

The Impact of Coin Changers on the Business Development of Chinese Commercial Banks

Yongjie Zhu

Ph.D. Student, School of Business, Gachon University

동전교환기가 중국 상업은행의 업무발전에 미치는 영향

주영걸

가천대학교 경영대학 박사과정

Abstract In China, the continuous promotion and coverage of scanning code payment has caused an imbalance in the coin market. Coin changers can not only alleviate this problem, but also affect the business development of commercial banks. Therefore, it is meaningful to study the coin changer. The purpose of this paper is to study the impact of coin changers on the business of commercial banks in China. Through on-the-spot visits and based on the manually collected customer data of Chinese commercial banks as the object, combined with the calculation method of financial indicators to conduct case analysis. The results of the study show that the coin changer has a positive impact on the business development of Chinese commercial banks. This paper provides feasible suggestions and new ideas for business development to Chinese commercial banks. At present, there are few related studies on coin exchange machines. This study combines the calculation of financial indicators to verify the policy results, which is the innovation of this study.

Key Words : Coin exchange machine; Chinese commercial bank; Business development; Self-service exchange; Maintenance and operation

요약 중국에서는 코드 스캔 결제의 지속적인 홍보 및 적용으로 인해 코인 시장의 불균형이 발생된다. 동전 교환기는 이 문제를 완화할 수 있을 뿐만 아니라 상업 은행의 비즈니스 발전에도 적극적인 영향을 미친다. 따라서 동전 교환기를 연구하는 것은 매우 중요하다. 본 연구의 연구목적은 동전 교환기가 중국 상업 은행의 사업에 미치는 영향을 연구하는 것이다. 현장 방문을 통해 수집한 중국 상업 은행의 고객 데이터를 재무 지표 계산 방법과 결합하여 사례 분석을 수행한다. 연구 결과에 따르면 동전 교환기는 중국 상업 은행의 비즈니스 발전에 긍정적인 영향을 미친다. 본 연구는 중국 상업 은행에 대한 타당성 제안 및 비즈니스 개발에 대한 새로운 아이디어를 제공한다. 현재 동전교환기에 대한 연구는 거의 없으며, 본 연구는 재정지표 계산을 결합하여 정책성과를 검증하는 것이 본 연구의 혁신점이다.

주제어 : 동전교환기, 중국상업은행, 사업발전, 셀프교환, 유지보수운영

*Corresponding Author : Yongjie Zhu(zyjzone@163.com)

1. Introduction

In China, with the development of code-scanning payments represented by Alipay[1], WeChat[2], and UnionPay[3], cashless transactions have become the norm. However, in third- and fourth-tier cities and their jurisdictional counties, urban and rural streets, and rural areas, small banknotes and coins are still widely used, typically in supermarkets, farmers' markets, and waste collection stations [4]. For institutions and individuals that need a large amount of small banknotes and coins, the exchange channels are mainly Chinese commercial banks and private mutual exchange. It is safe and reliable to exchange through commercial banks, but there are insufficient quantities, and it is necessary to make an appointment in advance or go to multiple commercial banks; for private exchanges, there are either small quantities or few channels; For exchange, you generally choose to go to a commercial bank for deposit and exchange, and if you go to the bank to deposit and exchange too many coins at one time, you will be declined by the bank or you need to make an appointment in advance, which will lead to high time and labor costs for depositing and exchanging coins. Therefore, it is difficult for the required coin customers and places to exchange coins, and the coins accumulated in ordinary people's homes lie flat in piggy banks or corners, resulting in an imbalance between supply and demand in the coin market [5]. This imbalance has also spawned an industry that takes the exchange of small notes and coins as its source of income. In order to effectively solve this problem, the People's Bank of China has been promoting coin exchange machines since 2012, but it mainly relies on commercial banks. And due to factors such as cost, the coin changer didn't

really work.

On the other hand, judging from the change (one yuan and less) issued by the People's Bank of China in the past ten years (2010-2020), the coinification of small banknotes is a trend[6]. Coins have the advantages of being wear-resistant and not easy to fold, but also have the disadvantages of being unchanged and easy to lose. These characteristics are a challenge for commercial banks. Although it is easier to pick out damaged coins by manual counting mode, it will increase the workload and transportation costs. Under the impetus of the People's Bank of China, various commercial banks have purchased coin exchange machines and integrated coin deposit and withdrawal machines, through which customers can freely exchange or deposit and withdraw coins and banknotes[7]. However, due to factors such as maintenance and operation, the coin exchange machines of many commercial banks have turned into a "paralyzed" mode: either they are under maintenance, or the amount of banknotes is insufficient and cannot be exchanged[8].

Internationally, South Korea, Japan, the United States and other countries have not only installed coin exchange machines in subway stations, large shopping malls, etc., but also arranged them in places with concentrated traffic such as airports [4]. In China, small currency is gradually becoming coins, but the arrangement of coin exchange machines is far from enough[8].

Based on this background, this paper takes the coin exchange machine as the research object, through the investigation and visit of Jiaozuo City, Henan Province, a fourth-tier city in China, and according to the customer data of Jiaozuo Branch of the Bank of Communications collected manually, combined with the

calculation method of financial indicators Do a case study. Attempts to study the impact of coin changers on the business development of commercial banks in China.

The purpose of this article is to study the impact of coin changers on Chinese commercial banks, in order to bring suggestions and new ideas for business development to Chinese commercial banks. Through data research and analysis, it is found that coin changers have a positive impact on the business development of Chinese commercial banks. The existence of the coin changer not only brought in new customers and customer deposits for China Commercial Bank, but also brought a positive reputation to China Commercial Bank. At the same time, the promotion and use of coin exchange machines has also enabled Chinese commercial banks to better respond to the policies of the People's Bank of China.

In the current research on coin exchange machines, Z. Qiu & T. Li (2019) studied the phenomenon of coin precipitation in county areas and studied foreign experience, mainly using the literature review method[4]; R. Huang (2018) studied the improvement of coin use in Shanxi Province Non-empirical research [6]; J. Xie(2016) studied the factors affecting coin supply and demand and put forward relevant policy recommendations [8]. There are relatively few studies on coin changers, and little empirical analysis due to other reasons such as data acquisition. And there are few researches through on-the-spot investigation combined with financial index analysis. This paper conducts a one-year follow-up survey on customers who use coin exchange machines, combined with the calculation and analysis of financial indicators, to verify the impact of coin exchange machines on the business development of Chinese commercial banks.

This is the innovation of this study.

2. Literature Review and Research Hypotheses

Coin change machines are divided into coin change machines and coin deposit and withdrawal all-in-one machines [9]. Both are machines that can convert coins into banknotes in batches [4], the difference is that the coin deposit and withdrawal machine can deposit coins directly into the bank account. The coin exchange machine can not only improve the efficiency of customers depositing and exchanging coins, but also save the time of customers and the time of handling business at the window. According to the “effort heuristic” [10] theory proposed by Belk et al. (1988)—effort (or perceived effort) is related to how positive people are about outcomes (e.g., time, labor, pain, or money spent) effort). Customers will spend less time and energy in depositing and exchanging coins through the coin exchange machine, and the satisfaction they get in their hearts will not only increase their goodwill towards the bank, but also increase the number of times they go to the bank to handle business and the types of business they handle. For example, the supermarket’s accountant spends less effort and time in going to the bank to exchange coins, and gets a higher degree of psychological satisfaction; the merchant spends less effort and time in going to the bank to exchange coins, and gets a higher degree of psychological satisfaction. Satisfaction is high, business is convenient, and the news that commercial banks have coin exchange machines will also be widely advertised through circle culture. It will not only increase the popularity and customer flow of the commercial bank, but also bring new customers to the commercial bank.

Tracking and maintenance can also lead to an increase in foreign customers and deposits.

Therefore, this study makes hypothesis 1:

H1: Existence of coin exchange machines, introduction of new customers, increase in deposits

China's commercial banks pursue economic benefits. In response to the policies of the People's Bank of China, commercial banks must purchase and arrange coin exchange machines. However, depositing and withdrawing coins at the counter takes time for employees and affects the progress of business processing; the high cost of purchasing coin changers and high labor costs for daily maintenance and counting lead to a small number of coin changers and even fewer actually put into use. In order for commercial banks to actively respond to the policies of the People's Bank of China and invest heavily in coin exchange machines, the worries of commercial banks must be resolved. The available data proves that the profit contribution from the coin changer is greater than the purchase cost. This article refers to Y. Zhu & S. Jin (2022) to calculate the accounting profit based on the annual average deposit combined with FTP (Funds Transfer Pricing) to evaluate the business impact of the existence of coin exchange machines on Chinese commercial banks [11]. If the purchase cost of the coin changer is less than the profit contribution of introducing customers through the coin changer, it proves that the coin changer has a positive impact on the development of China's commercial banking business; otherwise, it proves that the coin changer has a negative effect on the development of China's commercial bank business .

Therefore, this study makes hypothesis 2:

H2: The profit contribution of introducing customers through the coin changer is greater than the purchase cost of the coin changer

3. Case Analysis

3.1 Introduction to Bank of Communications Jiaozuo Branch

Bank of Communications (BCM), founded in 1908, is one of the six largest banks in China and a large state-owned commercial bank. On April 1, 1987, the reorganized Bank of Communications officially opened for business, becoming China's first national state-owned joint-stock commercial bank with its head office in Shanghai. In June 2005, Bank of Communications was listed on the Hong Kong Stock Exchange, and in May 2007 on the Shanghai Stock Exchange. Bank of Communications Henan Branch was reorganized and opened in 1988. It was renamed in 2009. The new name is Bank of Communications Co., Ltd. Henan Branch. Established in November 2010, Jiaozuo Branch of Bank of Communications is a subsidiary of Bank of Communications Henan Branch. Located in Jiaozuo City, Henan Province. Jiaozuo City is a fourth-tier city in China, with urban, county and rural township and village institutions.

3.2 Variable Design

This paper mainly studies the impact of coin changers on the business of Chinese commercial banks. The required variables are: the cost of purchasing coin changers by Chinese commercial banks, the annual average daily deposits of customers (demand, time and structured deposits) and income. This study

refers to the variable design method of Y. Zhu & S. Jin (2022) [11].

Table 1 lists all variables, variable names and measurement methods.

Table 1. List of variable definitions

Serial Number	Variable	Variable Name	Measurement Method
1	PC	Purchasing Costs for Coin Changers	The winning bid price of Postal Savings Bank of China Beijing Branch in 2019, 108,068 yuan per unit [12]
2	HQS	Annual Average Return on Demand Deposits	Annual average demand deposit* (2.8%-0.3%)
3	DQS	Annual Average Daily Fixed Deposit Income Yearly	Annual average time deposit* (2.8%-2.1%)
4	JGS	Average Daily Structured Deposit Yield	Annual average structured deposit* (2.8%-2.1%)
5	SY	Income	Annual average daily demand deposit income + annual average daily time deposit income + annual average daily structural deposit income - purchase cost of coin exchange machine

3.3 Data Sources

The research object of this study is the situation of banks in Jiaozuo area investing in coin exchange machines, and the customers who use the coin exchange machines in the business department of Jiaozuo Branch of Bank of Communications. Because there are only two devices in normal use in more than 400 bank outlets in Jiaozuo City (the investigation date is December 2017), the coin exchange machine of the business department of Jiaozuo Branch of the Bank of Communications was used as the research object, and the use of coin exchange machines customers to conduct follow-up follow-up surveys. The coin exchange machine of Jiaozuo Branch of the Bank of Communications was installed and used in November 2017. It is located in the lobby of the business department and can only be exchanged but cannot be accessed. The use

time is 9:00-17:00, and the operation and maintenance will be carried out by the manufacturer. Through nearly one year (2017.12-2018.11) tracking and contacting of customers who have used coin exchange machines and newly opened cards, by the end of 2018, 215 valid customers have been obtained.

For the convenience of research, this study excludes customers whose annual average daily assets are less than 1,000 yuan, and a total of 198 groups of valid data are obtained.

3.4 Data Analysis

3.4.1 Earnings Calculation Formula

The existence of the coin exchange machine, the introduction of customers, the calculation of the profit contribution of customers, this study refers to the practice of Y. Zhu & S. Jin (2022) [11], by assigning the price of 2.8% for FTP and 0.3% for demand deposits. Annualized rate of return, fixed deposits and structured deposits are calculated at an annualized rate of return of 2.1%. The purchase cost of the coin exchange machine is calculated based on the winning bid amount announced by the Postal Savings Bank of China in 2019 (108,068 yuan/unit) [12]. The time calculation dimension is one year, from December 2017 to November 2018.

The revenue brought by the coin changer can be expressed by formula (1):

$$SY=HQS+DQS+JGS-PC \tag{1}$$

If $SY \geq 0$, the return is positive. The cost of the coin exchange machine can be recovered within one year, and the coin exchange machine has a positive impact on the business of Chinese commercial banks;

If $SY < 0$, the return is negative. The cost of the

coin changer cannot be recovered within one year, and the impact of the coin changer on the business of Chinese commercial banks is not significant in the short term.

3.4.2 Analysis Results

According to the data analysis, $\Sigma HQS=71197.34$, $\Sigma DQS=84536.16$, $\Sigma JGS=9457.07$, $\Sigma PC=108068.00$, so $SY=57122.57 \text{ yuan} > 0$, that is, the income is positive, which proves that the cost of the coin changer can be recovered within one year, and the coin changer has a positive impact on the business of Chinese commercial banks. Both Hypothesis 1 and Hypothesis 2 are supported.

4. Research Conclusions and Management Implications

4.1 Research Conclusion

This article starts from the coin exchange machine, and studies the impact of the coin exchange machine on the business development of Chinese commercial banks through the combination of FTP and customer deposits. The study found that the presence of coin deposit machines was able to attract new customers and increase bank deposits. At the same time, the bank's lobby manager's marketing mining of new customers can bring a profit contribution higher than the cost of the machine to the Chinese commercial bank within one year.

4.2 Management Enlightenment

4.2.1 The Coin Exchange Machine is Operated and Maintained by the Bank Itself

In this study, a total of 410 bank outlets of 13 commercial banks in Jiaozuo City (including counties) in the fourth-tier city of China were visited and investigated (the time is 2017) [13]. The layout and use of the coin exchange machines are shown in the figure 1 & figure

2.(Data as of December 31, 2017)

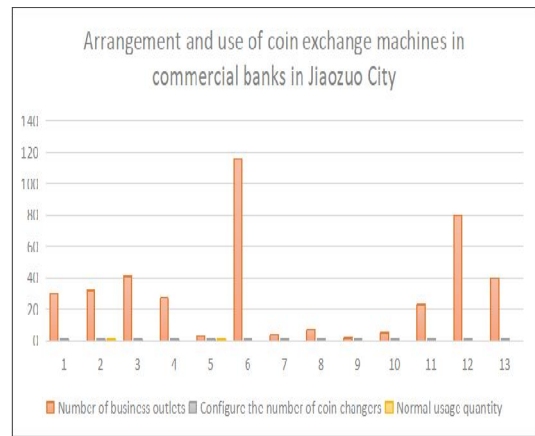


Fig. 1. Configuration of coin exchange machines in commercial banks in Jiaozuo City

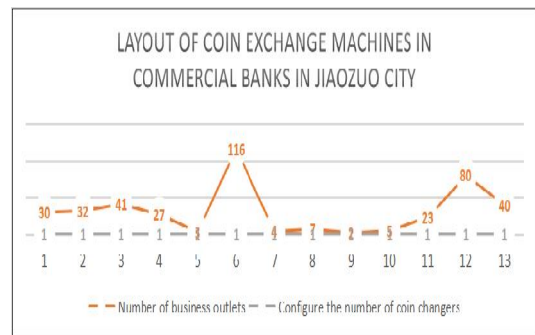


Fig. 2. Usage of Coin Exchange Machines in Commercial Banks in Jiaozuo City

The survey results show that all 13 banks are equipped with a coin exchange machine, but only two of them are actually in normal use, both of which are operated and maintained by a third party.

Coin change machines are rarely able to operate due to insufficient exchange amount, machine failure, etc. It is recommended that commercial banks treat the coin exchange machine as an ATM machine, and have it operated by the bank itself with special personnel to maintain and assess it to ensure the normal operation of the machine.

4.2.2 Put the Coin Exchange Machine into the Self-service Bank for 24 Hours

Coin change machines are generally placed in business outlets, and the business hours follow the operating hours of commercial banks, resulting in insufficient utilization of the machines. It is suggested that commercial banks can put the machines in self-service banking outlets [14] to achieve 24-hour operation, which is convenient for customers to use and avoids idle machines. Get the most out of your coin changer.

4.2.3 Put the Coin Changer in Places With Large Traffic Such as Supermarkets

Learn from the practices of Japan, South Korea and other countries, and cooperate with supermarkets. After the coin exchange machine is placed in the place, customers can directly exchange coins into shopping coupons [5], avoiding coins being idle in customers' homes, which can effectively improve the circulation of coins and alleviate the imbalance in the coin market.

4.2.4 Grow New Business with Coin Changer

(1) The bus company has a lot of coins in and out every day [15]. If the coin changer is used, the bus company can save a lot of manpower and material resources. The commercial bank can cooperate with it to solve the daily change problem through the coin exchange machine, saving the operating cost of the bus company. At the same time, it can market the deposit of the bus company and the business of the bus company.

(2) The customer goes to the business outlet to handle the coin deposit and exchange business. On the one hand, the commercial bank can upgrade the coin exchange machine to an all-in-one coin deposit and withdrawal

machine. Marketing customers to apply for savings cards, attracting new customers, and improving customer assets through subsequent mining. On the other hand, pay attention to the follow-up and improvement of customers in the later stage. There are often a large number of coins in circulation, usually supermarkets, bus companies, individual industrial and commercial households, etc. [16], their economic strength should not be underestimated, and proper mining is an important source of new customers.

4.2.5 Invest Heavily in Coin Exchange Machines and Actively Respond to the Policies of the People's Bank of China

The People's Bank of China has been actively promoting coin exchange machines, and commercial banks can invest heavily in coin exchange machines. The coin exchange machine can introduce new customers, and it is also a new starting point for commercial bank marketing. At the same time, it also actively responds to the policies of the People's Bank of China, bringing good social reputation and government support to commercial banks.

4.3 Limitations

Due to the difficulty in obtaining data, empirical analysis cannot be done; in Jiaozuo City, there are not many coin changers that can be used normally, so the research cannot be expanded. This is a limitation of this article.

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주 영 결(Yongjie Zhu)

[정회원]



- 2014년 6월 : 중국 산둥공상대학 (경영학학사)
- 2019년 6월 : 중국 중남재경정법대학(경영학석사)
- 2021년 3월 ~ 현재 : 가천대학교 경영학과 박사과정

- 관심분야 : 기업재무, 기업지배구조, 금융혁신, 금융투자
- E-Mail : zyjzone@163.com