The application prospect of block chain technology in accounting industry

Zhang Liucheng

School of Accounting Harbin University of Commerce Harbin, China

zhangliucheng@126.com

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Abstract: The emergence of each new technology may have an impact on the accounting profession. Over the past ten years, with the development of information technology, several technologies have been applied in the client level of accounting firms, and thus affect the audit work of the firm. As an innovative technology, block chain technology is a decentralized and distributed database to record transactions. There are significant implications for future financial and future central bank forms or regulatory policies. The future financial audit industry will undergo tremendous changes. Big data technology and the increasingly popular block chain technology may have a profound impact on the financial and auditing industries. This paper systematically summarizes the relevant contents of block chain technology, including the essence, development history, core technology, characteristics and related applications of block chain, and provides inspiration and reference for future research.

1. Introduction

Block chain is the foundation of the currency support technology, first appeared in the hearing (Satoshi Nakamoto) published in the "COINS: a kind of point to point electronic cash system", this paper describes in detail how to build a new, decentralized, don't need to trust the point-to-point transaction system, the method of its realize ability has been running since 2009, has demonstrated the COINS. Block chain technology is the prominent advantages of decentralized design, by using encryption algorithm, timestamp, tree structure, consensus and reward mechanism, in the node without trust based on the decentralized, distributed network credit point-to-point transactions, to solve the current centralized mode existing problem of poor reliability and low security, high cost and low efficiency, etc. Although currency in recent years, rapid development, its trading anonymity and as currency distribution cannot be mastered, most state institutions don't admit its monetary attribute, and chain blocks with its unique advantages, attracts a lot of attention, related research and the trend of application for a while a gusher. Block chain technology is considered to be the more large computers, personal computers and the Internet and mobile social after the fifth subvert computing paradigm, is following the blood in the history of human credit credit, precious metals, the central bank credit notes after the fourth milestone. The broad block chain technology is expected to completely reshape human social activities and bring profound changes to finance, science and technology, culture and politics.

2. Overview of block chain

2.1. The essence of block chain.

Block chain technology revolution on credit, is based on a digital encryption currency monetary core technology and infrastructure, and through the P2P communication network, rely on mathematical encryption algorithms, collective in decentralized autonomous way to maintain an open not tamper with the growing body of electronic accounting, subversive significance. Traditionally, both large and small systems have a database behind them. This database is like a big book. So we can think of database changes as "borrowing equals" bookkeeping. Usually we believe

that the person who maintains the system has the right to manage the database, and the user has no right to manage it. However, the block chain is different from this mode, and its users can participate in it and keep accounts. Block chain like a big book, in a certain period of time, the system will find out the fastest, the best user charge to an account, and the users in this paragraph of time recorded a ZhangYe data change, then the other user backup ZhangYe copied to the system, complete the whole movement. Repeat this operation, and each node in the final system has a full account copy. Since each block data is linked through cryptography, it is called "block chain" or "distributed general ledger technology".

The essence of the block chain is decentralized ledger books, each of which is determined by the mining operations of millions of computers. He will be stored in a central repository, use advanced cryptography spread in a book on the books of the world, when someone to trade, the miners will be based on their hand holds the massive computing power for about 10 minutes will generate a block, the block before including all of the transaction information.

2.2. block chain development stage.

Block chain 1.0 -- digital currency. Just as its name implies is monetized digital, virtual currency is a delegate with COINS, although there are many shortcomings, including the price volatility, calculate the force of the waste and governments regulatory restrictions, and so on, but he is a bud block chain, is the successful application of block chain technology.

Block chain 2.0 - smart contract. A smart contract is a pre-programmed procedure that is performed automatically when a set condition is reached. Because it can automatically in terms of implementation, without the need of human participation, can screen out economic cooperation for the possibility of fraud in the financial sector at this stage the main service, include to improve the efficiency of the settlement and payment, reduce the cost of cross-border payments, registration and transfer of equity, and other functions.

Block chain 3.0 -- decentralization. Decentralization means that the nodes of the block chain jointly maintain a point-to-point network, with no centralized management, and the rights and obligations of any node are equal. The financial industry, applying it to the other, all aspects of the society, make social programmable society, people no longer need the trust of the third agency, he applied in various fields, can solve the problem of trust, improve the efficiency of the society.

2.3. Block chain characteristics.

First, decentralize. The block chain system is composed of individual nodes, and there is no central node, and any single node damage can't or destroy the operation of the whole system.

Second, transparency. Due to the block chain running on millions of computers, the system is open, block chain made public, but only the trader's private information is confidential, other trading information is public, so long as has the private key can view all of the information.

Again, timestamp. It's usually a string of characters, real-time identification time, like a digital beeswax. The block chain requires that the node with the right of account must be stamped with a timestamp to record the data write time, making the future data query easier.

Finally, information cannot be tampered with. Miners through their operation ability to generate a block, and each block is on the basis of a block on the generated, so once a certain trading information is tampered with, must have cut more than 51% of the work force to succeed tamper with the information, and this ability is almost cannot achieve, so highly secure information confidential and not tampered with.

3. Technical basis of block chain

3.1. Core technologies

Distributed accounting method. It is a kind of decentralized way scattered record-keeping and transactions are nodes in the various regions to work together in operation, and each node will be the information public, so everyone can see, can be mutual supervision, improve the legitimacy.

The database recorded the information of all traders, everyone can be the information changes, updates will be open, so that other participants can see, and all the people see is the same.

Asymmetric encryption and authorization technology. In order to guarantee the security of trading information, need to encrypt information, generally with the public and private keys for encryption, and using a secret key encryption, you need to use another secret key to decrypt, for example with the public key encryption is decrypted. And the public key generation is irreversible, which means the private key cannot be released through the public key. And only the decrypted person can view, thereby ensuring the high confidentiality of the information.

Consensus mechanism.Trader by POW, POS, DPOS, consensus, the formation of the POOL system to judge the accuracy of the information, both to confirm information also can prevent information being tampered with, realize the balance of efficiency and security.

Smart contracts.It is a self-executing contract, and not only can the plan be executed, it can also manage the plan and its daily work and transaction costs. Exist in the etheric fang system all kinds of projects, some may become the substitute of the stock market, some may become the new democratic model, in this mode, politicians will be more responsible for the citizens. And in the blockchain finance industry, there is no settlement, because payment and settlement are the same thing, just change the account book.

3.2. Relevant basic technologies.

P2P network.P2P (person to person) as the name suggests is individual to individual, not the third agency to participate, each node is equal status, between traders can communicate directly, without intermediaries, and they can share some hardware facilities, these resources can provide services and content through the network.

Hashing algorithm.Hashing is also called a hash is a function that compresses any length of characters into a fixed length. The block chain does not store raw data or transaction records directly, but saves its hash function by calculating the hash function. He has a one-way (not back stepping input values), or staying power (no matter how long the hash value, and the result is a fixed length), regular sex (function values of the different length of consumes about the same length), random (a byte will produce significantly different input values).

The work proof mechanism.As the name suggests is a proof of the workload, he can show you how much work you do. In the process of get the COINS, for example, we want the function solution is found through a hash algorithm, and this process is very accidental, because it can only rely on the computer random hash collision, and each miner collision every time how many times can do to get the solution, is to see the merit of his work force, this also is what we call work mechanism.

4. Application and prospect of block chain technology in accounting

4.1. application status of block chain technology

As of January 2018, the application results of block chain, related intellectual property rights and patent is also blank, block chain field but also presents the technology and the development trend of industrial innovation drive. In July 2017, suning financial institute was founded officially block chain laboratory, the laboratory for block chain technology and its application in the financial sector, aimed at using block chain technology for Su Ningjinfu business and Suning banking business to provide technical support. Suning bank block chain domestic letter of credit information transmission system adopts the alliance chain method, which is only used for free between the alliance Banks and does not provide services directly to the outside world. The system has no direct income generation. Deloitte has set up a group called "Deloitte cryptocurrency community" (DCC) since 2014, with about 100 members distributed in 12 countries around the world. At present, Deloitte has introduced called Rubix software platform, the platform allows customers to infrastructure to create a variety of applications, based on the block chain Rubix interests include four aspects: trade partnership, the functions of real-time audit, land registration and loyalty points.

Internally, the company focuses on solving the problems in the audit process automatically through covert methods. Eric•picini, Deloitte's chief investment officer, believes that every transaction in the company is done on the block chain, so a solution designed to take advantage of the block chain will speed up the audit process. At the same time, as the block chain is not reversible and time postmark, we will check the company's block chain and all transactions for the company that needs to be audited. This will speed up the audit process, making it cheaper and more transparent. One of the applications of the Rubix platform is Deloitte's Perma Rec, which can connect with the company's financial system to establish a global distributed ledger, which greatly improves audit efficiency.

In terms of current development, block chain technology has wide application potential in payment, financial transaction, Internet of things and so on, among which the smart contract is the key. Pay aspect, traditional pay use "pull" mode (traditional pull is the user will provide personal information to a third party, the third party to use the information for payment processing), and block chain technology USES the "push" model, directly to bypass the third party, significantly improve security. At the same time, the automation of block chain can reduce the payment cost and shorten the processing time. The decentralized opening features can help the innovation in the platform. As the core technology of block chain extension, intelligent contract opens up the application space of interconnection intelligence in various fields of block chain. Technology in the field of financial transactions, block chain settlement audit time from hours can be reduced to the second level, automation sharply reduce the intermediate costs, combined with intelligent contract will digital automatic issued securities and financial derivatives transaction possible. Block chain technology has the biggest impact on the financial industry, and the field of impact is very wide. In asset transfer and block chain, smart and vote on issues such as contract has become a base layer, but for different USES to create the different block chain, encryption currency such as COINS is likely to continue to play a role in the management of the chain block. Accounting, auditing and codification are a huge cost to companies around the world and have been a headache for global companies. Accounting firms that derive benefits from auditing see the value of block chain technology. In addition, if the audit data is generated by using the block chain technology, one advantage is that it cannot be tampered with. Chain mature technology while waiting for the blocks fall to the ground and a period of time, but when that day really comes, we, as auditors or accountants are likely to be replaced, and this is also a financial audit practitioners within the territory of the transformation.

4.2. Future application - an irreversible distributed financial system.

The company can establish a fully transparent financial system on the private block chain, and the licensee can access, write the books, or confirm the transaction. In this way, the database established on the financial system will be permanent, real-time, and unchangeable, thus ensuring the full and accurate picture of the transaction. Company A and company B, for example, when A deal, can produce A contract, invoice, certificate of rights and interests and bank instructions and other documents, so there will be A interface from bank, there are interface from company B, to confirm real and matching. The process has reviewed the trade process. In financial accounting, it will again be broadcast to other nodes to verify the match, ensuring the authenticity and integrity of the trade. All of this will leave an irreversible record of time postmarks on the block chain financial system.

From the perspective of financial systems, each node to store a set of not been tampered with, the complete transaction history of distributed copy books, again through encryption technology to safeguard security, but each participant's private key encryption makes them can only browse and their related transactions. Before each transaction is added to the financial system, the authentication and verification of other nodes will be obtained through the full network broadcast, and the non-real transaction will be automatically rejected. The data will be tampered with in real time, and the newly written transaction will be consistent with all previous historical transactions for easy tracking. In terms of financial management, the block chain financial system improves the

transparency, accuracy, timeliness and reliability of accounting information, satisfies the accounting requirements and reduces moral hazard. In the aspect of internal control, reduced the demand for financial information audit control, in the protection of the enterprise property safety integrity at the same time, reduced the dependence on the relevant inspection work, greatly reduces the foundation work to external audit demand, reducing the cost. From the audit point of view, the firm no longer needs to use external audit professionals to carry out internal audit and the transaction of information, have objective, authentic record orderly concentration, real-time, and stored

On the private chain of the financial system. And block chain irreversibility and timestamps function allows companies to reduce the possibility of a false trade, accounting fraud, make public accounting firm external auditor to audit the time of financial transactions is greatly reduced, greatly reduces the audit cost.

4.3. Future prospect

Every technological revolution is a long time from beginning to end. The emergence of block chain technology will break the pattern of accounting industry again. In terms of accounting, it will make the accounting industry face both opportunities and challenges. Of course, the course of every change is also very difficult, it will be accepted gradually, and it will be repeatedly verified and validated, and gradually infiltrated into the actual work.

5. Conclusion

With the application of block chain technology promote the practice of the evolving, as well as the research matures, block chain will give us each individual's ability to give financial, like the Internet gives us the ability of information, media, everyone has to have a future found value, the ability to deliver value. However, we should also see that it is not the use of block chain technology to solve the problem of trust automatically, which will solve the risk of accounting data tampering, which will automatically lead to the standard development of the industry. The application of block chain technology, the underlying technical security problem must be solved, who supervised by blocks of chain enterprise and its financial innovation problem must be solved as soon as possible, to block chain technology JianZhang gauge problem must be solved as soon as possible, so as to promote the health of the block chain technology application in accounting industry development.

Acknowledgments

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