Factors Affecting the Development Policies of Digital Deposit Accounts for the Bank in Taiwan

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Abstract

Banks' digitalization is a future trend and a national financial technology policy. This research aims to study which factors will affect digital accounts' promotion by digital banking. Specifically, we apply the Pearson product-moment correlation (PPMC) to analyze the relationship between variables. The empirical findings can briefly be summarized as follows:
1. In the PPMC model, the research shows that digital accounts have a significant positive relationship with the card in force and active cards.
2. The digital accounts' negative relationship with account opening age limit. On the whole, there are two ways for digital banking to promote digital accounts.

First, digital banking effectively promotes digital accounts by targeting customers who hold the bank's credit cards. Second, digital banking best doesn't set the account opening age limit. The results of this research can also serve as a reference for bank authorities when formulating policies to promote digital accounts' promotion.

Keywords: Fintech, Digital Banking, Digital Account, Pearson product-moment correlation, Pearson's r.

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1. Introduction

According to the Taiwan Financial Supervisory Commission (TFSC) statistics (2020), the number of digital banking has increased from 17 banks in 2015 to 34 in 2020, a 100% increase in just five years. Among them, the number of digital accounts in Taiwan has reached 6.463 million in 2020, and the growth rate has increased fastest year.

There are two main reasons. First, beginning in November 2019, the COVID-19 epidemic has spread to more than 120 countries and regions around the world in just a few months, and more than 300,000 people have been ill. It has not been controlled so far. Countries have resorted to the evacuation of overseas Chinese, air bans, and border closures. In Taiwan, the world's travel warning lights are listed as "red" for an unprecedented rate. It can be seen that the speed of the epidemic has forced countries or regions around the world to take a global quarantine action, which in turn caused a severe impact on the global economy. Hence, the government has encouraged people to use more internet functions because reduces the chance of infection. As a result, the number of digital accounts continues to rise. According to the Banking Bureau of the TFSC's 2020 statistics, the number of digital deposit accounts in banks has reached 6.463 million, compared with 3.384 million in 2019, a year-over-year increase of 90.9%.

Second, traditional banks have physical branches and branch employees. Now the government has responded to the COVID-19 pandemic by calling on citizens to reduce their outings, which reduces people's willingness to open accounts in traditional banks and reduces the number of new bank accounts opened. Traditional banking units must rethink their business directions and future trends.

On the other hand, the government has encouraged people to use more internet functions because of COVID-19. As a result, the number of digital accounts continues to rise. According to the Banking Bureau of the TFSC's 2020 statistics, the number of digital deposit accounts in banks has reached 6.463 million, compared with 3.384 million in 2019, a year-over-year increase of 90.9%. It has also prompted banking units to pay more attention to developing and operating digital banking offerings. However, we found that TFSC (2020) statistics show that some financial holding companies with digital accounts are growing fast, but some banks are growing slowly. So, what factors affect digital accounts? Domestic literature has not yet widely addressed this topic.

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literature has not yet widely addressed this topic.

Because the digitalization of banks is a future trend, and it is also a national financial technology policy, this research aims to study what factors will affect digital accounts' promotion.

Specifically, we apply the Pearson product-moment correlation (PPMC) to analyze the relationship between variables.

This paper is organized as follows. Section 1 introduces the research background and goal. Section 2 reviews the conceptual framework and the overview of the policy. Section 3 briefly reviews the PPMC methodology. Section 4 presents the empirical results. Section 5 includes some conclusions.

2. Literature Reviews

Several financial and banking sector reform programs were instituted in different countries over the last three decades. Just like Taiwan in 2016, the "FinTech Development Strategy White Paper" was proposed. The plan emphasizes the promotion of a friendly financial technology and financial transformation environment in Taiwan. Master the development trend and professional knowledge of financial technology to strengthen international competitiveness. Technology is also used in financial services to improve financial services' efficiency and innovation and to stimulate financial innovation.

With many information displays, digital banking has soared across Asia. Moreover, according to A McKinsey study shows consumers of financial services are turning to computers, smartphones, and tablets more often to do business with their banks, while visiting branches and calling service hotlines less frequently (Barquin and Hv, 2015). It is mainly affected by the most important changes in the presence of a much stronger ecosystem to enable digital banking, including the rapid increase in Internet and smartphone adoption and growth in e-commerce. That shows the trend of customers using digital banking is growing rapidly. Over 3.4 billion people (about 46%) of the global population are using the internet, with growth rates of 16% per year (Internet World Stats, 2017). It is resulting in the demand for digital banking moving from early adopters to a broad range of customers (Nguyen and Dang, 2018). Based on Sardana and Singhania (2018) pointing out characteristics of digital banking. Digital banking has the potential to transform the banking business as it significantly lowers transaction and delivery costs. The main reason, the digital banking is characterized by no physical passbook, and all services are completed on the digital network. Therefore, compared with traditional banks, it saves rent and human resources expenditure. Besides, its digital banking marketing methods are also different. Digital banking often uses accounts opened by the digital bank and often offers high-profit live deposits, cross-bank cross-deduction, and waived handling fees to attract users to join.

As mentioned above, in recent years, research has favored digital finance and digital banking. Studies show that digital banking can lead to greater financial inclusion and expansion of financial services to non-financial sectors (Phan, Narayan,

Rahman, and Hutabarat, 2020). Further, digital banking can provide convenient access to diverse financial products and services (and credit facilities) for individuals and businesses (World Bank, 2014). Additionally, innovation in digital finance and digital banking can have long-term positive effects on a bank's performance. For instance, digital banking has increased profitability, financial innovation, and improved control of risk within banks (Ozili, 2018).

Overall, by using financial technology, commercial banks can improve their traditional business model by reducing bank operating costs, improving service efficiency, strengthening risk control capabilities, and creating enhanced customer-oriented business models for customers (Scott, Van Reenen, and Zachariadis, 2017). However, no studies have ever tried to that What factors can increase digital deposit accounts.

On the other hand, many types of researches display the Pearson product-moment correlation model can analyze the relationship between variables (Coskun, and Akar, 2020; Puth, Neuhäuser, and Ruxton, 2014; Ndako, Olisa, Ozoadibe, Dojumo, Fajobi, and Akinwumi, 2020). Specifically, we apply the Pearson product-moment correlation (PPMC) to analyze the relationship between variables and what factors main can increase digital deposit accounts.

3. Study Model

In this article, I would like to find the question of what factors affect the digital account business. Therefore, in this study, we have chosen Pearson product-moment correlation (PPMC) to analyze the relationship between variables, described as follows:

3.1   Pearson Product-Moment Correlation

The Pearson product-moment correlation coefficient (or Pearson correlation coefficient, for short) is a measure of the strength of a linear association between two variables and is denoted by r. In this method the coefficient of correlation is between two variables x and y is given by, described as follows (Equation (1)):

$$r = \frac{\sum d_x d_y}{\sqrt{\sum dx^2 \sum dy^2}} \tag{1}$$

where
$dx = x - \bar{x}$
$dy = y - \bar{y}$
$dx^2 = (x - \bar{x})^2$
$dy^2 = (y - \bar{y})^2$

In this model, the x and y are the means of the variates X and Y, respectively. The above formula can also be written as (Equation (2)):

$$r = \frac{\sum d_x d_y}{n \sigma_x \sigma_y} \tag{2}$$

where

$$\sigma_x = \text{ Standard deviation of X} = \sqrt{\frac{\sum x^2}{n} - (\bar{x})^2}$$

$$\sigma_y = \text{ Standard deviation of X} = \sqrt{\frac{\sum y^2}{n} - (\bar{y})^2}$$

n Number of observations in x or y series.

Final, this model be written as (Equation (3)):

$$r = \frac{\text{Covariance (x,y)}}{\sigma_x . \sigma_y} \tag{3}$$

In this approach, the r shows the linear relationship's strength between two different variables, x, and y. If the r-value is near ± 1, then it is said to be a perfect correlation. As one variable increases, the other variable tends to increase, and a linear correlation coefficient greater than zero indicates a positive relationship; conversely, as one variable decreases, and a value that is less than zero signifies a negative relationship. Finally, the r-value definition, described as follows:

- High degree: If the coefficient value lies between ± 0.50 and ± 1, then it is said to be a strong correlation.

- Moderate degree: If the value lies between ± 0.30 and ± 0.49, then it is said to be a medium correlation.

- Low degree: When the value lies below $\pm .29$, then it is said to be a small correlation.

- No correlation: When the value is zero.

4. Empirical Results and Analysis

This study's empirical analysis mainly comprised two parts: Section 1 describes the study objects and variables description for this study. Finally, Section 2 analyzes correlation analysis between variables.

4.1   Research Objects and Variables Description

4.1.1   Research Objects

This research analyzes the digital account business of the 16 financial holding companies in Taiwan. One of the Guopiao Financial Holding does not have a digital account business, so this article's research will remove it. This study's data only use 2020, mainly because the data are relatively complete and include all major financial holding companies (16 companies) in my country. Besides, this study lists the number of digital accounts in 2020 (Table 1).

Table 1: Bank Names and Number of Digital Accounts

NO	Bank Name	Digital Account	Quantity
1	Hua-Nan Financial Holdings Co., Ltd.	Yes	208326
2	Fubon Financial Holdings Co., Ltd.	Yes	106547
3	China Development Finance Holdings Co., Ltd.	Yes	1411
4	Cathay Financial Holdings Co., Ltd.	Yes	966989
5	CTBC Financial Holding Co., Ltd.	Yes	277198
6	Sino-Pac Financial Holdings	Yes	663697
7	E.SUN Financial Holding Co., Ltd.	Yes	110471
8	Yuana Financial Holdings Co., Ltd.	Yes	882
9	Taishin Financial Holding Co., Ltd.	Yes	2368752
10	Shin-Kong Financial Holding Co., Ltd.	Yes	16470
11	Mega Financial Holdings Co., Ltd.	Yes	92317
12	First Financial Holdings Co., Ltd.	Yes	450384
13	Jih-Sun Financial Holding Co., Ltd.	Yes	137
14	Taiwan Financial Holdings Corporation	Yes	20783
15	Cooperative Treasury Financial Holding Company	Yes	125009

4.1.2   Definition Variables

Prior to the establishment of the empirical model, we list as many preliminary assessment factors as possible. Therefore, this research refers to TFSC (2020) statistics reports and various financial holding websites to list the impact variables. Pearson's correlation analysis is then used for preliminary analysis. The variables of this study are explained as follows:

1. Digital Account (x_1): There is no real physical passbook, and internet operation is required.
2. The Card in Force (x_2): It points to the total number of issued cards minus the total number of stopped cards and the card status is normal.
3. Active Cards (x_3): It points to the cards with spending records in the last six months.
4. Interest Rate (x_4)：Currency deposited in the bank account, interest for a certain period of time
5. Number of Free Transfers (make an inter-bank transfer) (x_5): It refers to the transfer of money from one's own account to another account.
6. Number of Free Withdrawals (take out money) (x_6): It points to the number of withdrawals from the ATM.
7. Deposit Limit (x_7)：It points to refers to a limited deposit amount.
8. Account Opening Age Limit (x_8): It points to refers to restrictions on the age limit for account opening.

4.2 Data Correlation Analysis

This study organizes its results as Table 2. The research has shown that digital accounts (x_1) have a significant positive relationship with the card in force (x_2) and active cards (x_3). Furthermore, there is a negative relationship with the account opening age limit (x_7) as follows:

Table 2: Correlation Test and Analysis

Variable	x_2	x_3	x_4	x_5	x_6	x_7	x_8
x_1	0.525^{**}	0.517^{**}	0.411	0.331	0.366	0.221	-0.932^{***}

Source: This Study, Note: *p<0.05; **p<0.01; ***p<0.001

1. Card in Force (x_2):
According to the empirical results shown in Table 3, the digital accounts (x_1) have a significant positive relationship with the card in force (x_2). Besides, the coefficient value lies between 0.525, and then the correlation of the coefficient between the two variables is a strong correlation. It means that banks use existing credit cards to promote digital account business. This will increase the number of digital accounts.

2. Active Cards (x_3):
Based on empirical results shown in Table 2, the digital accounts (x_1) have a significant positive relationship with the active cards (x_3). Besides, the coefficient value lies between 0.517, and then the correlation of the coefficient between the two variables is a strong correlation. It means that banks use existing credit cards to promote digital account business. This will increase the number of digital accounts.

Even if it doesn't often use credit card users, it will have an impact.

3.   Interest Rate (x_4)

According to the estimated results shown in Table 2. The experiment results that the digital accounts (x_1) and the interest rate (x_4) are a correlation coefficient of 0.411 with moderate degree correlation and positive relationship. Moreover, the coefficient value lies between is not significant. Studies have shown that interest rates have little effect on the promotion of bank digital account business, mainly due to deposit amount restrictions. Such restrictions will affect the public's want to open digital accounts.

4.   Number of Free Transfers (x_5)

According to the empirical results shown in Table 2, the digital accounts (x_1) have a significant positive relationship with the number of free transfers (x_5) are a correlation coefficient of 0.331 with moderate degree correlation and positive relationship; the relationship between the two is not significant. Some traditional general banks do not need to open a digital account and be provided with free transfers. However, the bank still has limited the number of times, which will affect the people's want to open digital accounts.

5.   Number of Free Withdrawals (x_6)

Based on the estimated results shown in Table 2. The result of the experiment that the digital accounts (x_1) and the number of free withdrawals (x_6) have a correlation coefficient of 0.366 with moderate degree correlation and positive relationship; however, the relationship between the two is not significant. Because some banks do not need to open a digital account and have free withdrawals, but the bank still has a limited number of times. Besides, people's deposits are use ATMs, which are only universal in large cities, and there are not many small cities. So, this will affect the people's want to open digital accounts.

6.   Deposit Limit (x_7)

According to the estimated results shown in Table 2. The result of the experiment that the digital accounts (x_1) and the deposit limit (x_7) are a correlation coefficient of 0.221 with a low degree correlation and positive relationship. Moreover, the coefficient value lies between is not significant. Studies have shown that deposit limits have little effect on the promotion of bank digital account business, mainly due to deposit amount restrictions. Therefore, the digital banking will not calculate interest when the deposit exceeds the limit; this will affect the people's want to open digital accounts.

7.   Account Opening Age Limit (x_8)

Based on the estimated results shown in Table 2. We find that digital accounts (x_1) negative relationship with account opening age limit (x_8). Besides, the coefficient

value lies between -0.932, and then the correlation of the coefficient between the two variables is a strong correlation. The results show that the traditional general banks and digital banking in Taiwan have to limited age to open a digital account, which will affect people's want to open accounts. Because young people rely on 3C (computer, communication, and consumer electronics) products more than the masses. Therefore, if digital banking does not limit the age, which will help the bank promote the digital account business.

5. Concluding Remarks

This research aims to study which factors will affect digital accounts' promotion. Specifically, we apply the Pearson product-moment correlation (PPMC) to analyze the relationship between variables.

In this study, the PPMC model research has shown that digital accounts (x_1) have a significant positive relationship with the card in force (x_2) and active cards (x_3). Furthermore, there is a negative relationship with the account opening age limit (x_7). As mentioned above, we can conclude with certainty that if digital banking wants to promote digital accounts, it must use existing credit card users to promote significant growth. What is more, digital banking must pay attention to the limited age issue to open a digital account; this major factor will affect the people's want to open digital accounts; conversely, other factors will not influence the promotion of bank digital account business.

Lastly, the conclusions and recommendations presented here are based on the models constructed, sample data collected, and research methodologies employed in this study. Hence, it is necessary to consider the current situation and changes in Taiwan's digital banking environment and to tailor any application of our findings further to yield more accurate conclusions.

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