

## The Influence and Application of Artificial Intelligence & Blockchain on Financial Service

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### Abstract

*The advances in science and technology have benefited many industries. In recent years, we have witnessed the rapid development of financial technology. All of them worked hard in this area, such as Amazon, UPS, and Wal-Mart International. In China, leading e-commerce platforms such as Alibaba and Tencent actively provided services to SMEs in their ecosystems; Taiwan also make efforts to develop it. The emergence of networking account scientific and technological AMIS provides various payment companies, lending platform, financial robots. Although Taiwan's innovation industry faces many restrictions on its development, it will still go through it. Therefore, Taiwan has continued to update laws and regulations related to financial technology. The latest rule "Financial Science and Technology Development and Innovation Experiments Regulations" regards the development of Taiwan's financial technology. FinTech has gradually replaced the traditional financial service model. Through mobile payments, cloud platforms, and artificial intelligence, the technology industry has gradually penetrated into the financial industry. We are willing to make more progress in Taiwan's financial technology to deepen the understanding of FinTech as a study.*

*Keywords: Blockchain; Artificial Intelligence; FinTech*

JEL Classification: E26, G21, G28, O33.

### 1. Introduction

In recent years, financial technology has developed rapidly and has a wide range of development. The financial technology field includes payment services and electronics. Innovation in both payment and lending business has grown considerably in recent years. In addition, the Blockchain is also listed among them.

In fact, the emerging Blockchain technology has gradually increased in importance in recent years. At present, it has attracted many financial industry leaders and government agencies to invest in research. In Western countries, the development of Blockchain is in full swing. 2015 is a Blockchain, forming Blockchain 1.0, Blockchain 2.0 and blockchain 3.0 concepts. Blockchain 1.0 is a virtual currency represented by Bitcoin. Blockchain 2.0 is a blockchain application in other financial sectors. Blockchain 3.0 is extended to applications outside the financial industry. Blockchain technology is becoming more and more widely available. From the figure, it can be seen that blockchain technology is connected to the financial transaction flow layer so that consumers can obtain better service. In addition to being able to significantly reduce transaction time, transaction costs can also be reduced, and banks have the opportunity to generate new trading agreements through blockchain finance.

### *1.1. Blockchain Application in Money Laundering Prevention*

#### (I) Introduction:

Blockchain can optimize and even change the anti-money laundering process. Through a distributed database to record trading information, the counterparty's message can be verified in a better way. This can reduce the erroneous of financial supervision. At present, the monitoring of financial institutions requires a lot of people to intervene. In the long run, using the proven customer information sharing database will optimize the KYC (Know your customer) review process. The blockchain will reduce the manpower cost for anti-money laundering and regulatory fines for anti-money laundering.

Money laundering is the cover for illegal income such as drug smuggling or financial fraud. The issue of money laundering is quite severe for international financial organizations. In order to respond to such questions, regulators have proposed anti-money laundering procedures within the bank. However, the amount of money-laundering behavior that can be detected at present is very low, and banks are also subject to huge supervision and fines. If a fine is included in the supervision, the annual bank's spending on anti-money laundering compliance will reach billions of U.S. dollars. If the financial transaction information can be recorded through the "shared" nature of the blockchain, the process of optimizing monitoring of anti-money laundering will greatly reduce the costs of transaction monitoring and KYC auditing.

#### (II) Background and motivation

In the past, anti-money laundering activities required a lot of manpower. In order to tie in with the ever-increasing anti-money laundering regulations,

financial institutions need to use a lot of resources to develop and maintain anti-money laundering compliance procedures. Although banks can now perform automated improvements on these processes, most anti-money laundering budgets still need to be used on human resources. They are responsible for manually reviewing whether clients have suspicious transaction behaviors. Currently, existing banks face many structures. The issue of sexuality has led to the current process of anti-money laundering compliance which requires high manual monitoring and high costs.

Different inter-bank data cannot be shared due to many factors, making it a lot of repetitive steps when implementing KYC. When a relationship with a new customer is to be established, the bank conducts customer due diligence (CDD) for the customer in accordance with KYC regulations. Customer Due Diligence program. For example, a complex manual inspection of ownership of a particular retail and institutional account, where “know-client” activities are often repeated. In most jurisdictions, banks are required to re-examine their customers independently despite accounts that have been audited by other banks.

Because of the lack of account aggregation and editing, it often leads to a large number of false positives in transaction monitoring. Although banks can use transaction monitoring software to review suspicious behavior, it finds that some transactions require compliance personnel to conduct manual reviews to determine whether there is any doubt about money laundering. Under such circumstances, the false alarm rate is usually very high. In most cases, it is considered to be due to poor transaction data, such as missing details of the recipient or sender, rather than monitoring the software. Despite being caught up, the transfer message is syntactically false or incomplete, and the surveillance system will issue a warning message, whether or not it involves money laundering, although these transactions are audited. This manual reconciliation process will bring a cost burden to the entire industry. In order for financial institutions to implement anti-money laundering regulations, they need to hire a large number of employees. It is used to audit customer resources such as customer and transaction monitoring and personnel recruitment, accounting for most of all anti-money laundering budgets. Because the efficiency of reliable information sharing and circulation among many financial industries is very low, the compliance staff needs to promote the process with human intervention.

### (III) Development status

There are several financial institutions to carry out money laundering prevention, for opening new bank accounts and the transfer of multiple accounts requires the initiation of anti-money laundering procedures to reduce risk. The figure indicates the phases of each process, including auditing, monitoring, and reporting.

#### (IV) Expected Benefits

The Application of blockchain will reduce the cost of hiring compliance personnel and technology, as well as the cost of anti-money laundering law, etc. The cost of thirty to five billion dollars.

The human resources used on anti-money laundering spending is expected to significantly reduce human resources intensive anti-money laundering spending after the application of blockchain, and the left is the current application of the entire industry spending composition and right application blockchain After the comparison, the red dotted area is the blockchain savings.

#### (V) Challenges

Blockchains have the greatest impact on anti-money laundering software vendors. It was found that most financial institutions, especially small-scale ones, rely on external anti-money laundering software solutions to screen for suspicious transaction activities and sanctions lists. Challenges that may be faced by internal parties include lack of customer authentication information and the compatibility of the blockchain infrastructure with the bank's standards.

### *1.2 The application of AI in bank*

#### (I) Company-CTBC (Chinatrust Banking Corporation)

As the most international financial institutions in Taiwan, ChinaTrust takes each effort in the financial technology. ChinaTrust, also known as CTBC Holding, its subsidiary includes Taiwan Life Insurance, CTBC Securities, Taiwan Lottery, Venture Capital, Investment trusts, Asset management and other eight subsidiaries. In the Leader's Dialogue in 2017 "The Practice of Destructive Innovation," ChinaTrust stated that CTBC's development in financial technology will focus on the application of AI (artificial intelligence), the blockchain, and biometrics in the future. Among them, "artificial intelligence" covers customer service, wealth management, risk management and other aspects in finance. With automated financial management advice and management of customer wealth investment, it can reduce labor costs and it's easy for the general community; they could also enjoy financial services. Big Data and artificial intelligence provide the function of measuring fraud and risk. It is not difficult to understand that as the

highest penetration rate in Taiwan, the ATMs of CTBC have the highest site point. ATMs of CTBC have a great deal in the current market status. CTBC has developed a finger vein recognition with a superior service experience and also no-card withdrawals. This is the best application of biometric identification in FinTech. ChinaTrust established a data research and development center in January 2018 in order to have a good niche point in FinTech. One of the latest report from CTBC in May 2018 stated that: "ChinaTrust actively promotes financial technology and deepens the application of Big Data. CTBC and ITRI (Industrial Technology Research Institute) announced that they launched the first "AI Intelligent Censor Service" project and it was also the first exposure of the ChinaTrust's Big Data R&D Project, the core product of CTBC Brain. It will promote artificial intelligence technology in the future. The anthropomorphic rule will strengthen the traditional procedures on personnel reviewing documents. By this way, not only it can significantly shorten the time for applying for loan examinations and speed up loan application, but also can implement customer-centric digitization experience. It allows customers to enjoy faster and more convenient financial services." The following SWOT analysis is based on ChinaTrust's latest AI outpost.

## (II)SWOT Analysis

### Strengths

CTBC is strict with self-requirements and it devotes to satisfy customers' needs and provides quality services. They cooperate with other companies (LINE Pay) to provide related preferential services. They have the most station of ATMs.

### Weaknesses

The traditional financial industry transform into innovative style, how flexibly can the big elephant turn?

### Opportunities

ChinaTrust has a high sense of recognition in Taiwan, and customers have high acceptance of their activities or programs. For example, ATMs, branches, and intelligent vehicle services. It can generate greater benefits by attracting different types of customer groups and using the complementarity of virtual network access and physical access.

### Threats

CTBC face the international new-type financial institutions and companies. The competitive market with Lufax, the Ant Financial Services, Tencent, Baidu, and the Alibaba and so on. Moreover, Amazon and even Apple want to jump and get

a share with. Taiwan is in a country where the financial legislation environment is more district. In order to break through this horizon, there is bound to be some way to go.

### (III) Background and Motivation

ChinaTrust is based on the Big Data that has been built in recent years. CTBC continue optimizing the customer experience with Big Data technology. Student, I, am studying at CTBC Business School so it's necessary to understand the latest AI service launched by ChinaTrust. In the cooperation between CTBC and LINE, it is now possible to use Mobile Banking and its APPs. Users do not need to turn into the other webpage, and they are allowed to click on the link in the LINE dialog box to trade on the relevant platform. Any customer service needs can be resolved by leaving a message waiting for someone to reply. The scope is not limited in credit cards, mortgages, foreign exchange, etc. From the official account of ChinaTrust, you can register with your CTBC account, as soon as the deposit is recorded, a sweet reminder comes up. With user-friendly interface designed and the high density and high frequency of the Taiwanese people using the line, it quickly penetrates into the community as soon as it was initiated.

### (IV) Development Status

The “artificial intelligence”, “blockchain”, and “biometrics” those mentioned earlier will be the three major technologies affecting the financial industry. Overview on the general market and developing status, traditional banks must quickly integrate and apply new technologies to the innovative banking industry. Banks have to pay more attention to the customer experience, and fully strengthen digital aspect and traditional branches' manpower should transfer part of their strength to sales and consulting. ChinaTrust has launched a new type of "mobile branch" which breaks through the "fixed-point" type of service in the past. Combining new generation of automation equipment and new business model, each client is a mobile branch. Also, it includes VTM service which is referred to opening an account with video and immediately receiving the financial card. With the finger vein biometric technology, it can be used to refer to the “finger vein ATM” for deposit, withdrawal, and transfer. One thing that worth mentioning is that CTBC has "Taiwan-Foreign Currency Cash Exchange Machine", which is different from traditional foreign currency cash machines. In addition to withdraw foreign currencies with financial cards, it can also directly withdraw foreign currency in a two-way mean. Even if people without foreign currency account of ChinaTrust Bank can easily exchange foreign currency.

### (V) Expected Benefits

ChinaTrust continues pursuing innovation, and it is expected to increase its market share in Taiwan and take actively process in a digital financial environment. It is committed to providing instant, convenient, and safe financial services to demonstrate that Taiwan's financial industry is not behind FinTech's innovative soft power. Through the development of innovative and intelligent financial services, we have created a more convenient digital financial life vision for the people.

(VI)Challenges - Regulation Supervision: The term of Financial Technology innovation Regulatory Sandbox

Sandbox was originally derived from computer engineering terminology. When engineers develop software, the environment to be tested must be an environment that is isolated from the outside world. There are no other mutation conditions that allow engineers to test the software on certain conditions. The Financial Conduct Authority of the United Kingdom's FCA (Financial Conduct Authority) first proposed this concept to develop financial supervision sandboxes so that each startup company would need to apply for a financial supervision sandbox to implement new ideas to develop financial services. The case which gets approved is not regulated by national laws. The British FCA mentioned here is just like Financial Supervision and Management Committee in Taiwan, and it is the central supervision agency in the UK's financial industry. It shoulders the responsibility of supervising banking and insurance businesses. It plays the role to promote the normal operation of the market and urge the financial industry to be effective, take up the level in good competition.

Taiwan has passed the rule "Financial Science and Technology Development and Innovation Experiments Ordinance" on December 3, 2017. Following the predecessors of Britain, Singapore, Australia, and Hong Kong, Taiwan is the fifth country in the world to have a supervision sandbox system. It's a major milestone in Taiwan's progress in the financial services industry. It is able to demonstrate their strengths with more various and innovative financial services, and to improve user-friendly.

The supervisor sandbox in Taiwan is expected to perform experiments as quickly as possible in the third quarter of 2018. Some preparations, various seminars and summits are all intended to promote the smooth implementation of this law. According to the regulations, the number of exposures for funds and transactions for the experimental scale of financial services applications must not exceed 100 million NTD, and the period of the experiment should be under one

year, and the extension can be extended only once. The maximum period cannot exceed six months and the Financial Supervision and Management Committee has the power to revoke the experiment. One of the features is that the sub-law contains a compensation mechanism, such as how to refund money or how to make compensation if there is any fail. Taiwan should learn from the UK. How the UK does successfully implemented the financial supervision sandbox? Andrew Pittam, the representative of the UK's Taiwan office once said that the UK's supervision sandbox does not look at the scale or maturity of the company, but the emphasis is on fostering innovation. I think this concept is very applicable to Taiwan. It should not be focused on the financial technology service tycoon but should be distributed to all walks of life. It helps to develop new ideas that start-up companies have just established. Regulation is a double-edged sword. Not only do laws and regulations need to advance with the times, what is more, crucial is that how to balance innovation and financial risk control. ChinaTrust now has inevitable challenges.

## **2. Results**

Nowadays, regardless of China, Europe, the United States, or in Taiwan, the public sector of government and the private sector of the company put all out their effort in FinTech to bring about change. ChinaTrust starts AI smart censor mechanism which focuses on “wide, simple, and fast”. It extends from the company's innovative financial lending service process to the private sector, making financial transactions more flexible, accurate, and personally oriented. It's milestones that ChinaTrust sets new standards for financial industry in AI, also, it allows the international community to recognize the power of innovation in Taiwan. The FinTechBase in Taiwan is also dedicated to training FinTech talents and teams. Each financial institution should think and try hard in the new wave of FinTech. The talented person needed is not just one or two major talent, but a complex talents. Thus, professional personnel will not be replaced by machines.

## **3. Discussion and conclusions**

For banks, the application of blockchain can save transaction time and reduce costs and risks. As the banking industry has ample funds to develop blockchain technology applications, large banks and financial institutions can lead the blockchain goes to another realm. Applying a blockchain can help these small businesses increase their creditworthiness and reduce the difficulty of credit collection on smart contracts.

The application of transaction processing systems for blockchain or ledger books can have a huge impact on the financial market. The most directly applied to clearing business, can reduce the complexity of transactions, effectively monitor the trading process of securities assets such as stocks or securities, blockchain can solve the problem, but there are still some problems that the blockchain cannot solve, need to be careful Assessing the potential needs of the financial industry and identifying issues that really require the use of blockchains or decentralized books to solve problems is a major and major challenge for the financial industry.

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