温州肯恩大学
WENZHOU-KEAN UNIVERSITY

The growth of mobile payments like Alipay, WeChat Pay in China, and Paypal in America

In Partial Fulfillment of the Requirements

for the Bachelor of Science in Finance

by

ZHENG Jinyang

1026013

May, 2020

Table of Contents Page Number

ABSTRACT

With the high development of technology, people start taking mobile payments as their first payment choice. This study investigates why people stop using cash but only use different mobile payments, whether this social development trend would have a significant impact on the banking industry, and whether governments need to take some measures to support traditional payments or make some new policies to regulate m-payment platforms. Using multiple linear regression analysis can test the correlation between banks and mobile payments. The results of this study are as followings: (1) using mobile payments is the trend of modern living, especially in China; (2) mobile payments have a significant impact on private banks' card business; (3) mobile payments do not have a significant impact on state-owned banks' card business; (4) the trend of using mobile payments may affect bank card intermediary business of private commercial banks; (5) mobile payments have no threat to state-owned banks but do affect the of business of some private commercial banks.

1. INTRODUCTION

In recent years, Internet has widely infiltrated all areas of society. It plays an increasingly important part of people's daily life. Because of the popularity of smartphones in these years, mobile payments are gradually accepted by more and more people. The history of mobile payments could date back to the early 20th century. In 1998, PayPal was founded, and it soon became popular in the US and other western countries. It was undeniable that PayPal was the leader in the mobile payments market at that time. Even though the Google Wallet and Apple Pay were launched after 2010, PayPal is still the most famous mobile payment in western countries. However, people in America and other western developed countries still prefer using cash and credit cards when they shop offline. And this situation is different from some countries in Asia. The prime example is China, which is the e-commerce giant in the world now. According to the Global Payment Record (Worldpay, 2018), the data shows that in 2017, the expenditure per capita in the Chinese e-commerce market was $787, while the spending per capita in retail entity stores was $10,911. Among this consumption, mobile wallet payment in the e-commerce market accounted for as much as 65%, and mobile wallet expenditure in physical stores accounted for 36%. From the year 2018 to 2022, the compound average growth rate of the e-commerce market and physical stores will reach 9% and 11%. Besides, the Internet penetration rate was 61% in 2018.

In December 1998, Ken Howery, Luke Nosek, Peter Thiel, and Max Levchin founded Confinity Inc, and PayPal grew out of it. PayPal gained rapid development at the beginning because it charged only $5, $10, or $20. The user growth rate is almost 10% every day. The number of PayPal users had jumped from one million to five million until March 2000.

In January 2002, eBay Inc. announced the acquisition of PayPal, and since then, the users in the eBay platform started using PayPal for money transfers. PayPal is a revolutionary payment platform that has changed the traditional money service business. PayPal now has 277 million active users. The number of 255 million accounts was consumer accounts, and the other 22 million were business accounts. Besides, there were 40 million new active users over the past 12 months.

Alibaba Corporation founded Alipay in February 2004. It is a big third-party mobile and online payment platform in China. Alipay is more like an imitation of PayPal at the beginning.

Alipay is a way to pay for goods and services online. But now more and more people in China also use mobile payments offline. People only need to show their unique Alipay code and have it scanned, and then they can buy whatever they want. Alipay is used by more than 5% of the world's population. More than 60% of the transactions processed by Alipay are conducted on mobile devices. Alipay is helping both large and small businesses to connect to the cashless world. Except for the use of the payment, there are also some other functions; for example, Yu'e Bao is an online financial instruments that offers their users to gain higher returns on their current account balance. Alipay is also a comprehensive wealth management platform that allows their users to do the investment using an array of products no matter how small their investments are. More and more merchants around the world are accepting Alipay payment.

WeChat is the most popular social media application in China. It was founded by Tencent Company in 2011. It initially only helps people to communicate with each other and make new friends. In January 2014, people can use WeChat to pay for DIDI drivers. In March, WeChat opened the function of mobile payment to all the users. Users did not accept WeChat payment until the invention of the WeChat red envelope. People soon had a keen interest in this new interaction. In the first quarter of 2019, Alipay and WeChat payment took up 92.65% in the mobile-payment market. Although the transaction volume (¥) in Alipay was much higher, more people choose WeChat payment when they pay a small amount of money. Till now, there are more than1,120 million users in WeChat, which is higher than that of Alipay (1,000 million).

2. LITERATURE REVIEW

2.1 Main factors for people choosing mobile payments

2.1.1 A boom in e-commerce platforms

Consumers initially accepted the mobile payment method because it is the only payment method when shopping online. After that, as the development of e-commerce platforms in the world, more and more people download apps like Alipay in China, and PayPal, Amazon Pay in the US. Then these companies encourage users to use some other functions like transfer account and pay the fees online. Also, they are trying to change the payment methods in retail store purchases (Dahlberg & Mallat, 2002).

2.1.2 The convenience of mobile payments

Convenience is an essential factor for mobile payment users. According to Viehland (2010), the reason why people are willing to use mobile payment through their phones is that they can pay the fees anytime and anywhere. However, in many western countries, like the US and New Zealand, only a small number of consumers use mobile payments. Whereas consumers acknowledge that m-payment services can be beneficial, easy to use, and convenient. (Choi & Sun, 2016)

2.1.3 The government support of mobile payments

Mobile payment has made a significant change in people's daily life. The government may not want these payment platforms to replace banks, but the government approved news policies to help these platforms regulate their operating mechanisms. For example, the Chinese government encourages Alipay to start its business in other countries. (Guo & Bouwman,2016)

2.2 The significant effects of mobile payments on the banking industry

2.2.1 The considerable effects of mobile payments on the banking industry in China

There are several aspects that of how mobile payments influence the Chinese banking industry. On the one hand, it exists the impact on the customers of commercial banks. With the development of Alipay and WeChat pay, these platforms have accumulated a large number of customers, including both individual online consumers and online shopkeepers. One crucial factor that Alibaba Group was able to develop Internet finance smoothly was that customers are the foundation of all business. Even though the banks start e-commerce in their platforms, they may not possess such advantages. (Yan, 2012)

According to Yang (2017), Alipay provides payment, settlement, guarantee services, transfer accounts, and other services at a super low service charge, but high efficiency. So it quickly occupied the middle business market of commercial banks. Other financial services provide a high-interest rate or high returns like Yu'e Bao, which encouraged more people to store their money in Alipay, not banks anymore. As a result, the scale of the current deposits of commercial banks is becoming smaller. At the same time, Alipay provides small loan services for SMEs, which also has an impact on the loan business of banks.

2.2.2 The significant effects of mobile payments on the banking industry in the US

It is different from the Chinese market. Although mobile payment first began in the US 20 years ago, it had a very low impact on the American banking industry. PayPal became famous because it was purchased by eBay Inc. so that people must have PayPal accounts if they want to buy the goods online. (Hedman & Henningsson, 2015)

2.3 The measures aimed at information leakage and fraud in China

2.3.1 Fraud detection and prevention in mobile payment systems

Due to the information leakage and Internet fraud in the m-payment platform, many security mechanisms have been used to ensure the security of m-payment operations. However, mobile payment also faces some other security challenges, such as malware detection, and data breach prevention (Wang, Hahn & Sutrave, 2016). To decrease the risk, although the m-payment platform can force the users to add more personal information like real name, birthday, profession, and ID number, the more important part is the users need to know how to distinguish the swindler and false information.

2.3.2 The solution to the fraud in m-payment platforms

In China, all m-payment platforms would offer help if there is money lost due to some unforeseen situation. People can only use their phones to buy whatever they want, so do the strangers who possess your phones. Some people lose some money after losing their mobile phones. When facing this kind of problem, the users can contact the service section and provide the evidence, and then you can get back your money soon (Wang, Hahn & Sutrave, 2016).

2.4 The threat to the traditional payment

2.4.1 No cash in the future

According to Dahlberg (2015), over the last eight years, more people around the world accept mobile payment. In western countries like the US, the UK, New Zealand, Australia, people still keep cash when they go out, but they are more willing to use the credit cards when paying for things and services. According to Erling (2013), after the mobile and Internet revolution, the world will become cashless.

2.4.2 The bank cannot be replaced

There is sufficient evidence about why cash would be rejected in the future. How about the banking industry? Firstly, mobile payment would not replace physical payment cards but is likely to substitute for paper-based payments such as cash and checks (Trütsch, 2016). Another research shows a similar view and gives support. According to Daly (2016), many card issuers think that in the next few years, 25% or more of debit transactions will migrate to mobile payments, and cash would not exist anymore.

2.5 The measures to support banking business

2.5.1 Joint mobile payment platforms

Although mobile payment platforms cannot replace banks, bank managers need to attach great importance to extend online business. In China, all the banks make their mobile phone apps to satisfy those who want to make transactions anytime and anywhere. According to Reuver (2015), the collaboration between banks and telecom operators who jointly developed a trusted service manager for mobile payment. It is beneficial to the users' security in the platform, and it also helps their own online business.

3. METHODOLOGY & DATA

3.1 Dataset

Mobile payments developed rapidly along with the development of mobile network infrastructure and devices. In China, people nowadays prefer using mobile payments like WeChat Pay and Alipay to pay for anything in their daily life. At the same time, because the third-party payment business is similar to some business of commercial banks, it has a great impact on the traditional business of Chinese commercial banks, which is mainly reflected in the bank's intermediary business: the bank card business.

Therefore, the bank card business income of listed commercial banks is selected as the indicator to measure the traditional business of banks. The development of commercial banks is also affected by the macro-economy. Therefore, in addition to the comprehensive transaction scale of third-party payment, another three indicators are introduced: money supply (M2), Gross

Domestic Product (GDP), and Consumer Price Index (CPI).

Due to the strong real-time performance of financial business data, the data before 2013 was deleted in this paper, and the income data of the bank card business of some banks in 2019 were incomplete. Therefore, the sample cycle was selected from 2013 to 2018.

3.2 Sample

The dataset is the bank card business income of five state-owned banks and three private commercial banks. The five state-owned banks selected are as followings: Bank of China (BC), Industry and Commercial Bank of China (ICBC), Agriculture Bank of China (ABC), China Construction Bank (CCB), and Bank of Communications (BCM). The three private commercial banks selected are as followings: China Merchants Bank (CMB), Pingan Bank (PA), Shanghai Pudong Development Bank (PF).

3.3 Methodology

I will do the Linear Multiple Regression Analysis for each bank I choose to test whether mobile payments have any impact on bank card business.

3.4 Hypotheses

Hypotheses 1: Mobile payments do not affect deposits in state-owned banks in China.
Hypotheses 2: Mobile payments do not affect deposits in private commercial banks in China.

The model was set as follows:

$$Y_{it} = \alpha_0 + \alpha_1 GDP_t + \alpha_2 CPI_t + \alpha_3 M2_t + \alpha_4 TTP_t$$

(GDP means gross domestic product, CPI means consumer price index, M2 means money supply, and TTP means third-party payment)

4. ANALYSIS & FINDINGS

4.1 The correlation between mobile payments and banks' deposits

Figure 1 is about the changing trend of bank card intermediary business of different banks from 2013 to 2018, and we can see that there are certain differences in the changing trend of bank card income business, which is related to the business development mode of each bank.

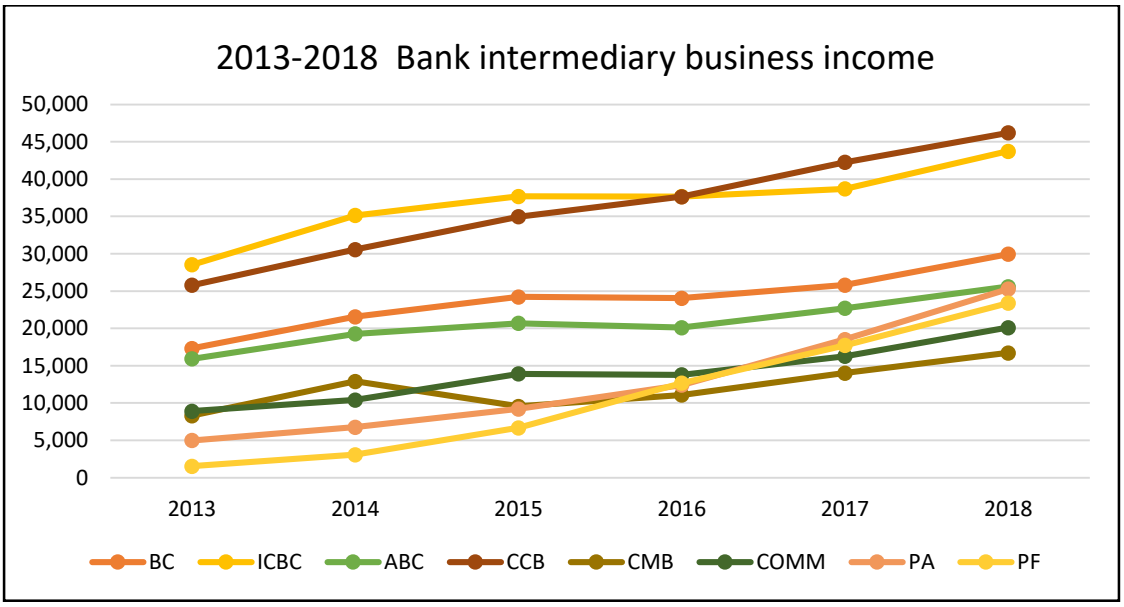

Figure 1 2013-2018 Bank intermediary business income

Therefore, the impact of third-party payment on the income of an intermediary business is also different. It can be seen from Figure 2 that the third-party payment business showed explosive growth from 2013 to 2018, with the scale growth far exceeding the growth of China's GDP, which was mainly due to the sharp rise in the use of Chinese Internet users due to the development of the Internet

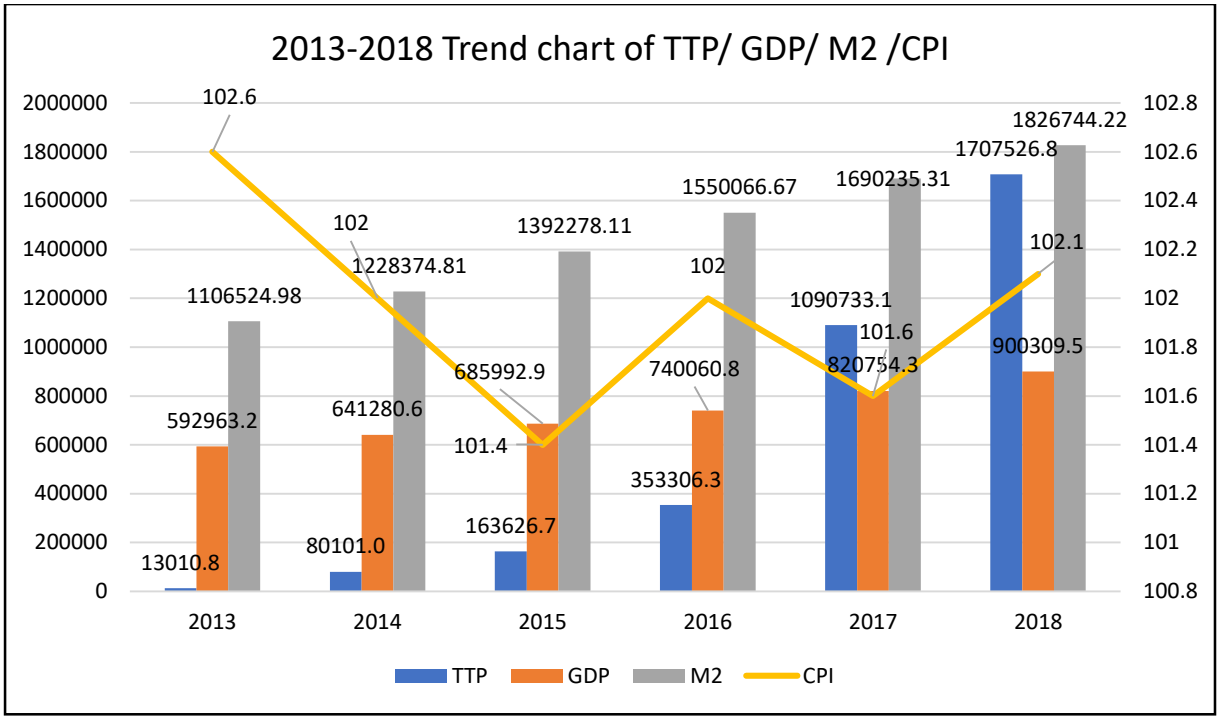

Figure 2 2013-2018 Trend chart of TTP/ GDP/ M2 /CP

4.2 No significant impact on state-owned banks

Table1 Five state-owned banks

		Coefficients	Standard error	t Stat	P-value
BC	Intercept	39.6931383	76.55258374	0.51850814	0.695476
	X Variable 1	0.06328773	0.202896097	0.31192188	0.807512
	X Variable 2	-0.3815327	1.964846186	-0.19417943	0.877901
	X Variable 3	0.79309542	2.497201709	0.31759365	0.804227
	X Variable 4	-7.71885320	19.9857499	-0.38621784	0.765361
ICBC		Coefficients	Standard error	t Stat	P-value
	Intercept	0.11905479	0.197604864	0.60248914	0.654794
	X Variable 1	-2.85280121	1.426407083	-1.99999092	0.295168
	X Variable 2	8.71725583	4.044177839	2.15550754	0.276532
	X Variable 3	-4.94673505	2.600251375	-1.90240647	0.308096
	X Variable 4	-0.12990559	0.190628835	-0.68145821	0.619191
ABC		Coefficients	Standard error	t Stat	P-value
	Intercept	0.218305278	0.120553903	1.81085200	0.321207
	X Variable 1	-1.43557343	0.870216139	-1.64967457	0.346926
	X Variable 2	5.92583237	2.467254171	2.40179242	0.251163
	X Variable 3	-3.60115325	1.586349885	-2.27008762	0.264156
	X Variable 4	-0.22492509	0.116297999	-1.93404090	0.303792
CCB		Coefficients	Standard error	t Stat	P-value
	Intercept	0.091497015	0.018530581	4.93762264	0.127211

	X Variable 1	-0.38020033	0.133762657	-2.84235031	0.215366
	X Variable 2	1.541904208	0.379246557	4.06570390	0.153535
	X Variable 3	-0.20289169	0.243841003	-0.83206553	0.558192
	X Variable 4	-0.09251456	0.017876397	-5.17523515	0.121515
COMM		Coefficients	Standard error	t Stat	P-value
	Intercept	69.1310376	67.74407826	1.02047351	0.493549
	X Variable 1	-0.14770920	0.179549904	-0.82266374	0.561745
	X Variable 2	0.60067679	1.738761611	0.34546241	0.788243
	X Variable 3	2.56622820	2.209861768	1.16126186	0.452586
	X Variable 4	-21.8295299	17.68609418	1.23427647	0.433489

According to the regression results of state-owned banks, the coefficient of third-party payment fails the t-test, and the P-values are higher than 0.1, which indicates that the third-party payment has no significant impact on the bank card business of state-owned banks. As a result, we should accept the Hypothesis 1.

4.3 Do exist impact on private commercial banks

Table2 Three private commercial banks

		Coefficients	Standard error	t Stat	P-value
CMB	Intercept	-72.48603668	19.54956875	-3.70780745	0.167706
	X Variable 1	0.542721435	0.051814465	10.4743227	0.060595
	X Variable 2	-5.372181333	0.50177138	-10.7064323	0.059289
	X Variable 3	2.061174918	0.637721343	3.23209335	0.191021
	X Variable 4	26.72074076	5.103848528	5.23541022	0.090151
PA		Coefficients	Standard error	t Stat	P-value
	Intercept	-31.91940549	14.04166414	-2.27319249	0.263835
	X Variable 1	-0.015781579	0.037216234	-0.42405093	0.744673
	X Variable 2	0.716723173	0.360402078	1.98867658	0.296615
	X Variable 3	3.201994175	0.458049434	6.99049913	0.090455
	X Variable 4	-2.582006908	3.665887864	-0.70433330	0.609352
PF		Coefficients	Standard error	t Stat	P-value
	Intercept	-64.19662055	5.310565014	-12.0884727	0.052543
	X Variable 1	0.133493038	0.0140752	9.4842729	0.066876
	X Variable 2	8.207377832	0.136304262	60.213655	0.010571
	X Variable 3	-4.856602223	0.173234545	-28.034836	0.02269
	X Variable 4	4.45103495	1.386440784	3.2104039	0.10223

On the contrary, the TTP coefficient of Shanghai Pudong Development Bank and China merchants bank, which are in private banks part, has passed the 90% confidence test, indicating that third-party payment has a significant and positive impact on the bank card business income

of private banks, indicating that third-party payment has a positive impact on the bank card business development of private banks.

However, Pingan bank is special, its coefficient of TTP didn't pass the test. According to the survey, Pingan Bank is subordinate to the Pingan group, which has a wide range of business. The main business of Pingan Bank is mainly affected by the business of its parent company's financial situation. Its nature is different from other private banks. The simple analysis of the impact of third-party payment on Pingan Bank may not lead to a significant conclusion.

4.4 The threat to banks

Based on the above, mobile payments only has a significant impact on private commercial banks. Although the m-payment method has already changed people's daily life, there is no big threat to central banks but may decrease some business of private banks. My result is consistent with Zhang's conclusion (2019), who also found that third-party payment has a more significant influence on private commercial banks than that on central banks. It can be concluded that five state-owned banks in China can still maintain their supreme positions.

Mobile payments can affect bank card business of all the banks, but for central banks, the income of bank card business is only a small part of their total income. In addition, the government supports their business, while other commercial banks do not have.

5. CONCLUSION

This thesis firstly combines the literature review and people's preference for mobile payments in China and the US to find why more and more people prefer using mobile payments. There are two main reasons: (1) convenience, which means people do not need to take cash anymore; (2) the popularity of online shopping because people can only use the m-payment method to pay for the goods. Based on the regression analysis, it can be found that, even though the rapid development of mobile payment has already changed Chinese people's daily life, there is no significant influence on the banking industry. (1) For state-owned banks, they still have business contact with other companies. Besides, they have the government's support, so that mobile payments do not have a significant impact on state-owned banks. (2) For private

commercial banks, their bank card business would be affected by mobile payments. But for some banks which are subordinate to big companies, they may not suffer a big loss. (3) Mobile payments do not have a big threat to central banks but do affect the bank card business of most private commercial banks.

No matter what m-payment platforms, their capital clearing relies on commercial banks, and many users also use bank cards to withdraw the funds on m-payment platforms, which enables commercial banks to be at the "upstream" position of mobile payments. Also, most commercial banks have strict supervision measures, abundant funds and advanced technology, which makes their reputation, stability, and security of online banks higher than some m-payment platforms. After commercial banks pay more attention to mobile payment, their market shares of the third-party payment will increase rapidly. For example, the UnionPay, with 40 commercial banks, launched a cloud flash payment platform in 2017, which strongly entered into the mobile payment market.

This thesis has several limitations. The most considerable limitation is sample size. There are only 5 state-owned banks in China so that I can only analyze these five banks. However, there are a large number of private banks and I only choose three typical banks as my sample.

6. Reference

Ahsan, A., Chang, V., & Issa, T. (2012, January). Community perception of mobile payment in e-Government services. In ACIS 2012: Location, location, location: Proceedings of the 23rd Australasian Conference on Information Systems 2012 (pp. 1-11). ACIS.

Choi, Y., & Sun, L. (2016). Reuse intention of third-party online payments: A focus on the sustainable factors of Alipay. Sustainability, 8(2), 147.

Dahlberg, T., & Mallat, N. (2002). Mobile payment service development-managerial implications of consumer value perceptions. ECIS 2002 Proceedings, 139.

Dahlberg, T., Guo, J., & Ondrus, J. (2015). A critical review of mobile payment research. Electronic Commerce Research and Applications, 14(5), 265-284.

Daly, J. (2016, August 9). Debit Card Issuers Struggle With Higher Fraud on Both Signautre an dPIN Transactions. Retrieved August 9, 2016, from Digital Transactions: http://www.digitaltransactions.net/news/story/Debit-Card-Issuers-Struggle-With-Higher-Fraud-on-Both-Signature-and-PIN-Transactions

De Reuver, M., Verschuur, E., Nikayin, F., Cerpa, N., & Bouwman, H. (2015). Collective action for mobile payment platforms: A case study on collaboration issues between banks and telecom operators. Electronic Commerce Research and Applications, 14(5), 331-344.

Erling, G. (2013). Cash is dead, long live cash. Journal of Payments Strategy & Systems, 7(1), 43-49.

Hayashi, F. (2012). Mobile payments: What's in it for consumers? Economic Review-Federal Reserve Bank of Kansas City, 35.

Hedman, J., & Henningsson, S. (2015). The new normal: Market cooperation in the mobile payments ecosystem. Electronic Commerce Research and Applications, 14(5), 305-318.

Trütsch, T. The impact of mobile payment on payment choice. Financial Mark Portf Manag (2016) 30: 299. https://doi.org/10.1007/s11408-016-0272-x

Wang, Y., Hahn, C., & Sutrave, K. (2016, February). Mobile payment security, threats, and challenges. In 2016 second international conference on mobile and secure services (MobiSecServ) (pp. 1-5). IEEE.

Yang, M. (2017). A brief analysis of the impact of the third-party payment platform on commercial Banks [J]. Modern Business, 2017(34):71-72.

Yan, Z. (2012). Analysis of the impact of third-party payment business on commercial Banks [J]. The Financial Times, 2012(18):241-241.

Zhang, Z. (2019). Analysis on the impact of third-party payment on China's large commercial banks. Economic Forum, 10.16266/j.cnki.cn11-4098/f.2019.16.008

7. Tables and figures

8. Appendix

Appendix A: Data about GDP, M2, CPI, TTP from 2013 to 2018

Year	TTP	M2	GDP	CPI
2013	13010.8	1106524.98	592963.2	102.6
2014	80101.0	1228374.81	641280.6	102
2015	163626.7	1392278.11	685992.9	101.4
2016	353306.3	1550066.67	740060.8	102
2017	1090733.1	1690235.31	820754.3	101.6
2018	1707526.8	1826744.22	900309.5	102.1

Appendix B: Bank card income of five state-owned banks

BC	ICBC	ABC	CCB	BCM
17312.00	28,533	15,929	25,783	8,916
21567.00	35,133	19,279	30,569	10,424
24215.00	37,684	20,689	34,960	13,912
24054.00	37,670	20,108	37,649	13,787
25798.00	38,692	22,699	42,242	16,267
29943.00	43,719	25,586	46,192	20,114

Appendix C: Bank card income of three private commercial banks

Year	CMB	PA	PF
2013	8,309	4,996	1,541
2014	12,894	6,780	3,091
2015	9,562	9,207	6,683
2016	11,083	12,401	12,670
2017	14,011	18,511	17,717
2018	16,727	25,266	23,390