台灣金融研訓院
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How the Financial Services Industry Can Capitalize on Blockchain and Virtual Currency Opportunities

Supported by: The Bankers Association of the Republic of China

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December 2016

Abstract

The blockchain synthesizes multiple fields, covering information science, cryptography, and economic models. Its most important breakthrough is in consensus algorithms, giving it the moniker of the "trust machine." It is characterized by decentralization, anonymity, finality, traceability, and encryption. As a result, it can be widely applied in the financial services industry to optimize transactions. For instance, without compromising privacy, blockchain can help establish a trust mechanism in cases where the parties do not know each other, reduce the costs of centralization, make information transparent and traceable, and record data chronologically.

There are many opportunities for the Taiwanese financial sector within the nascent blockchain space: blockchain alliances amongst different banks, collaboration with fintech firms to develop new core applications, use of blockchain in peripheral banking functions, implementing pilot schemes and even developing new banking bases focused on fintech innovation and blockchain development. Applications introducing blockchain technology do not need to be tied to any particular strategy, and different strategies may even be employed concurrently.

Research Findings

Blockchain is the technology underlying the Bitcoin virtual currency. Bitcoin's blockchain general ledger is a long list of blocks, each of which is a group of transactions occurring at the same time. As long as the system continues to operate, the chain grows without limit. In general, the term "blockchain" refers to a decentralized technological solution that collectively maintains a reliable database. It allows any node participating in the system to calculate and record all information stored in the system during a period of time, and to compute and record a block of data through cryptographic algorithms, to generate a "fingerprint" for the block used to chain to the next block for verification. It is up to all participating nodes in the system to collectively determine whether the record is real. The blockchain is essentially a "distributed shared ledger," in which each node keeps records and updates them at any time.

The blockchain is characterized by features including decentralization, encryption, finality, traceability, and anonymity, so its applications may include any program with many intermediaries, excessive intermediary costs, or low tracking costs and high information security requirements. It can be used in many areas, and can even create entirely new business models.

The blockchain ecosystem can be divided into underlying protocol architecture teams, service providers, and top-level applications. Bitcoin, Ripple and GCoin are all low-level protocols; some service providers develop their own blockchain, while others modify off-the-shelf chains to provide APIs or services to financial institutions. Top-level platforms include Bitcoin exchanges, or the Linq trading platform used by NASDAQ.

Tech companies are not destined to dominate blockchain. Indeed, financial institutions cannot cede this critical emerging technology to tech firms. The world's main financial institutions have taken countermeasures to deal with the rise of fintech and blockchain technology. However, the strategies adopted by each are different. Based on a 2016 report by McKinsey, they can be roughly divided into three categories: 1) Cooperating with other peers to form blockchain alliances and formulate industry standards – for instance, R3CEV assembled more than 40 multinational financial institutions to establish industry supervision and technical application standards; 2) Developing core blockchain applications, together with fintech companies – i.e. through strategic investments in fintech companies, Visa and Capital One both are tapping blockchain business opportunities; and 3) Banks such as UBS, Citigroup, Deutsche Bank,

BNP Paribas, and Barclay's have internally promoted their own partial applications, and quickly implemented pilot projects. They have established their own blockchain R&D laboratories or cooperated with fintech companies, and are conducting testing of different blockchain applications.

Blockchain technology is has the potential to significantly change the way financial transactions are conducted, and is already sending ripples through financial markets. Blockchain's most direct use is settlement, reducing transaction complexity, and effectively monitoring transactions of assets like stocks and bonds. Blockchain can speed up banks' back-end settlement, reaching the realm of trading, even saving on auditing procedures. Blockchain is more than just a cost reducer for banks though. It is also a cornerstone of financial innovation, with wide applications in emerging financial technology, such as mobile payments, P2P financing platforms and crowdfunding. Blockchain can also be useful for cross-border exchange, trade financing, issuance of valuable assets, and even to improve the efficiency of supply chain finance.

Research by the World Economic Forum (WEF) found that global blockchain investment reached USD 1.4 billion by August 2016. Nearly 100 companies have joined various blockchain organizations, and more than 2,500 patents have been granted. Further supporting this view, it is expected that 80% of banks will launch blockchain projects in 2017. The report notes that hype about blockchain is beginning to surge. Business models abound, but only some innovations will succeed, while more will fail. After the technology fails to satisfy irrational exuberance, and the public's expectations come down to earth, there will be a "blockchain winter," so to speak. However, the current hype will continue for some time. For now, the bubble will not burst. In other words, banks should wait and see.

Blockchain itself is only a technology. It is important to understand what problems need to be solved, and what sort of value financial institutions or other practitioners wish to create through its use. Discovering the pain points, and identifying the issues that truly require blockchain or distributed ledger applications, are the most important challenges and opportunities for Taiwanese banks.

Blockchain application scenarios, and their subsequent impact, will become more diverse and unpredictable with the passage of time. The financial industry should keep a close eye on this explosive technology.

Conclusions

1. Although the blockchain originated as a digital currency, FinTech promotion should focus on the technological aspects

Although the blockchain is closely related to virtual currencies, currency issues often involve countries' overall economy and monetary policy. Thus, Taiwanese financial practitioners do not necessarily need to focus on virtual currencies, unless fintech is their main focus. Cryptocurrency applications like Bitcoin are just one blockchain format, not the technology itself. Much room remains for the growth of applications in banking, including trade finance, supply chain financing, B2B cross-border payments, and back-office transaction settlement services using the blockchain.

2. Financial practitioners should be trained on blockchain topics

Personnel development is the basis of fintech development, so technology problems are also personnel problems. The blockchain is just a technology, and is not intrinsically suited for any particular financial field. Determining for which segments it works best requires considerable understanding of both the finance and technology aspects. We suggest that banks use a two-stage approach to education and training to control costs. The first stage involves strategy, introducing the blockchain to mid-level and senior bank executives, not necessarily in terms of its technical details (just explaining its basic concepts), but more to ensure that professionals with both qualifications and vision can understand how to best apply blockchain technology to their respective organizations. The second stage involves implementation. After the determination is made to implement a blockchain trial for a certain task, the technology can be introduced to personnel involved in the task. By practicing how to use blockchain, bank personnel will come to better understand how it is beneficial to them and their organization, and they can learn to agree on how to best implement it. Certain technical details can be explained in detail as necessary.

Almost all blockchain protocols are currently open-source, so acquiring the source code should not be a problem. The key point is finding a good service provider to assist in integration with existing systems. Financial institutions like banks and insurers must have a certain understanding of blockchain to know how to make such choices and apply the services appropriately. Taiwanese financial institutions should also be more proactive about training personnel and building ties with their international counterparts as well as academic institutions. Comparing fintech development in Taiwan, the U.S. and Europe,

we can see that Taiwan still has room for improvement. In addition to cultivating internal talent, companies may also consider recruiting international blockchain or fintech professionals by offering them tax breaks. This would provide Taiwan with better access to blockchain technology and management systems, while also serving to spur collaborative fintech development in Taiwan.

3. Improving professional training and industry-university cooperation

The application of blockchain technology in the financial sector is still forward-looking, and the sector must learn specialized technological skills to compete with non-financial players. Salaries and benefits are important conditions to attract fintech experts. The salary levels of Taiwanese financial professionals tend to be lower than their counterparts in Western or other East Asian financial institutions. Blockchain professionals are financial information integration experts, and are currently being sought out by financial institutions in many countries. There is a shortage of this type of talent in the industry, so Taiwanese banks should refer to international salary benchmarks and gradually increase the remuneration of their fintech personnel. In particular, for positions requiring special skills, or key business positions, they should consider adhering to international standards as quickly as possible to prevent loss of competitiveness with international rivals in terms of staff.

For Taiwan to develop financial technologies including blockchain, it must have more fintech R&D bases. It is recommended that the financial sector cooperate with institutions of higher learning to develop research centers, which are an integral part of the fintech industry pipeline, providing fertile ground for the establishment of innovative fintech products and services. They can assist in attracting top professionals, establishing innovation labs, international FinTech knowledge exchanges, FinTech R&D, competitions for FinTech innovation proposals, and the rapid implementation of outstanding innovation plans.

4. The finance industry should follow blockchain development trends, and make reasonable long-term investments

At present, not all banks need to invest large amounts of manpower and capital in blockchain. After all, blockchain development requires more than capital: it needs economies of scale. However, we however recommend that banks at least plan for reasonable, long-term, stable investments in blockchain development and application, so that they are well positioned to tap the opportunities that blockchain will ultimately provide in financial services.

Blockchain has a wide variety of applications. Given Taiwan's limited resources, it may make sense in some cases for Taiwanese banks to work together to best access blockchain-related opportunities. However, that is not a given: the Taiwanese banking sector has long been fragmented, with much-needed consolidation proving elusive most of the time. Regardless, Taiwanese banks must pay careful attention to global blockchain trends – both in global financial institutions and fintech startups.

5. Customizing blockchain applications by industry

The Internet of Things (IoT) is one of Taiwan's five major strategic industries in its national 5+2 Innovative Industry Plan (along with the "Asian Silicon Valley," biomedicine, green energy, and defense). IoT operators can use the blockchain to monitor the interaction between intelligent devices with the external network, ensure their normal operation, verify automatic system updates and staff maintenance procedures, and maintain the integrity of the food supply chain.

Banks are currently limited by consensus, so each transaction must be approved by every participant in the blockchain to be valid. If the consensus mechanism can be improved upon in the future, consent will only be necessary by the parties involved in the transaction, speeding up the execution of some P2P microtransactions. In the future, bankers and other financiers, manufacturers, and IoT operators will be able to contribute original code through the blockchain to create low-level agreements fitting the unique characteristics of each industry – thus putting the focus on applications, rather than the technology itself.