

# To What Extent Has Online Payment Influenced the Development of FinTech among Chinese Commercial Banks?

Junang Lu<sup>1\*</sup>, Xiaoxiao Shen<sup>2</sup>, Yican Jin<sup>3</sup>, Weijia Ji<sup>4</sup>

<sup>1</sup>Lemania International School Altdorf, Altdorf Uri, 6460, Switzerland

<sup>2</sup>Ulink College of Suzhou Industrial Park, Suzhou, Jiangsu, 215000, China

<sup>3</sup>St. Michaels University School, Victoria, V8P 4P5, Canada

<sup>4</sup>Urumqi Bayi High School, Urumqi, Xinjiang, 830002, China

\*Corresponding author: Email: 1652517917@qq.com

## ABSTRACT

With the rapid development of online payment platforms in China, this sector has impacted the returns and operations of traditional commercial banks in China. This paper investigates the impact of online payment platforms on Chinese commercial banks. First, this paper introduces FinTech and compares Online Banking and Online Payment. Next, the paper presents a list of developments in the online payment sector in China. Then, the paper constructs a trend chart using company earnings data to empirically examine the impact of online payment platforms on commercial banks' deposits, returns on equity and returns on assets. Finally, the paper discusses the impact and outlook of the emerging payment instrument e-CNY on traditional commercial banks and the general environment in China. The results show that the development of online payment has a positive impact on the growth of commercial banks and a negative impact on the returns of Chinese traditional commercial banks. The paper has significant implications for Chinese commercial banks to reflect on themselves, reduce their reliance on traditional business, and improve their products and services.

**Keywords:** *FinTech, Online Payment, Commercial Banks*

## 1. INTRODUCTION

### 1.1 Overview of FinTech

As the word FinTech suggests, it comes from two words "Financial" and "Technology". Under the background that the technology is developing at a high speed, the finance industry has always been affected by it to change the operational strategies. In the past few decades, the financial industry might be the most digitized industry [1].

Unlike the traditional finance industry where centralization is extremely emphasized, FinTech is decentralizing the centralized finance with technological methods. Almost all the financial activities are supervised and regulated by authority institutions, such as the central bank while the public seldom participate in those financial activities except borrowing and lending since they are confined to attend according to strict regulations published and implemented by the central bank and other

banks. The FinTech, instead, allows common people to take part in more financial activities through the technological advancements. Until now, the emergence of FinTech has caused significant impacts on the traditional financial industry, especially to commercial banks [1].

FinTech also aims to improve the efficiency of financial services so that different customers' requirements can be satisfied. Firstly, the development of information technology facilitates the networking process of financial services, which expands the range of services of retail banking. Moreover, the emergence of online payment tends to fulfill demands of people who do not own a credit card and part of those who own that. The blockchain, cloud computing and other technologies, besides, are going to accelerate the intelligentisation and datamation of the financial services in order to lower the cost of trading and decrease the influence of asymmetric information.

Although both merits and demerits exist for

commercial banks, it is still the advantages will outweigh the disadvantages. In addition, it is highly possible that the commercial banks will gradually take the dominance in managing and manipulating the FinTech. In this paper, how commercial banks are affected by Online Payment, one type of Fintech, and be turned to technological based in the end will be discussed.

## **1.2 Comparison of Online Banking and Online Payment**

The payment service provided by online banking is the transaction between virtual commercial banks on the Internet. Customers should first connect their deposit cards or credit cards to the online banking system. When they need to pay for the bill, they can choose to use the online banking of a specific commercial bank. The system will turn to the commercial bank's website for online payment. After filing the relative information and being verified by the bank, the payment will be done. In fact, it is just the transfer of money from one account to another account. If it is a transaction between two accounts of the same bank, no extra fee will be charged. But if it is between two different commercial banks, there will be an extra charge for transaction of over 5000 RMB. Moreover, the amount of money which is allowed to be transacted is relatively larger. The multinational transaction is also available by using the online banking.

The online payment applications, for example, Alipay and WeChat pay, are supplying platforms for people to pay for bills by using the money transferred and saved in their accounts. The only thing people need to do when they want to pay is showing their QR coded and input the password, which is much more convenient and faster than the online banking. Recently, Alipay and WeChat Pay are even promoting password-free payment. The money flows from one Alipay account to another one without any extra charge, instead of flowing between bank accounts. In addition, there is even no need to connect to a bank card due to the real-name certification system. However, if people want to withdraw money, a bank card must be connected to the Alipay account. Transferring money from bank cards to Alipay is free of charge, but for withdrawing over 20000 RMB, an extra charge will be deducted. Apart from that, the limitation on the amount of money transacted is stricter compared with that of online banking.

## **2. DEVELOPMENT OF ONLINE PAYMENT IN CHINA**

### **2.1 Background factors**

Since the twentieth century, technological development has been growing in rapid momentum. New inventions such as smartphones and laptops have been invented and introduced to the market. The flourishing

internet has weaved an invisible network that substantially connects people worldwide, increasing broad communications. China is influenced by the leaping technology advancements and innovations, and the employment of the internet became increasingly frequent among the population. To satisfy the various needs of the crowd, the range of online services began to grow wider, offering news broadcasts, learning resources, entertainment, and more. Online shopping noticeably became the most dominant network business, leading to the prevalence of e-commerce within the country. However, the upsurge of the brand-new concept of consumption faced numerous issues: the lack of efficiency and sufficient trust in payment transfer made it impossible to fulfill the massive demand from the crowd. Under the stalemate, FinTech subtly stepped into the Chinese financial world. The simultaneous development of FinTech, particularly online payment, ultimately became the best solution to the problematic e-commerce in China throughout the past twenty years [2-4].

### **2.2 Explanation of Online Payment**

Theoretically, online payment refers to the currency exchanged electronically. Unlike traditional payments, it can be done via credit/debit card and clearing house like PayPal. By this means, money transactions from the buyer's bank account can be transferred to the seller through several confirmations from each side online. In detail, according to AT Integrated Your Digital Partner (June 29, 2012), the typical online payment process has the following stages:

- The customer submits the payment information to the merchant. For example, the customer completes the payment form on the merchant website and submits the information.
- The merchant submits the payment information to the online payment gateway.
- The online payment gateway submits the payment to the payment processor.
- The payment processor authorizes the payment and responds back to the payment gateway.
- The payment gateway responds back to the merchant.
- The merchant responds to the customer showing if the online payment was successful or not and taking the appropriate action.

Furthermore, as online payment offers a simpler way of transaction, it is also unique from traditional commercial banks considering the aimed customers—everyone in the society, from business firms to individual households, can employ the financial services [5].

## 2.3 Alipay as an Epitome of Chinese Online Payment

### Overview

Alipay, founded in 2004, is one of the two prevailing Chinese online payments companies. By building up a digitized platform offering financial services for all customers, Alipay justified its irreplaceable role in the development of the Chinese FinTech world.

### Initial Stage

- Oct 2003, Alipay was first introduced to Taobao as a secured online payment method.
- Dec 2004, Alibaba formally established Alipay.

### Beginning

- Sep 2008, Alipay's mobile WAP platform was formally released.
- Jun 2009, Alipay launched App, starting the era of online payment
- Dec 2010, Alipay and BOC jointly announced the release of the latest innovative product - quick payment with credit card.
- Apr 2011, Alipay's quick payment service had cooperated with credit cards issued by ten banks, increasing payment success rate from around 60% to 95%.
- May 2011, Alipay was the first to receive "The Payment Business License" from the People's Bank of China (also called "payment license" by industry insiders).

### Developing

- Jun 2011, Alipay launched a new mobile payment product - payment with barcode, being the first to tap the offline market with online payment technology.
- Apr 2012, Alipay launched quick payment of utilities bills with credit cards.
- May 2012, Alipay obtained the license as a third-party payment platform for fund transactions from China Securities Regulatory Commission.
- Sep 2012, Alipay launched the account balance protection service. Users can claim compensation if the balance on their Alipay account is lost due to account theft.
- Mar 2013, Alipay launched "Compensation within 24 hours for capital loss below RMB 300".
- Jul 2014, Alipay Wallet became the first in China to trial fingerprint-verified, bringing mobile payments into the biometric recognition era.

- Aug 2018, Alipay announced plans to launch online face payment in KFC's KPRO restaurant, which is the first commercial trial spot of face payment in the globe.

### Heading to Flourish

- May 2018, Alipay proposed the concept of "QR code merchants" and launched a plan to fully integrate its payment capabilities and resources to support these offline QR code merchants.
- Jun 2019, Alipay upgraded its Full Amount Reimbursement program with new services of "immediate compensation for confirmed fund theft" and "advance compensation for disputed fund theft".
- Aug 2019, Alipay launched China's first "Biometrics User Privacy and Information Security Protection Initiative".
- Nov 2019, S Space, Alipay's new Shanghai office building located in Pudong Financial Plaza, was officially put into service as Alipay's international business center.
- Jan 2020, Alipay launched a community service platform during the Covid-19 outbreak, including six types of services that can be enjoyed from home.
- Mar 2020, At the 2020 Alipay Partner Conference, Alipay announced the establishment of an open platform for digital life, focusing on digitizing the service industry [2].

## 3. IMPACTS ON COMMERCIAL BANKS

### 3.1 Overview of impacts

The wide application of online payment has exerted great influence on commercial banks. The distinction between them is that the E-bank does not belong to the third-party payment platform. It is directly affiliated to the bank, belongs to the financial institution. It shall have the right to collect money to issue a loan. The online payment platform such as Ali Pay or WeChat Pay belongs to the third-party payment of non-financial institutions. The company is also open an account in the bank. It can only put the collected money in the bank to earn interest. There is no right of embezzlement. In other words, when users charge money into their Alipay or WeChat pay accounts, they are putting money into Ali or Tencent's bank accounts. The most obvious impacts are the business of commercial banks are affected. Due to the widespread popularity of online payment systems, the offline bank card business has shown a significant downward trend. In comparison, online payment is cheaper to use. Because the procedure fee of trans-regional transfer is much lower than that of bank card transfer, and the income of many current financial management projects is relatively high, more and more people choose to use online payment to obtain greater

profits. That's the reason why the E-banks are not as popular as those third-party payment platforms.

### 3.2 Analysis of deposits

Based on the data provided by The People's Bank of China, between 2004 and 2020, the deposits rate of users increased from 1,567,800 million Yuan to 8734200 million Yuan. But it stagnated from 2009 to 2014, as third-party payment platforms developed rapidly in these

years. The financial sources from users has been growing steadily but it's slowed down since 2014. From 2009-2014, it increased 1,380,100 million Yuan, but between 2014-2020, it just has a tiny growth. (See Figure 1) The deposits, however, has a huge increase at that time. This is because during this period, commercial banks have found a balance point between third-party payment platforms and cooperated with them to achieve mutual benefit and win-win results [6].

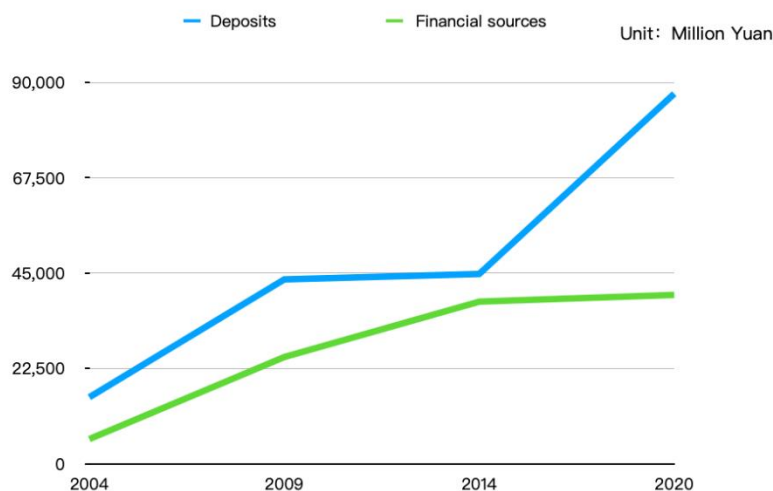


Figure 1 The deposits rate and Financial Sources in Chinese Bank from 2004-2020

### 3.3 Analysis of Return on Equity (ROE) of Chinese Commercial Banks

As shown in Figure 2, there was a growth in the banks' Return on Equity (ROE) from 2010 to 2011 except Agricultural Bank of China. In 2010, the ROE of Industrial and Commercial Bank even peaked at 22.1045%, which was high. Even the smallest ROE owned by Bank of China was more than 18%. The liabilities of banks of commercial banks at that moment

were extremely high. But after 2011, the ROE gradually began to fall, indicating that there were reductions in commercial banks' liabilities. Initially, in the following two years, the decreases were relatively slow and slight. The three years from 2013 to 2016 witnessed the dramatic declines of ROE. Almost all the banks' ROE fell by approximately 5%. The ROE continued dropping after 2016 with a slower speed, and in 2020, the ROE of the four banks shrunk to about 10%, which were nearly half of the original values in 2010.

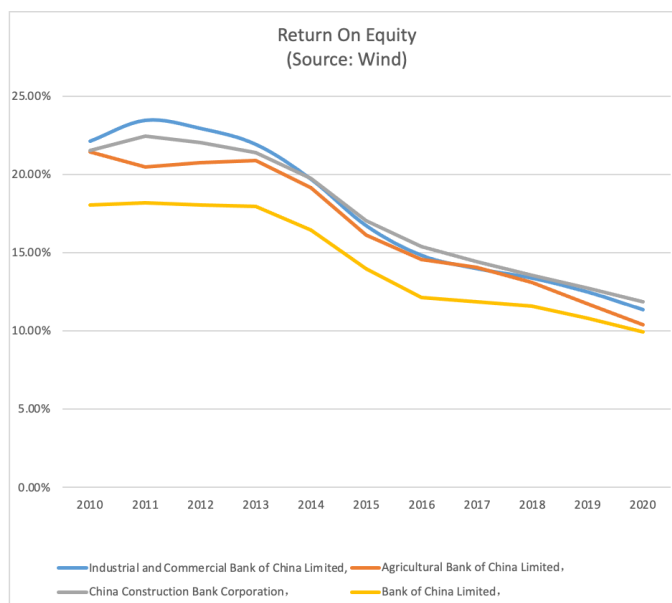
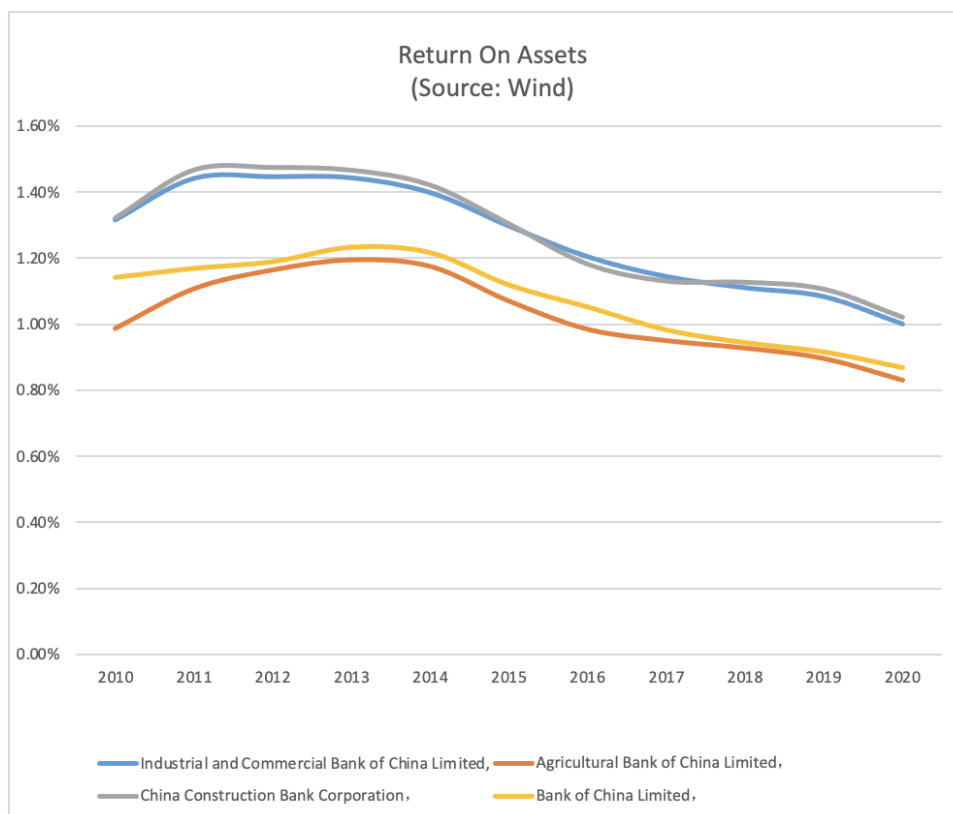


Figure 2 Return on Equity of commercial banks between 2010 and 2020

### 3.4 Analysis of Return on Assets (ROA) of Chinese Commercial Banks

Figure 3 shows that commercial banks were still making more net profits initially with the increasing Return on Assets (ROA). Starting from approximately 1.3217%, China Construction Bank took the lead while Agricultural Bank of China owned the smallest ROA, which was 0.9876% in 2010. In 2011, all the four commercial banks experienced gradual increases. However, influenced by FinTech, ROA started

decreasing gradually. In the following three years, Bank of China's and Agricultural Bank of China's ROA were still rising. At the same time, whereas Return on Assets of Industrial and Commercial Bank of China and China Construction Bank started falling slowly to about 1.40%. There were considerable declines from 2014 to 2017 in the banks' ROA, which meant that the net profit the made were decreasing. After 2017, although ROA was still displaying the downward tendency, the speed of dropping was much slower than before. Until 2020, two banks' ROA declined to around 1.00% and the other two decreased to about 0.85%.

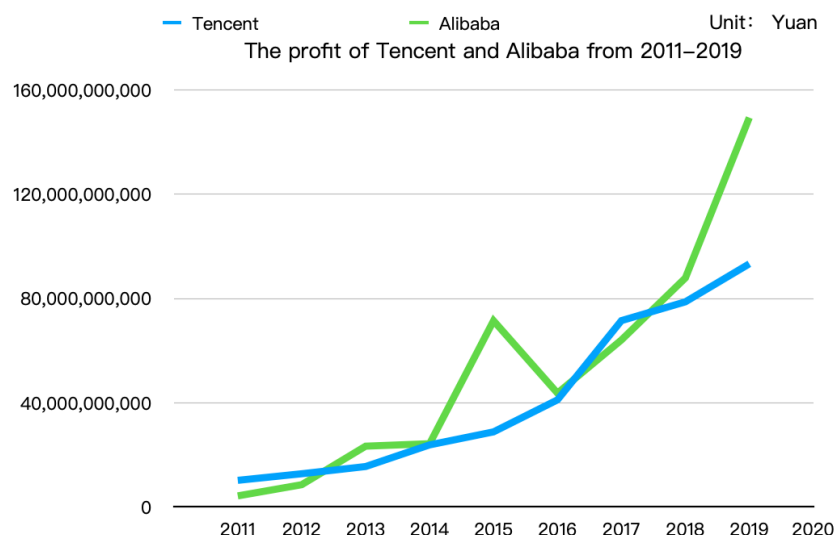


**Figure 3** Return on Assets of commercial banks between 2010 and 2020

### 3.5 Analysis of net profit of third-party payment platform

Take two most famous third-party payment platform: TenCent and Ali (WeChat pay and Alipay) as examples. Figure 4 indicates that the profit of the two

company were increasing generally. Especially for Tencent, which is continually rises every year from 10,203,083,000 Yuan to 93,310,000,000 Yuan. For Alibaba, although it has fluctuating during 2014 to 2016, it still shows a significantly increasing in 2019 which is 149,433,000,000 Yuan.



**Figure 4** The profit of Tencent and Alibaba from 2011-2019

Compared with the ROA and ROE of the 4 biggest commercial banks in China it is obvious that when Tencent and Alibaba have shown an upward tendency, the banks ROA and ROE rate have steadily decreased since 2014. Therefore, the third-party payment platform does have a significant influence on the commercial banks (Sources from Wind).

### 3.6 Disadvantages and advantages

The development of the online payment industry not only brings impact and threat to banks but also brings development opportunities for banks. In the context of the continuous development of the online payment industry, commercial banks are also carrying out their reform. Nowadays, major commercial banks have also deepened their research efforts on such convenient payment channels as QR code payment. Commercial banks can also build information banks according to their advantages, such as customer resources. In that case, users can have more convenient services than before. The popularity of mobile payment has also eased the pressure on commercial banks' counters and ATMs to some extent. At the same time, commercial banks can also cooperate with online payment platforms to conduct business negotiations, thus creating new business growth points. For example, Bank of China and Tencent cooperation, Construction Bank and Ali cooperation, and so on. All these can become important strategies for other commercial banks to learn.

## 4. FUTURE PROJECTION

The rapid development and penetration of FinTech has had a significant impact on the financial industry's development. The business of FinTech companies is innovative, and precisely because of the business characteristics of FinTech companies, traditional financial regulatory policies cannot fully meet the

regulatory needs, so regulators are constantly improving the regulatory framework, making up for regulatory system shortcomings, and reducing regulatory arbitrage. As a result, China has implemented several FinTech regulatory policies, ranging from lending to internet platforms and other areas of FinTech regulation and norms. According to China's financial technology key planning policy document "Financial Technology (FinTech) Development Plan (2019-2021)", it is stated that China's financial technology development is still unbalanced and insufficient, that top-level design and integrated planning are lacking, and that there is a relative imbalance between various market players in terms of scientific and technological capabilities, innovation drive, talent team, institutional mechanisms, and so on; the industrial base is relatively weak [7].

### 4.1. Emerging Technology — e-CNY:

#### 4.1.1 Overview of e-CNY

e-CNY is a legal currency in digital form issued by the PBOC, operated by designated operators, and redeemed to the public, based on a broad-based account system, supporting bank account loosely coupled functionalities, equivalent to banknotes and coins, with value characteristics and legal reimbursement, and supporting controlled anonymity.

The payment landscape will be altered by e-CNY. According to the central bank's "Progress in the Development of China's e-CNY White Paper" the e-CNY is a retail-type central bank digital currency that is primarily used to meet domestic retail payment needs. The three main goals of the e-CNY, according to the white paper, are to: enrich the form of cash provided by the central bank to the public and help promote financial inclusion; to support fairness, efficiency, and security in the retail payment sector; and to investigate

improvements in cross-border payments. The anti-fraud and anti-money laundering functions of e-CNY should be vigorously developed, relying on encryption technology to ensure digital currency security, while cash flow and information flow data can be entered into the database in real time and become traceable. e-CNY adheres to the principle of "all amounts are traceable," and places a high value on the protection of personal information and privacy, while making it easier to meet regulatory and social requirements such as anti-electronic fraud, anti-money laundering, and anti-tax evasion. For example, the anti-moving type of foreign exchange (more than 5 different individuals, after purchasing foreign exchange on the same day, every other day or multiple consecutive days respectively, remit foreign exchange to the same person or institution abroad), or underground bank (whose business includes money laundering, loan sharking and illegal remittance) can be adequately regulated. Banks can clearly grasp the full volume of transaction information of e-CNY exchange and circulation through verification and processing and grasp the total volume and distribution of e-CNY in real time, and can conduct necessary monitoring, analysis and regulation, thus greatly enhancing the accuracy and effectiveness of policies and regulation.

China's online payment sector has risen to the top of the global rankings. e-CNY can facilitate payment and cashless payment, reducing cash circulation costs, increasing capital turnover and utilization efficiency, and preventing counterfeit currency. It has the potential to be a dependable and low-cost payment method in online transactions and cross-border payment scenarios. Legal digital currency can be used for peer-to-peer and end-to-end payments, and it can provide the public with a payment instrument that is both secure and liquid, thereby lowering transaction costs [8].

#### *4.1.2 Fee advantage*

Since e-CNY designated operators are not permitted to charge service fees to individual customers, widespread adoption of e-CNY may result in additional fee reductions and concessions within the commercial banking system, lowering the cost of social capital circulation. Second, the rates charged by e-CNY operators, service providers, and merchants should be determined on a market-based basis. Theoretically, e-CNY commercial payments could charge a certain acquiring rate to cover system renovation and operation and maintenance costs, but the pilot phase of e-CNY acquiring is largely free of charge. In comparison to credit cards, e-CNY as an underlying source of funds is relatively limited. e-CNY as a social infrastructure, a forerunner the leading payment institution will face regulatory and competitive pressure to raise prices solely based on market leadership, and the scope for increasing narrowly defined rates may be limited [8].

#### *4.1.3 The impact on commercial banks*

The use of e-CNY will erode banks' cash business while lowering the cost of financial services. The most direct impact of the central bank's digital currency replacing M0 on commercial banks is that the physical branch cash business will gradually decrease. Currency "digitalization" means that currency transportation shifts from traditional manual escort to digital transmission; currency preservation shifts from vault to cloud storage; and currency counting and settlement shifts from vault to cloud storage. e-CNY has no physical entity, which will significantly reduce commercial banks' daily operating costs. e-CNY will reduce or even eliminate the need for users to transfer money and make payments through financial intermediaries such as commercial banks and payment service providers, lowering the cost of use. The commercial bank branches may undergo some transformation in the future, as will their business and personnel structures, as they transition to non-cash transactions.

#### *4.1.4 Impact on China's overall economic environment*

As to whether the e-CNY as a digital fiat currency will have better management and control on China's economy, Qian Jun, executive dean of Fudan University's Pan-China School of International Finance and professor of finance, said that e-CNY will not completely replace cash in the short term, the potential changes are relatively large, and in the short term there will be two monetary systems in parallel in China, e-CNY on the one hand and M0 (which is the cash in circulation) on the other.

The launch and innovation of the technology itself will require the transformation and upgrading of the system, as well as the coordination of different systems, in the medium to long term; the impact on monetary policy will also be seen in the medium to long term. As a result, the e-CNY will alter the landscape of the payments market. Adding official payment instruments to a market dominated by market-based payment instruments, it is expected that e-CNY will be parallel to payment instruments such as WeChat Pay and Alipay within the next 5-10 years.

#### *4.2. Solutions to commercial banks :*

The most fundamental requirement for commercial banks to achieve deep integration with FinTech and realize their professionalism, immediacy, and universality is a mature and complete financial infrastructure. To strengthen their financial infrastructure, commercial banks must invest in both hardware and software. In terms of hardware, cloud servers, as well as large-capacity storage, are required; in terms of software, data mining and computing,

distributed storage, artificial intelligence, and so on are required. Traditional financial institutions with license and capital advantages, as well as clear digital transformation strategies, may choose to establish FinTech subsidiaries or expand their collaboration with Internet companies. Here are some recommendations for the future adaptation of commercial banks.

#### *4.2.1 Increase cooperation with online payment platforms*

Traditional banking has accumulated a group of stable and loyal customer resources in China, with a large and stable policy background. After a thorough analysis of online payment users' online usage behavior, credit records, transaction status, dispute status and other information, banks and online payment platforms can build a customer resource base that can support mutual benefit cooperation.

Commercial banks can also provide credit guarantee mechanisms for third-party payment platforms. Commercial banks can use their own creditworthiness mechanisms to endorse online payment platforms, enabling third-party payments to provide guarantees to buyers and sellers during the transaction. After verification of the customer's capital situation and credit rating, the bank will provide transaction guarantee for the third-party payment platform. Commercial banks and third-party payment platforms can share customer information, and commercial banks can evaluate customers' credit based on their online transactions as an indicator for issuing loans to provide better services to high-quality customers; third-party payment companies can reduce their own risks by virtue of commercial banks' information to avoid cashing out and money laundering and ensure their healthy and orderly development. Commercial banks can cooperate with third-party payment enterprises in online loans and use the information of third-party payment customers as the evaluation index for issuing loans. Therefore, the cooperation between commercial banks and third-party payment enterprises is conducive to promoting the development of credit business and jointly building a perfect credit evaluation system.

#### *4.2.2 Strengthen and update own financial products and services*

Commercial banks can develop their own mobile phone apps based on the advantages of online payment platforms to meet customers' demand for convenient and quick payment without wallet with a simple sweep. Banks can make use of chip virtual card technology and the latest payment tokens, dynamic keys, and cloud authentication technology. This is more secure than QR code mobile payment in the market to achieve the highest level of risk control.

## 5. CONCLUSION

To conclude, the development of online payments has a positive impact on the growth of commercial banks and a negative impact on the return of traditional commercial banks in China. The paper has significant meaning for Chinese commercial banks to conduct their own contemplation, reduce their dependency on traditional business, and improve their products and services. These commercial banks should take the initiative to capitalize on the opportunities presented by development of payment method, such as the issuance of e-CNY. By leveraging commercial banks' inherent advantages, they can provide more satisfying financial products and convenient services to their customers, thereby expanding the scope of their business and increasing profitability.

## REFERENCES

- [1] Okhrati, R, (2019) A Quantitative Introduction to Fintech, University College London, London.
- [2] Ant Group. [www.antgroup.com](http://www.antgroup.com).
- [3] Agrawal, J., Patel, R., Mor, P., Dubey, P., Keller, J.M. (2015) Evolution of Mobile Communication Network: from 1G to 4G. <http://ijmcr.com/wp-content/uploads/2015/11/Paper11100-1103.pdf>
- [4] Bian, H., Cao, H., Lian, H., Su, X. (2017) Ant Financial Service Group: From Alipay to The Neo Financial Ecosystem. China Renmin University Press, Beijing.
- [5] AT Integrated Inc. (2012) What Is Online Payment And How To Accept Payments Online. [www.atintegrated.com/e-commerce/what-is-online-payment](http://www.atintegrated.com/e-commerce/what-is-online-payment).
- [6] The people's bank of China (2021) "Statistics." [www.pbc.gov.cn/diaochatongjisi/116219/116319/index.html](http://www.pbc.gov.cn/diaochatongjisi/116219/116319/index.html).
- [7] Zhu Dalei. (2018) "Tsinghua Financial Review- Wwww.thfr.com.cn." [www.thfr.com.cn/post.php?id=79572](http://www.thfr.com.cn/post.php?id=79572).
- [8] People's Bank of China e-CNY R&D Working Group. Progress in the Development of China's e-CNY White Paper. July 2021.
- [9] Yao Zeyu, et al. (2021) CICC: The potential impact of the full-scale rollout of digital RMB on the payment system. <https://finance.sina.com.cn/money/forex/forexinfo/2021-07-29/doc-ikqcfnc9634052.shtml>
- [10] iResearch, (2021), China Third Party Payment Industry Research Report 2021, [report.iresearch.cn/report\\_pdf.aspx?id=3785](http://report.iresearch.cn/report_pdf.aspx?id=3785).