. G. Sirer, and R. Van Renesse, “Bitcoinng: A scalable blockchain protocol,” in Proceedings of 13th USENIX Symposium on Networked Systems Design and Implementation (NSDI 16), Santa Clara, CA, USA, 2016, pp. 45–59.

[11] I. Eyal, A. E. Gencer, E. G. Sirer, and R. Van Renesse, “Bitcoin-ng: A scalable blockchain protocol,” in Proceedings of 13th USENIX Symposium on Networked Systems Design and Implementation (NSDI16), Santa Clara, CA, USA, 2016, pp. 45–59.

[12] J. Bonneau, A. Narayanan, A. Miller, J. Clark, J. A. Kroll, and E. W. Felten, “Mixcoin: Anonymity for bitcoin with accountable mixes,” in Proceedings of International Conference on Financial Cryptography and Data Security, Berlin, Heidelberg, 2014, pp. 486–504.

[13] T. Ruffing, P. Moreno-Sanchez, and A. Kate, “Coinshuffle: Practical decentralized coin mixing for bitcoin,” in Proceedings of European Symposium on Research in Computer Security, Cham, 2014, pp. 345–364.

[14] I. Miers, C. Garman, M. Green, and A. D. Rubin, “Zerocoin: Anonymous

[15] A. Fiat and A. Shamir, “How to prove yourself: Practical solutions to identification and signature problems,” in CRYPTO ’86, vol. 263 of LNCS, 1986, pp. 186–194.

[16] A. Biryukov, D. Khovratovich, and I. Pustogarov, “Deanonymisation of clients in bitcoin p2p network,” in Proceedings of the 2014 ACM SIGSAC Conference on Computer and Communications Security, New York, NY, USA, 2014, pp. 15–29.

[17] S. Barber, X. Boyen, E. Shi, and E. Uzun, “Bitter to better – how to make bitcoin a better currency,” in Financial Cryptography 2012, vol. 7397 of LNCS, 2012, pp. 399–414. digital currencies”, IEEE Commun. Surv. Tutorials, Vol. 18, No. 3, pp. 2084–2123. <https://doi.org/10.1109/COMST.2016.2535718>

[18] CryptoCurrency Market Capitalizations, Coinmarketcap.com, Available: <https://coinmarketcap.com>.