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Critical Review: Future of Block Chain Economy in Financial Services

By Lim Hong Hin
Liberty University

Abstract- This research paper is based on the future of block chain economy in financial sectors and its significant usage. The researcher emphasized that the block chain technology has the potential to disrupt financial services and it can change the current face of financial Industry. The researcher focused on the significant usage of block chain economy to fraud detection, to maintain the customer's history, trade finance, and smart contracts. There are some challenging faces of block chain economy towards adoption in financial sectors such as interoperability, privacy, energy consumption, security, scalability, and legal regulations. The researcher also stated that block chain economy is a scenario and potential future environment in which crypto currency replaces current monetary systems on a global basis to become an autonomous market participants in financial sectors. The researcher also highlights the key challenges of block chain economy adoption in financial sectors with current statistics of future analysis.

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I. Introduction

The block chain contains the ever-growing list of transactions by way of blocks. Each block is time-stamped and then linked to the previous block to become a part of the block chain. Block chain has been around since the evolution of Bit coin, with many have been somewhat skeptical of Bit coin creator Satoshi Nakamoto's new virtual currency in the wake of the last global financial crisis.

The block chain economy is a scenario and potential future environment in which crypto currency replaces current monetary systems, potentially on a global basis. Although block chain is most commonly associated with the Bit coincrypto-currency, the technology is actually a distributed ledger that keeps track of transactional data in a secure, verifiable and permanent manner. No central authority is required to validate the accuracy of transactional records; instead, trust is established and maintained through consensus within a peer-to-peer (P2P) network [1].

This has profound implications for the future of financial and the exchange of value. Block chain's peer-to-peer system of exchange is inherently self-governing; based on shared ownership and equality among participants. Because P2P transactions through blockchain don't require the help of an intermediary, it lowers the cost of each transaction. Additionally, the consensus algorithms used to validate the accuracy of the distributed ledger make blockchain much less vulnerable to fraud and cybercrime than conventional financial systems [2].

Block chain's autonomy is also expected to foster another emerging aspect of the blockchain economy, machine-to-machine (M2M) transactions. In this scenario, machines will use blockchain to become autonomous market participants with their own bank accounted. Before long, it's expected that advances in artificial intelligence (AI) will allow machines in the Internet of Things (IoT) to be able to lease themselves out, schedule and pay for their own maintenance, purchase their own replacement parts and keep their own transactional records, using blockchain [3].

a) *What is Blockchain?*

Blockchain was originally created to be a decentralized ledger of Bit coin transactions that take place within the Bit coin network. A decentralized or distributed database/ledger essentially means that the storage devices, where the ledgers are located, are not linked to a common processor. In the early days, the focus remained largely on the crypto currency itself and not the technology behind it. After all, exponential gains in the new asset class tend to overshadow what's the driving force behind it [4] [5].

b) *The usage of Blockchain Technology*

The blockchain is a peer-to-peer distributed ledger of time-stamped transactions. For the purposes of crypto currencies, the entire ethos was to decentralize away from central banks through Bit coin and other crypto currencies. Therefore, it's a movement against the centralization and the control of fiat money. While with fiat money, central banks are in control of the ledger, with crypto currencies and blockchain technology, the user maintains their own copy of the ledger and all copies of the ledger are synchronized through what is known as a consensus algorithm [5].According to Gartner, blockchain technology has already passed the peak of the hype cycle and has entered a period of disillusionment, which brings about a realism to blockchain technology. The general view is that passing the period of inflated expectation has been an important step in block chain's advancement through the hype cycle [6].The industry have now embarked on projects to fully assess block chain's capabilities and how it can be incorporated into day to day processes. The incorporation of block chain technology into day to

Author: Libertiy University. e-mail: drblalpersonal@gmail.com

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day practices within large multinationals has already stated, with the finance sectors is the quickest out of the blocks, getting into the hype and down to business.

II. Related Work

Trautman, Lawrence J (2016) stated that block chain technologies have been heralded as the next big disruption in financial services. Potential uses may without a doubt carry colossal advantages to the business and bring forth an entirely different age of administration. A few insights regarding open revelations from administrative specialists' agents have been dislodged to the extensions to gives extra data about the controllers' mentality in situations where real guidelines have not been planned at this point [1].

Javier Sebastian Cermeño (2016) focused on circulated record advancements (DLTs), including block chains, are progressively getting a huge enthusiasm from set up businesses. Furthermore, DLTs may turn into a facilitator for the advancement of new computerized organizations prompting new wellsprings of income. Be that as it may, DLTs are still a long way from been prepared for mass reception, because of some unsolved difficulties on the innovative, operational, business and administrative sides [2]. Philip Treleaven et al. (2017) emphasized that the financial and financial-administration industry has considered blockchain innovation's numerous preferences. This exceptional issue investigates its improbable starting points, huge effect, execution challenges, and gigantic possibilities on block chain innovation [3].

Nir Kshetri (2016) emphasized that the potential reasons for major monetary, political and social changes in the Global South. The unmistakable impacts of this innovation are as of now been noted there. The blockchain in conquering some monetary, social and political difficulties confronting the Global South. The article features the key applications and employments of blockchain in creating nations. It likewise digs into difficulties and hindrances that creating economies are probably going to experience in the utilization of blockchain [4].

Chris McPhee (2017) expounded four explicit applications that feature the potential monetary advantages of computerized records. The all-encompassing topic is that an expanding measure of ordinary activities including cash, resources, and reports could begin to be directed using block chain-based disseminated organize records with cryptographic security, and at progressively granular degrees of detail [5]. Richard Adams et al. (2017) stated that block chain innovation gives an energizing application space to development in various areas however compromises disintermediation for associations giving a trusted and auditable record of possession and exchanges [6].

Siba, Tarun K et al. (2016) focused on computerized money because of demonetization, quickly evolving world, and worldwide installment alternatives and so on. The enterprises are searching for such an innovation that works in advanced cash conditions with the record of the considerable number of exchanges. In this paper the researcher discussed the Blockchain innovation, an advancing innovation, which gives help to the ventures in computerized money conditions with the record of every exchange. It gives an understanding on the blockchain innovation with the dread and grin of start of new time of straightforwardness [7].

Chris Elsden et al.,(2018) emphasized that block chain is a developing infrastructural innovation that is proposed to generally change the manners by which individuals execute, trust, work together, sort out and distinguish themselves by featuring center theoretical and methodological difficulties for HCI analysts starting to work with blockchain and dispersed record innovations [8].

Javier Sebastian (2016) stated that disseminated record innovations (DLTs), including block chains, are progressively getting an enormous enthusiasm from built-up businesses. It depends on essential information from material rules and optional information from the open area including important contextual analysis experiences. In this way extending openness and accordingly financial comprehensiveness. It additionally features other financial possibilities spilling out of blockchain progression [9]. The intrigue is particularly solid among financial administration firms, which are beginning to see DLTs as a potential driver of gigantic investment funds in foundation and back-office forms [10].

Scott, Brett (2016) focused on decentralized computerized money Bit coin - and its fundamental "block chain" innovation. This paper gives an introduction on the nuts and bolts of Bit coin and talks about the existent accounted about the innovation's capability to encourage settlements, financial consideration, helpful structures and even miniaturized scale protection frameworks [11]. Guillermo Jesus, Largos-Hernández (2017) emphasized that creating economies have constrained or no entrance to formal financial administration, making cause for generous research enthusiasm for financial consideration as a complex multidimensional marvel. Computerized funds advances, including block chain, have enabled a sort of cursive business that looks for circumstances in connection to financially rejected people [12].

Charles W. Evans (2015) broke down the consistence of appropriated, self-governing block chain the board frameworks (BMS) like Bit coin-additionally alluded to as 'virtual monetary forms. It presumes that Bit coin or a comparative framework may be an increasingly proper mode of trade in Islamic Financial

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and Finance than riba-supported national bank fiat money, particularly among the unbanked and in little scale cross-outskirt exchange [13].

Andrei O. et al. (2019) stated that blockchain innovation could profoundly disturb the worldwide economy. As the new innovation, block chain is of wide and current enthusiasm for the travel industry. Little island economies are at the cutting edge of embracing this advanced resource and innovation [14]. Gareth W et al., (2019) gave a review of the idea of blockchain innovation and its capability to upset the universe of financial through encouraging worldwide cash settlement, savvy contracts, robotized financial records and advanced resources [15].

Thomas M. Hughes (2018) emphasized that Bit coin and its empowering innovation, the blockchain, are up front in exchanges of things to come of funds and "fintech." This innovation of the financial markets recommends that as opposed to been problematic to significant occupant organizations, blockchain-based development will in general reinforce existing business sectors members, serving more to lower costs than to energize new participants or new business techniques [16]. Julia Kokina et al., (2017) stated that block chain is a dispersed record innovation ready to change the bookkeeping practice, blockchain-related practices in enormous bookkeeping firms and follow critical achievements in this current innovation's rise. At last, we examine some potential regions that future research could address [17].

Jun sheng Wang et al. (2019) stated that the hot of government "Web +" and eight services "on the financial help for modern development and solidness of the exchange of various perspectives on the expansion in productivity," Supply chain money has entered a phase of quick advancement. The blockchain innovation as an inventory network account improvement of fuel, can be depicted as the job of indispensable. It expounds the examination and utilization of blockchain innovation in inventory network money lately, the use of blockchain innovation in production network funds is condensed and determined [18].

Shweta Bhardwaj, Manish Kaushik (2019) stated that blockchain innovation initially came into open talk through the fast development of Bit coin money. The utilization of blockchain innovation in various territories, the capability of This innovation in fresher zones and perceive how it is changing the key methods for exchanges in a variety of business areas [19]. Notheisen Benedikt et al.,(2017) stated that the blockchain has arrived at the tip of a worldwide promotion over an assortment of enterprises. The capability of this innovation, entomb alia building the fundament of Bit coin, is thought to be tremendous and problematic – especially for the financial business. Moreover, the analyst goes past a simply systematic point of view and gives a tool kit to help the dynamic development of blockchain-based environments and frameworks [20].

III. Problem Statement and Research Issues

The researcher pointed out some of the significant research issues in financial sectors concerning problems solved by blockchain which are offering access to funds or financial institutions to enable financial transactions, where infrastructures are lacking. The main economic advantage blockchain technology offers is its decentralized, digital ledger system. Technology could allow for the transformation of economies, in essence leapfrogging, by using blockchain as an economic tool. This is disrupting the financial services industry, as traditional services often include an expensive middleman used to verify a transaction has been correct and true. Blockchain circumvents the need for a middleman through the use of technology. Although blockchain isn't infallible, it's resistant to falsification attempts, making it a viable alternative to traditional processes [21]. The researcher stated some of the research objectives of this research article:

1. To study the usage of block chain economy in financial sectors.
2. To analyze the challenging faces of block chain economy in financial sectors.
3. To study the problems in adoption of block chain technology in financial sectors.

IV. Research Design and Methodology

This research paper has designed on the basis of secondary data. The secondary data were collected from published books, journals, research papers, magazines, internet and official statistical documents. The study is qualitative to show that a significant impact of block chain economy in financial sectors. The methodology builds on as technology widens communication and collaboration globally, this results in an increased reach to people who wouldn't ordinarily have had the opportunity to access traditional financial services. By drastically reducing the costs of this economic activity, blockchain becomes an affordable economic tool for the masses that doesn't discriminate on gender, ethnicity, income bracket, or occupation.

V. Future of Block Chain Economy in Financial Services

The researcher emphasized that the emerging use cases with each passing day, the blockchain technology has the potential to disrupt the financial and finance sectors of current times. A few ways in which blockchain can change the current face of the financial industry are as follows:

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1. *Fraud Reduction:* The involvement of money in any situation leads to increased chances of fraudulent activities. And for an overall sectors operating on the very base model of money, security is of utmost importance. More than 40% of financial bodies and intermediaries including money transfer service providers as well as stock exchanges are susceptible to heavy losses relating to economic crimes annually.
2. *Centralized Database:* Reason been the usage of centralized database systems for operations and money management. A centralized database system is vulnerable and highly prone to cyber-attacks as the single point of failure, such systems can be exploited by hackers. Once a hacker gets access to such a system, it is a child's play for him/her to take the money. This leads to the need for more secure systems that are strong enough to avoid such attacks.
3. *Security:* Enter Blockchain, a secure, non-corruptible technology operating on a distributed database system. Since blockchain is distributed, there is no chance of a single point of failure. Each transaction is stored in the form of a block with a cryptographic mechanism which is extremely difficult to corrupt.
4. *Virtual Currency:* The government currency of the future is inevitably crypto. Compared to the traditional fiat alternative, crypto currency is more efficient, provides reduced settlement times, and offers increased traceability. Crypto currency can also be backed by real assets, similar to fiat currency, and its price can be artificially manipulated by numerous controls (e.g., monetary policy for "printing" more tokens).
5. *Smart Contracts:* The application of smart contracts can prove particularly important in the financial and finance sectors. A smart contract is a self-executable piece of code that runs when certain conditions written on it are completed.
6. *Trade Finance:* Trade finance is considered one of the most useful applications of blockchain technology in the financial sectors. All the involved parties such as a complex transaction can be on-boarded on a blockchain network and the information can be shared by exporters, importers, and banks on one common distributed ledger. Once certain specified conditions of the deal are met, the smart contracts will automatically execute themselves and the respective parties can view all the actions performed.

Moreover, all the blocks are linked to each other and due to this linking mechanism, if one block is breached all the other blocks on the blockchain immediately showcase the change. This, in turn, helps to track the breach and provides the hacker with no time to make changes in the overall system. With a secure Blockchain system in place, the researcher emphasized to eliminate the cybercrimes and attacks of financial and financial sectors taking place in the current times.

VI. Challenges in Adoption of Block Chain Economy

Blockchain sure has its advantages in terms of adoption given its proposed features but there are some hurdles along the road as well which need to be addressed for banks and financial institutions to grow ahead with blockchain.

1. *Interoperability:* The blockchain technology is not bounded by any international rules and regulations that place a standard to it. With the increasing need for interoperability among large industry like banks, the technology needs to be compatible with different systems and should hold the potential to get adopted by the masses. The integration of existing systems with a block chain-based model is a big challenge today as the current systems and processes cannot be entirely eliminated. If the actual adoption of blockchain allows multiple systems to work together smoothly, operational feasibility can be achieved.
2. *Privacy:* Banks and financial institutions are the entities that are trusted by people for storing their funds. Forblock chain to take their place, it is important to ensure that the data stored on the blockchain technology is kept securely and would not hamper the identity of any individual. As the transactions made on a public blockchain are publicly available, the need of exploring the potential of private block chains for data-critical sectors is needed along with the resolution of issues like interoperability.
3. *Encryption:* Private keys are the essential elements of a blockchain as they play a significant roles in securing the data of an individual on the blockchain. However, a private key generated once has to be kept very securely as once it is misplaced or lost, there's no way to get it back. Moreover, the encryption used to store data can be compromised by finding loopholes in the network which in turn, makes the blockchain susceptible to hacker attacks.
4. *Security:* The blockchain network is secure and powerful as it is embedded with cryptography techniques. Cryptographic networks are complex to hack and thus, any kind of security breach in such networks would require a high amount of computational power to secure any hack. When a blockchain network is applied to any financial institution, it has to be secured with multiple security protocols. The network should be capable enough to restrict participating authorities to take control of

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the network only according to the access permission given to them. Depending upon the requirement, the blockchain involved in such systems or organizations could be permissioned or permission less. People in an organisation need to be handled with different levels of access permissions in order to save the overall network from malicious insiders and cyber hackers.

5. *Scalability:* Growth of existing databases is undeniable. The number of entries will keep on increasing as the number of people will continue to grow too. This poses a big challenge to the application of blockchain technology network. The network created through a blockchain should be able to handle the growing traffic while maintaining the speed of accessibility for the network participants. If the blockchain technology is applied to the current financial systems and institutions, it has to ensure the capacity of handling large volumes of data too.
6. *Energy Consumption:* Most of the current successfully running blockchain networks run on the concept of proof-of-work mechanism in which the network participants are rewarded based on how quickly they solve the equation to add the new block to the network. While this keeps the network working smoothly, it also increases the consumption of energy in enormous amounts in the form of computational work. This kind of computing power leaves massive carbon footprints that affect the environment. Before adopting Blockchain in an industry like financial, this issue needs to be resolved through alternate rewarding mechanisms.
7. *Legal Regulations:* If blockchain is applied in the financial sectors, the need for international and national regulations around it will become mandatory. Currently, crypto currencies, the most popular application of blockchain, do not have any regulations around them which makes them susceptible to both profits and losses. However, if and when blockchain finds its place in the financial or finance sectors, the regulations need to be in place to avoid chaos among people in case of any losses.

VII. Future Statistics of Block Chain Economy

Block chain technology market worldwide from 2018 to 2023 (in billion U.S. dollars)

Table 1.1: Source: Statista- Future Statistics of Block Chain Technology in Financial Sectors

Year	Market in billion U.S. dollars
2018	1.2
2019	2.2
2020*	3.9
2021*	7
2022*	12.7
2023*	23.3

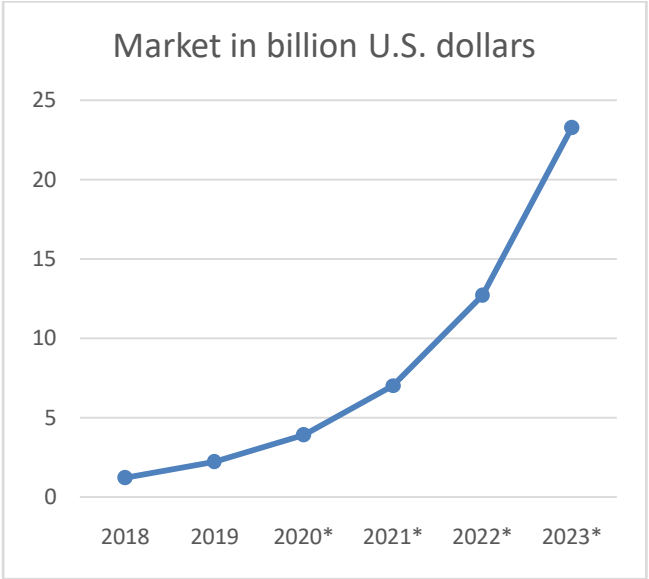

Fig.1.1: Block chain technology market worldwide from 2018 to 2023 (in billion U.S. dollars)

Forecasts suggest that global blockchain technology revenues will experience massive growth in the coming years, with the market expected to climb to over 23.3 billion U.S. dollars in size by 2023. The financial sectors has been one of the quickest to invest in blockchain, with over 60 percent of the technology's market value concentrated in this field.

Shanhong Liu (2019) stated that a list of evolving records that use cryptography to link back to each other and contain transactional data, Blockchain is a technology that has taken the business world by storm. Blockchain data is meant to be resistant to modification and secure as a record of transaction. The intricacies of the technology itself may be hard to grasp even for tech enthusiasts, but the growing popularity and prevalence of the technology is clear for all to see. Blockchain technologies can be used as public means of transactions as well as private ledgers for inter-company transactions and record keeping. Worldwide spending on blockchain solutions is expected to grow from 1.5 billion in 2018 to an estimated 11.7 billion by 2022. Every Industry are rushing to take advantage of the perceived benefits of the blockchain phenomenon and many are seeking to adopt their own private versions of blockchain and crypto currency. The financial sectors accounted for over 60 percent of the market value of blockchain worldwide in 2018, but the technology has spread to nearly every industry from healthcare to agriculture.

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VIII. Conclusion

Finally the researcher concluded that block chain economy is playing one of the significant roles in financial sectors concerning fraud detection, to manage the history of customers, trade finance, smart contracts, privacy and other significant factors. The potential roles of block chain technology seeing the popularity of crypto currency in the current markets. The big giants in financial sectors and possible cases of the decentralized technology for their business process. The researcher focused on some of the research issues of adoption of block chain economy in financial sectors such as interoperability, privacy, energy consumption, scalability, and legal regularities. Apart from that the researcher emphasized that block chain entering the current scenario, a lot of problems could be solved while making the system more transparent, easy to access and reliable.

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