

The Block Chain Technology – A Catalyst of the Fintech Revolution

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ABSTRACT: The block chain is seen as a new generation of the Internet, even called by some experts the New Internet. It can also be considered as an Internet of Transactions. These definitions tend to associate the block chain with the concept of the Internet of the People who use it daily and which are in turn extended to the Internet of Things (IoT) or to Internet of Value. This type of technology has multiple uses in financial and banking sector, but one of the most notorious applications associated with block chain remain the so-called cryptocurrencies. This field has grown rapidly in recent years, and the key to success and growing popularity are the seven principles: Decentralization, transparency, and security through security, stability and constancy over time, consensus, and responsibility.

KEYWORDS: Block chain, finance, cryptocurrencies, bitcoin, Fintech

Introduction

It is quite difficult to present the concept of block chain through one definition seeing how, judging from the perspective that it's being looked upon, it can generate a variety of lecture keys depending on the angle it's being approached from.

The block chain can be considered a part of the technological field whose register is structured as a chain of blocks containing transactions whose validation is entrusted to a consensus-based mechanism shared on all network nodes in the cases of *permission less* block chains, which do not require permission, since they are public, or just certain nodes authorized to participate to the transaction validation processes in the case of the *permitted* or *private block chain* category.

The main characteristics of the block chain technologies are the invariability of the action register, transparency, the ability to track transactions and security in the sense having security based on cryptographic technologies.

The block chain is based on the web network and, when it comes to its abilities, it allows the managing of a database in a distributive way. From an operational point of view, it is an alternative to centralized archives that allows data *upgrade*-type of management with the involvement of authorized partners in the network and with the possibility of accessing shared date bases, accessible and distributed to all of the participants while allowing their management under conditions of verification and authorization without the need for a central authority.

In our try to define what the block chain is we will start from already-established definitions in this field, trying to use the most accurate of descriptions. For many, the block chain is heralded as a new generation of the Internet or even the New Internet. It can be said that this is an Internet of Transactions. These definitions tend to associate the block chain to the concept of the Internet of the People, or the Internet of the Individuals that are using it and attending to it daily and which, in turn, is extended into the Internet of Things (Alam 2019) to reach, eventually, the definition and representation of the Internet of Value, based on seven characteristics:

- Decentralization
- Transparency
- Safety through security

- Stability and consistency over time
- Consensus
- Responsibility
- Programmability

1. The block chain in the financial and banking domains

Of all the domains experiencing an accelerated growth in this stage of the society's evolution, the economic and financial domains are the most watched by the investors who are watching the block chain technology (Guo & Liang 2016). Because the scope of the block chain technology does not have the concept of an intermediate when it comes to transaction management, the block chain technology can eliminate the costs of bank fees and financial services, therefore allowing for savings, a maximum reduction of the costs involved in transaction management, a dramatic shortening of execution time and increasing the degree of confidence in conducting transactions. Banks and financial institutions are the first ones to want to invest in this new technology and grab as much of a slice of this market as possible, seeing how it is already showing an alluring list of opportunities and participation possibilities.

1.1. Block chain technology and Central Banks: CBDC, Central Bank Digital Currency

It is self-understood that the banks have managed, for quite some time now, to transform the “threat” of the block chain (Bitcoin) into an opportunity (Dashkevich, Counsell, & Destefanis, 2020). One emblematic example comes from the central banks and therefore, from the main institutions of the banking world which, as it is clearly highlighted in the WEF World Economic Forum Report called “*Central banks and the distributed registry technology: how are central banks exploring the block chain today?*” is actively working on projects that can benefit from the block chain technology (Toshendra 2020). The report indicates ten major priorities but the real key point, the one where it's important to focus our attention, is the creation and support for a digital currency of the central bank or CBDC.

However, CBDC should confer various characteristics to specific cryptocurrencies that appear, but are not issued by any state and have no coverage at a national economic level in the same way traditional currencies do.

CBDC currency is not in a “competition” with the present-day banking system but it does represent an innovative monetary tool in a digital format, valid as a payment instrument, as a reserve / value deposit and as tools designed to increase the security of transactions in terms of identification, tracking, prevention, and reduction of counterfeiting risks and exposure to fraud (World Economic Forum 2019).

Next to CBDC, the central banks have, according to the WEF report, the next ten main priorities when it comes to the block chain:

- Central Bank Retail Digital Currency (CBDC)
- Wholesale Central Bank Digital Currency (CBDC)
- Settlement of interbank securities
- Strength and contingency of the payment system
- Issuing bonds and managing their life cycle
- Knowing the customer and combating money laundering
- Exchange of information and exchange of data
- Trade financing
- Cash supply chain
- SEPA creditor and Customer identified (SCI)

1.2. The block chain for those without bank access

A delicate topic is the one about people who do not have access to banking services, and this aspect is a reality as well as a great opportunity on both a social and a business level (Viriyasitavat & Hoonsopon, 2019): offering access to a bank to those who do not have one, or those who do but do not have access to all the banking and financial services. We are talking about the *Unbanked*, 31% of the world's population which means, in absolute terms, 1.7 billion people. For credit institutions seeking new business, it might seem like the “Eldorado” if the unbanked do not have the possibility of bank access. We are speaking about Facebook, which is among the promoters of project Balance (Balance Association) that is ready to give life to a cryptocurrency, Balance that also has the mission to serve all those who cannot have a bank today and who will be able to pay, send, receive money and manage financial services tomorrow due to their smartphones.

After all, the interest of the banks when it comes to the unbanked has not been a secret for some time. Goldman Sachs declared that Block chain is going to revolutionize the industry, while Barclays and USB publicly admitted to the possibility of using the technology in a variety of operational areas, from remittances to contracts. The bank of England has declared that it has created a series of development teams in its organization. Instead, in September, R3 was born, which is a private consortium of financial institutions interested in the potential of Block chain. A new round of meetings took place in December, which widened the scope of interest with the entry of BMO Financial Group, Banco Santander, Scotiabank, Sumitomo Mitsui Banking Corporation, USA Bancorp and Westpac Banking Corporation. Today, a total of 42 banking institutions have joined the federation.

But there are also those who've already moved from words to action: Bank of America filled in the U.S.A. at the Patent and Trademark Office (USPTO) 15 block chain-related patents and is expected to file another twenty in the upcoming period. The Bank of America patents aim to create systems for identifying cryptocurrency-related risks and alerts in case of suspicious users.

Evidently, there are also disadvantages to this. If, on one hand, the banks are attracted to the possibility of engaging in cheaper and safer transactions, on the other hand, the idea that the participants to the network can observe, in real time, the data being transmitted through the nodes is considerably diminishing the enthusiasm of those who do not want their transactional flows to become public. Therefore, it's necessary to make sure that each user has the accreditation to only see the operations related to him.

1.3. The block chain and the insurance domain

The insurance and reinsurance domain grants special attention to the new block chain technology that can come to the help of everyone who serve or are being served in the insurance field, so lower we are going to list some of the opportunities and benefits that the block chain technology can bring:

- Access to safe and decentralized transactions by providing solid databases, unchangeable and not subject to the possibilities of fraud or corruption in order to guarantee a government of superior quality and efficiency, to have reliable reporting databases and reports, with timely notifications of any change happening that will allow an improvement in risk management and maximizing the use of risk capital and one's own equity, with the possibility of adopting the strategies generated by access to the Big Data domain, possibilities which are essential and useful in obtaining safer information and data about customers, about their preferences and priorities, as well as for the possibility of access to the databases of a third party.

- The participation of insurance companies to the block chain technology can capitalize on the opportunity to integrate them into complex ecosystems together with third parties in

order to reduce the cost of customer portfolios management and administration platforms, improving, at the same time, the client – insurer relationship, the market shares and the possibility to find new solutions for evolution within new opportunities (Gatteschi et al. 2018).

- At the insurance market level, new management opportunities can be found through access to superior consistency and quality databases doubled by the possibility of comparing and exchanging experiences with third parties who are dealing with more sophisticated risk management systems, such as the ones for insurances in the cybernetic domain.

1.4. The block chain and the digital payments domain

When it comes to digital payments the block chain technology also offers an important series of opportunities. One of the yet-unresolved drawbacks is the time it takes to elaborate and execute transactions that don't keep pace with the speed at which the world works.

Even the level of system performance has to be enhanced as well as the norms regarding the speed with which digital payments are made, which is not always able to keep up with the speed with which productions, delivery of goods and services are taking place. The current level of applicability of the block chain technology will have to keep up with the improvements of production and distribution technologies.

2. The block chain and the 4.0 industry

Even in the manufacturing production, the block chain technology can be an important ally. Thanks to the block chain and the *4.0 level* of development of the industry a better integration and development of production, logistics and distribution chains is now possible together with the base zones of industrial units (Mohamed & Al-Jaroodi 2019). The block chain can allow and proposes particular, specific solutions for transforming the industries for a more efficient management of domestic production logistics and for a better synchronization and synergy of the relations happening on the production and distribution channels.

Specifically, by particularizing, solutions were created and developed which now allow adapting logics such as “Trust” which is now widely used in the area of digital payment, but also for transactions whose object is data packages representing unique identities and identification values for certain products and their production processes. Under these conditions, it is strictly necessary for production and distribution agencies to have a maximum level of confidence in terms of managing the identity of materials throughout the production and delivery processes.

2.1. The block chain and the IoT (Internet of Things)

In the case of IoT, as well, technology and the block chain platform can be of great use especially in the domain of quick and efficient data exchanges between devices connected to the IoT world (Viriyasitavat, Anuphaptrirong, & Hoonsopon 2019).

Thanks to the correct and fast reactions, the speed of the processes of identifying things between them is raised, something which really facilitates the processes along the distributions chains, the food industry being a first example of this (Yiannas 2018).

Why is the possibility of a rapid identification reaction between objects and things involved in the industrial and technological processes so important? The answer to this question comes from the need to facilitate interactions between people and the things involved in the technological processes along the entire distribution chain, starting from acquiring the supply of raw materials up to the packaged and ready for distribution product located at the end of the trajectory on which each of the products evolves.

Through the block chain, the identification, tracking and Timestamp process gives the maximum unique identification of each product or person who has had to deal with the production and distribution process.

2.2. The other possible field of application, from Public Administrations to National Companies

It's not just banks that see the block chain as a lever for strategic development. If many observers say they're convinced that public administration practices and even personal data and identity documents can be managed by exploiting the distributed control systems offered by the block chain (even those applicable to notarial activities or intellectual property management), we can begin to assess the positive impact of technology on private companies too.

The next step? Implementing it in the business networks, with the automation of the procurements processes through real-time notification systems, constant and shared monitoring of assets available for sale and purchase and, again, generating precise, gradual barriers of entry for participation in exchanges.

However, much of the application scope of the block chain technology is in large part dependent on the openness of the technology vendors to first understand, then embrace and, further down the road, implement the logic of the block chain into their offer. There are already enough people thinking about it. But the game is interdisciplinary as well as international and, in addition to developing technical solutions that answer to concrete – and still unresolved – problems, an important information and awareness activity is also required in order to involve the institutions and associations into defining system regulations through active regulatory requirements.

2.3. The block chain and the reality: what to expect

The block chain has been drawing more on more attention lately and we can say that, despite the fact that it is a complex technology, it has become a *mainstream* subject, the problems of the block chain are being tackled by large newspapers, radios and TVs which rarely focus on such innovative technologies. In many cases, the block chain is proposed as the *solution* to the problems and needs which come from far away and were never fully satisfied by traditional technologies.

Expectations, not only of the companies but also of the consumers, of citizens, in regards to the possibilities of the block chain have increased tremendously. On one hand, this situation favors debates and raising awareness from those working on developing new solutions but, on the other hand, it creates a “dangerous” situation because some of the “beneficial effects” attributed to the block chain today are the results of misunderstandings or a distorted lecture / interpretation of the very important possibilities of this technology. The risk is that, if the block chain is now given central stage for everything that it can do well, if it doesn't “follow up on those promises” in an equally radical manner, it can be “set aside” and forgotten.

3. Conclusions

The block chain is a quite recent phenomenon that has gone through an important series of qualitative accelerations and jumps and that has created many expectations. At the same time, developing and implementing the block chain is not an easy task and there isn't a single company that can do it by itself. For everyone, manufacturers, companies or user organizations, the block chain is an ecosystem phenomenon, of a collaborative type.

For the same reason, if, on one hand, the level of attention surrounding the block chain is extremely high, on the other hand, the number of actual cases, of projects actually being produced in companies and organizations is still fairly low.

There are several aspects to keep an eye on in the following years. First of all, there is much to do to increase the *awareness* – the phenomenon started in 2011 and still ongoing. There are business and organizations trying to understand and develop new fields and knowledge based on the block chain technology. When it comes to *experimentation*, we can conclude it began in 2017 and will last until 2023. Companies and organizations are working to create new skills, forms of collaboration, concepts and consortia, in order to fully understand the potential and criticism that comes with the block chain.

The last key aspect in fulfilling block chain technology potential is *transformation*. The first visible and tangible results have been observed since 2019 and will accompany us until 2025 and during this period the block chain will transform the ways of relating, integrating, collaborating, bringing innovations to several levels: technology, finance, data management and governance.

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