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第三方支付滿意度影響因素研究

Influencing Factors on the Third- Party Payment  
Satisfaction

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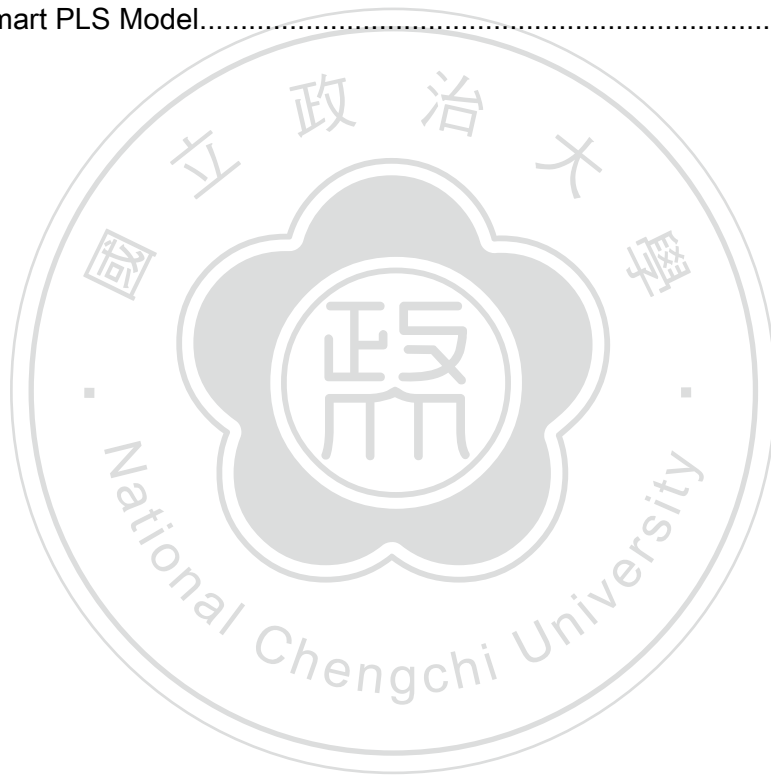
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## 摘要

隨著電子商務規模的快速擴張,第三方支付越來越普及,而新冠疫情加速了去現金化的過程。在這過程中可見第三方支付對於生活的緊密程度。COVID-19推動了數字支付的使用,各國央行發行數位貨幣並建立數字個人帳戶的想法變得越來越吸引人。COVID-19 疫情過後,我們生活的許多方面都將發生改變,包括我們去的地方、我們見的人、我們如何旅行以及我們的整個支付方式。

在 covid-19 疫情期間,萬事達卡的發布新聞,超過 75%消費者因疫情提升行動支付使用頻率,而且且每天都會使用行動支付的「重度使用者」自疫情發生後增加了 30%,全台每兩位行動支付使用者中,便有一人是行動支付重度使用者。線上交易從電子商務發展開始,至今第三方支付已成為主流。

第三方支付業者想要在很多競爭對手中,優先留住客戶的注意力進而獲得成功,就必須關注是什麼因素影響使用者的滿意度,選取大學生為研究對象,確定研究視角為:確認程度、知覺有用性、滿意度、持續使用意願,透過調查問券的方式收集數據,通過 SPSS 和 PLS 分析方法得出結論,為第三方支付業者提供建議。本文通過實證研究得出如下結論:期望確認程度、感知有用性、滿意度對持續使用意願有直接顯著正向影響,最後本文根據研究結論為第三方支付業者提出了幾項管理建議:優化操作流程、增強用戶感知易用性:提高用戶感知價值、優化產品服務品質、提高用戶滿意度。

關鍵詞:第三方支付、使用者滿意度、知覺有用性、持續使用意願

# ABSTRACT

With the rapid expansion of the e-commerce scale, third-party payment is becoming more and more popular, and the new crown epidemic has accelerated the process of de-cashing. In this process, we can see how close third-party payment is to live. COVID-19 has promoted the use of digital payments, and the idea of central banks issuing digital currencies and establishing digital personal accounts has become more and more attractive. After the COVID-19 epidemic, many aspects of our lives will change, including where we go, the people we meet, how we travel, and our entire payment method.

During the covid-19 epidemic, Mastercard issued news that more than 75% of consumers have increased mobile payment use due to the epidemic. The number of "heavy users" who use mobile payment every day has increased by 30% since the outbreak. For every two mobile payment users, one is a heavy mobile payment user. Online transactions started from the development of e-commerce, and so far, third-party payment has become the mainstream.

Suppose the third-party payment industry wants to retain the customer's attention and achieve success among many competitors. In that case, it must pay attention to what factors affect the user's satisfaction, select college students as the research object, and determine the research perspective as the degree of Perceived usefulness, confirmation, satisfaction, and Continuous use intention. Collect data through investigation and questionnaires. Conclude SPSS and PLS analysis methods, and provide suggestions for third-party payment companies. This paper outlines the following findings through empirical research: the degree of expected confirmation, perceived usefulness, and satisfaction directly and significantly positively impact the willingness to continue use. Finally, this paper puts forward several management recommendations for third-party payment companies based on the research conclusions: Optimize operation procedures Enhance user-perceived ease of use, improve user-perceived value, optimize product and service quality, and improve user satisfaction.

*Keywords: third-party payment, user satisfaction, perceived usefulness, willingness to continue the use*

# Chapter 1 Introduction

## 1.1 Research Background

With the development and evolution of the Internet, people have gradually switched from shopping at physical stores to shopping online with E-commerce; or browsed products on the Internet and then purchased at physical stores. The scale of the E-commerce market continues to expand. In the past, consumers were worried about the security of shopping on the Internet, such as not receiving goods after payment or leakage of personal and credit card information. The third-party payment came into being to solve it.

Third-party payment has been developed around the world for many years. The first one is PayPal, which is based on credit cards. Email and credit cards can solve the problem of online shopping payment flow at a lower cost. In China, Alipay, founded by Alibaba, is relatively backward in online popularity. In China, transaction credit and security are the concerns of Internet users. Alipay, a third-party payment system, has effectively solved these problems. When Taobao was established in 2004, 70% of online stores were less than one year old. Almost all of them use Alipay for business transactions. As of the end of 2020, the number of Alipay users exceeded 1.3 billion, of which more than 97% are mobile payment users. As of June 30,

2020, the scale of Alipay digital payment transactions reached 118 trillion RMB. Alipay has also become the world's largest mobile payment company. The use of third-party payment has also become a common consumption habit of people. According to Alibaba's 2019 shareholder meeting report, users are more accustomed to using Alipay year by year.

Take WeChat Pay, another third-party payment company in China, as an example. In 2020, the number of social insurance (社會保險) payments using WeChat Pay had reached 564 million RMB, an increase of 264 million RMB from 2019, and the growth rate is fantastic. In addition to paying social insurance, water, electricity and coal, credit card bills, and mobile phone recharge, life services is another area third-party payment users often use. This data means in China that people have become more accustomed to using third-party payment year by year.

The development of third-party payment in Taiwan began in 2000. Early vendors included Sun Tech Co., Ltd (紅陽科技), Neweb Technologies co., Ltd (藍新科技) and EC Pay (綠界科技). They provided IPSP (Internet Payment Service Provider) agency services and delivered a B2C (Business to Consumer) solution early. In terms of application, Neweb Technologies set up a C2C (Consumer To Consumer) payment tool, "ezPay Personal Account," in 2003. Still, in 2006 the Financial Supervisory Commission (FSC) terminated its service due to the involvement of stored-value business. Since the third-



party payment business in Taiwan has not been clearly defined by government regulations, it can only be used in the gray area before the adoption of the "Licensing and Management Measures for Bank Issuance by Cash Stored Value Cards (銀行發行現金儲值卡許可及管理辦法)" and the "Regulations on the Issuance of Electronic Tickets (電子票証發行管理條例)." Relative to some countries, third-party payment in Taiwan is relatively backward.

The government's attitude has gradually become more open in recent years because of the emerging global trend and the industry's requests. In May 2015, the "Regulations on the Management of Electronic Payment Institutions" officially went on the road. It opened a door for Taiwan's third-party payment industry.

As of now, the third-party payment service is still in Taiwan (LINE PAY, JKOPay (街口支付) is far from China (the most prominent third-party payment in China: Alipay) and the United States (the world's first third-party payment PAYPAL).

Due to the popularity of the Internet and smartphones, third-party payment has changed consumer behavior and the E-commerce development model.

Because third-party payment in Taiwan only began to develop after the passing of the Finance Act at the end of 2014, there is not much data available. However, because of the high degree of internet usage and acceptance of third-party payment among the young people, this study uses students of National Chengchi University (政治大學) as an example. For example, the study population sets the ages of first-year students to seniors to study the factors influencing the satisfaction of college students' third-party payments.

Taking Taiwan's top third-party payment LINE PAY and JKOPay, investigate the third-party payment in the consumer usage satisfaction technology model to conduct research and analyze the Taiwan market. The questionnaire will be discussed by National Chengchi University (政治大學) students as an example.

Research on mobile payment is relatively early and relatively incomplete. PAYPAL in the United States is earlier than Alipay and WeChat payment in China. We can learn that scholars have paid the most attention to mobile payment research by consulting and analyzing relevant literature. The point is in the technology, security, and business model of mobile payment. With further research, research on user behavior has also begun. There is relatively little research in the field of mobile payment segmentation, especially in mobile payment.

Because of the convenience store system and logistics system, people in Taiwan are accustomed to using supermarket pickup or cash-on-delivery methods for online shopping. These are all third-party payments in a broad sense. The operation of Taiwan's third-party payment will not affect Taiwan in a localized way. By improving the payment flow system, Taiwan's high-quality products and services and E-commerce will be marketed internationally. In Taiwan's consumption habits, credit cards and e-tickets, such as EasyCard (悠遊卡), are also ubiquitous payment tools. With the rise of mobile payment, shopping through mobile phones is bound to be the mainstream in the future, and service providers (FSPs) are attached to enter the growth and competition in the payment market in Taiwan, which is what we can expect.

## **1.2 Research development and current situation**

Customer satisfaction research has been an emerging issue in recent years. From the analysis of the influencing factors of customer satisfaction, find out the factors that affect customer satisfaction—the relationship between customer satisfaction and customer behavior. The cost can be optimized to change consumer behavior, effectively improve the key factors affecting customer satisfaction. Establish and strengthen customer loyalty, reduce customer complaints and customer churn, increase repeat purchase behavior, create a good reputation, and enhance the company's competitiveness and profitability.

Third-party payment company has sufficient capital guarantee and credit.

The background of the emergence of third-party payment is due to the prosperity of E-commerce and the security issue of separating receipt and payment. The bank does not have corresponding protection measures in the transaction process. The third-party payment is independent of the bank and acts as an intermediary for the capital transaction. The third-party payment company will temporarily keep the customer's money and not transfer it until it is assumed that the customer gets the goods. Cash to the merchant's account, solve the online consumption security problem. It is a payment method with a network, and credit card payment is also one of the functions of the third-party payment platform.

Third-party payment is linked:

- I. Account transfer payment (transfer money from the bank account to the mobile payment account).
- II. Credit card payment (the third-party payment can be used to link the credit card payment when the credit card is bound to the consumer). It becomes more convenient.

Mobile Payment, in simple terms, is a payment behavior initiated through mobile devices (such as smartphones and pads, etc.) to replace physical payment methods such as credit cards, tickets, or cash.

However, as mentioned above, "mobile payment" is a broad concept. If we want to understand Taiwan's mobile payment industry, we must first understand the three "business items" related to mobile payment, which are legendary ones. "Electronic payment", "electronic ticket" and "Third-party payment". ( See the Figure 1 and Table 1.)

Table 1-1

*Compare Electronic Payment, Electronic Ticket, and Third-party Payment*

	e-payment	e-ticket	the third-party payment
Competent authority	Financial Supervisory Commission		Ministry of Economic Affairs
Regulations	Regulations on the Administration of Electronic Payment Institutions		Self-regulation
Minimum paid-up capital	500 million yuan	300 million yuan	null
The main function	*Account can be stored and transferred  *Can engage in collection and payment services  *Maximum deposit of 50,000	*Account can be stored  *Maximum deposit of 10,000	*Can be engaged in collection and payment services

	*Can be engaged in collection and payment services		
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source: FSC Banking Bureau 、dept of commercial affairs(2018, august)

Table 1-2

*Overview and comparison of differences between PAYPAL and Alipay*

	PayPal (American)	AliPay (China)
Original purpose	Change payment speed	Provide a safer way to shop online
way to register	Email address	Phone number/ Email address
Account	Email address	Set it yourself
Support currency	30 currencies, including the U.S. dollar	14 coins, including RMB
Profit model	Handling fee	Handling fee, investment, financial services
User	305 million	1.2 billion

Sources: Organize by me / number of users: Merchant Savvy (2020)

The third-party payment was developed by eliminating the risk of fraud. In the beginning, buyers and sellers directly traded on the E-commerce platform. The sellers often did not ship the goods after receiving the money, or the sellers sent the goods first and could not obtain the money. The fraud has made buyers, and sellers feel insecure about online transactions. Third-party payment protects buyers and sellers simultaneously, significantly improving the credibility of online transactions and not only improving the consumer's network. The willingness to consume has also considerably changed the behavior of selling expenses. In a brief period, online transactions have surpassed offline transactions. In the beginning, PayPal in the U.S was mainly based on financial transfers and payments. After being acquired by eBay in 2002, PayPal became one of eBay's main payment methods, and it overgrew.

The rise of "Alipay" in China is even more dramatic. In the early days of E-commerce in China, most transactions were conducted using the C2C model. However, due to rampant copycat products and some sellers with integrity issues. As a result, merchants have slogans "one fake, and we will pay a triple refund (假一賠三)," or even "False one compensate ten(假一賠十)" to build buyers' confidence. In response to this problem, Taobao developed its third-party payment online payment platform "Alipay" in 2004. This mechanism has eliminated most of the fraud in electronic transactions and allowed Taobao to expand rapidly. In the end, even eBay withdrew from the

China market. In addition, credit card applications in the mainland were not as convenient ten years ago.

Although minors or some consumers have small payment needs, they do not have a credit card, so they turned to apply. "Alipay" to meet their needs. Because of the gaps in these two social, financial environments (fraud, credit card application), the development of "Alipay" has skyrocketed.

According to official website information, as of October 2019, Alipay has reached 1.2 billion global users, making it the world's number one mobile payment service provider. Become the most prominent mobile payment service provider and the second-largest mobile payment service organization globally. It has already exceeded RMB 10 billion, and the number of customers has exceeded 4 million. It is not difficult to understand why the E-commerce industry has been forcefully requesting the Taiwanese government to open non-financial institutions to engage in third-party payment storage value business.

### **1.3 Research purposes**

Based on the initial third-party payment in Taiwan, this study analyzes and discusses the current third-party payment user satisfaction in Taiwan. This research mainly concerns the factors that affect third-party payment user satisfaction. For example, Taiwanese consumers are accustomed to paying through cash on delivery and convenience store pickup and payment.



Furthermore, since students' spending power and habits in Taiwan's universities are not significantly different among universities, this study uses a sample of National Chengchi university students to explore the influencing factors of user satisfaction in Taiwan's third-party payment industry.

Taiwan's third-party payment business has been slowly developed due to the Financial Supervisory Commission (FSC) in the past prevented non-financial institutions from entering the third-party payment business. However, the rise of Alipay in China has driven the progress of E-commerce, prompting Taiwan to begin to pay attention to third-party payment. The issue, coupled with the pressure of the consortium, has made it necessary for the financial management committee to amend the law as soon as possible and allow the third-party payment to be carried out under perfect regulations.

Third-party payment integrates the Internet and financial services and develops rapidly. The related research on third-party payment is still in its infancy, mainly focusing on security control, risk classification, supervision suggestions, and users' willingness to use. Many studies are conducted from the perspective of information or law, and there is a lack of research on users' desire to continue operating after use. Satisfaction and loyalty are both essential factors that affect their willingness to continue using. The satisfaction of users in third-party payment is not much research.

This study researches the satisfaction of National Chengchi University students, hoping to provide a reference for the late-start Taiwan third-party payment business model.

To investigate the sing in this study's task of influencing college students' satisfaction with third-party payment. The trust in third-party payment and the willingness to continue using it, the higher the user's satisfaction, the greater the possibility of its continued use.

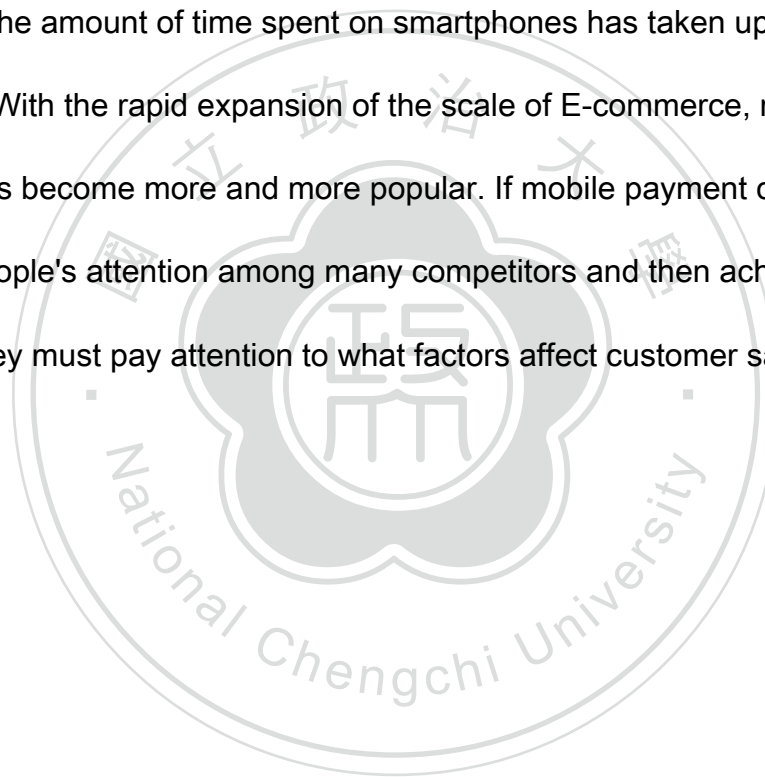
Therefore, taking the third-party payment as the research object, studying the factors that affect the user satisfaction of college students with third-party payment and the degree of influence of each element. Furthermore, profoundly discussing users' needs and meeting user needs to improve user satisfaction is significant for promoting new third-party payment services.

Third-party payment has considerably changed consumption patterns and habits, and all are gradually moving towards a cashless era.

In the era of the Internet economy, the interaction between people has become more apparent. In the context of E-commerce, because of network externalities, a user's willingness to use is likely to affect other users or potential users around them. In addition, consumer satisfaction significantly affects the desire to continue to use. The continuous use of users is the basis

for the success of the third-party payment platform enterprise. Therefore, the stickiness of customers is very important. Researchers and management must know what factors will affect the user's intention to continue using and the impact to ensure this basis.

People's reliance on smartphones is so high that even their social behaviors have changed. For example, people use smartphones when eating or talking. The amount of time spent on smartphones has taken up a terrible proportion. With the rapid expansion of the scale of E-commerce, mobile payment has become more and more popular. If mobile payment companies prioritize people's attention among many competitors and then achieve success, they must pay attention to what factors affect customer satisfaction.



## Chapter 2 State of third-party payment and Review of the Literature

The third-party payment service discussed in this study is an intermediary service, which explores the use of Line Pay or JkoPay, GAMAPAY... and others in Taiwan. These payment modes have been in use for some time. In addition, Taiwan PAY of Bank of Taiwan, as other publicly-owned banks. Furthermore, mobile phone manufacturers Google, Samsung, and Apple, have developed their third-party payments. This study chose IS Continuance Model (information system continuity model) to discuss the factors that affect customer satisfaction and whether users can continue to use these factors that influence user satisfaction.

### 2.1 E-commerce

E-commerce is to move traditional business activities to the Internet. In Taiwan, the Department of Commerce of the Ministry of Economic Affairs defines E-commerce as: "E-commerce refers to any commercial transaction activity conducted through electronic means. In a popular definition, it means "doing business on the Internet."

E-commerce is not just about using money to exchange products and services on the Internet. Kalakota & Whinston (1997) believe that E-commerce refers to the use of the Internet to purchase, sell, or exchange

products and services, including business-to-consumer (B2C) and business-to-business (B2B) Transactions. The primary purpose of E-commerce is to reduce operating costs, shorten product life cycles, accelerate customer response, and increase service quality.

## **2.2 Third-party Payment**

Third-party payment means a payment made through instruments issued from a bank account other than that of the bank account of the first-named applicant/investor or a joint bank account. The first named unit holder/investor is not one of the joint holders of the bank account from which payment is made.

### **2.2.1 Third-party payment introduction**

Third-party payment is an online trading platform that provides payment/disbursement services for buyers and sellers. After the customer pays, the store ships the goods, and the customer receives the goods. Then will transfer the money to the merchant's account. In the transaction, the third-party payment solves the problem of not getting the goods after paying or not receiving the money after the shipment of the goods. It is a Fintech application.

Cardozo, R. N. (1965) The third-party payment is currently the primary online transaction method and credit intermediary. The most important thing is

to establish a connection between online merchants and banks and realize the role of third-party payment supervision and technical guarantee.

### **2.2.2 Third-party payment summary**

third-party payment originally refers to an independent payment platform established between E-commerce companies and banks. It is neither a bank nor an E-commerce operator. It does not directly engage in E-commerce transaction activities but is only a shopping platform. Companies that provide channels and services for fund transfer usually have an agreement with banks, establish a payment platform, and provide a payment and settlement system. Both buyers and sellers generally need to obtain real-name authentication when trading on this platform. Merchant credit and consumer protection issues that banks have been worried about in the past are transferred to the third-party payment industry.

It allows small merchants who were not willing to provide services to the bank to have the opportunity to conduct online payment transactions. The third-party payment industry plays the role of arbitration and protection between buyers and sellers. It uses technology to establish a mutual trust mechanism between buyers and sellers to realize the supervision and safety of third-party payment. However, with the rapid development of E-commerce, people who use online transactions. It has been rising year by year, and business opportunities have emerged, causing financial institutions, E-

commerce operators, and other industries to invest in third-party payment services. Third-party payment subjects are gradually divided into financial institutions and non-financial institutions. Therefore, third-party payment is no longer just a pure cash flow service provider. There are more and more competitors vying to grab this market pie.

E-commerce is already a prevalent business model for the or current society. The earliest E-commerce was a general term for transactions on virtual networks through media. The early use of E-commerce was an information exchange system used between enterprises. E-commerce gradually became an independent term when various application methods became mature.

Third-party payment services

#### (1) PayPal

The appearance of PayPal in the United States in December 1998 drove the development of third-party payment worldwide.

#### (2) Alipay

Alipay was established in December 2004 to solve a function of Taobao transaction security. Like PayPal, it is currently the payment service company

with the highest market share and nearly half of the market share in China. It has been booming since 2007 then opened up the overseas market.

### (3) WeChat Pay

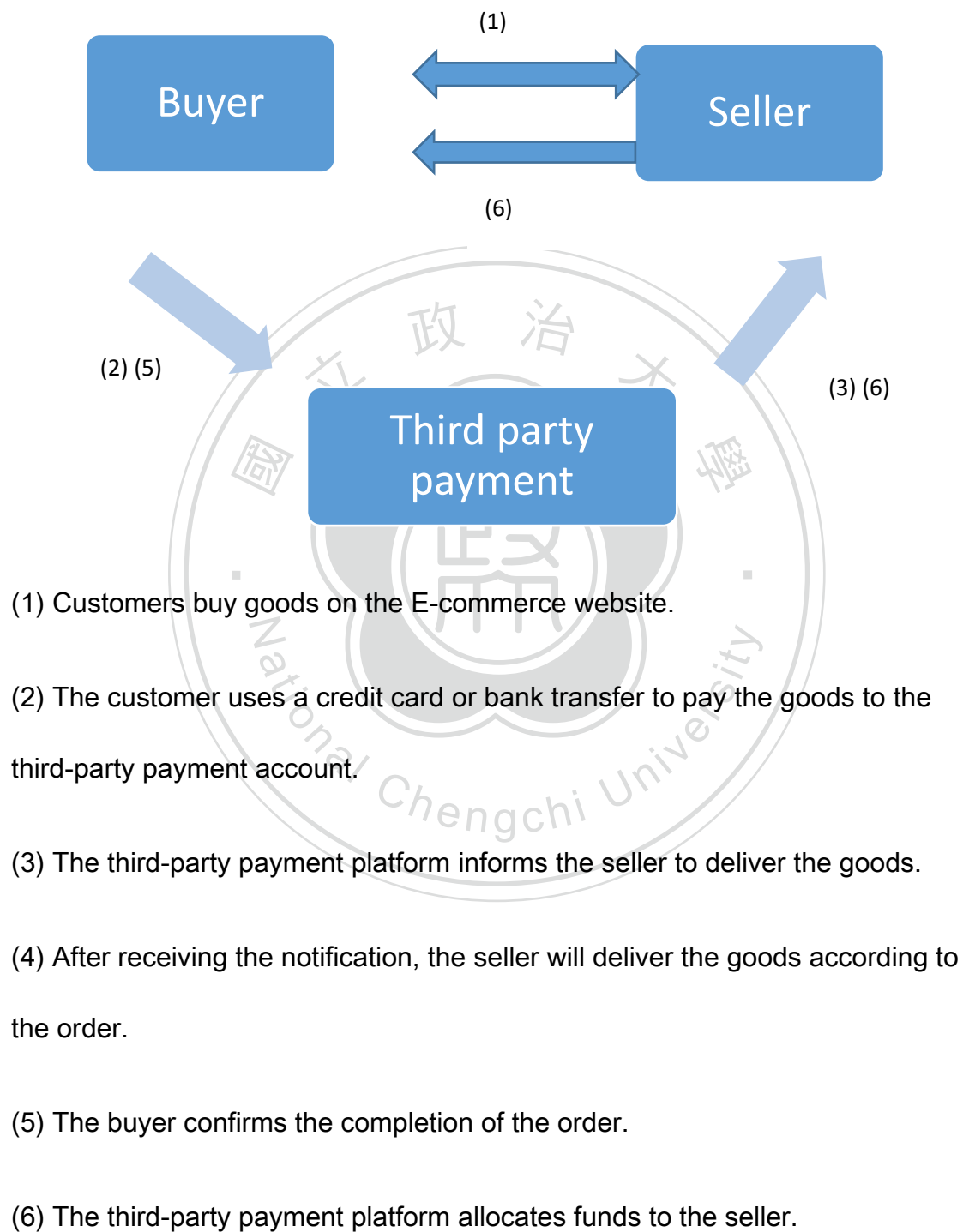
WeChat Pay completed internal testing and opened to the public on March 4, 2014. It was initially designed to solve a function of small mobile payment and replace the cash change function. At present, its operator Tenpay(財付通) is the micropayment service company with the highest market share in China, and it has become one of the leading payment tools for overseas travel by mainland Chinese tourists.



### 2.2.3 Third-party payment Transaction operation mode

Figure 2-1

*Third-party Payment Transaction Flow Diagram*



After the third-party payment provides a transaction guarantee mechanism, the transaction price will stay in the account provided by the third-party payment provider, and consumers can confirm that the product content is correct or need to be returned after receiving the goods. In addition, the merchant can also confirm the receipt of the payment. This ensures the lack of trust foundation for online transactions.

In addition to the transaction guarantee mechanism mentioned above, the third-party payment also extends the prepaid stored-value model. The difference in this model is that the buyer can deposit a sum of funds into an account opened in advance on the third-party payment platform. Then, through platform authentication, the preliminary purchase money is transferred from the deposit account or remitted to the stored value account paid by the third-party payment, guaranteed by the bank, and used to pay for the transaction during actual consumption. The third-party payment industry will follow each time The transaction amount is allocated from the account to complete the transaction. As a result, buyers can store value at any time after opening an account, reducing the number of times they must swipe or remit money online for each purchase.

Many consumers are usually buyers and sellers, and incumbents transfer the transaction price to the seller. After the stored-value account, sellers can also directly use this account to conduct other consumer

behaviors, apply for withdrawal, or transfer to other physical bank accounts. o Thus, on the one hand, it dramatically reduces the complicated procedures of money withdrawal or transfer, and on the other hand, it can also promote E-commerce. In addition, the booming and active market will be added.

#### **2.2.4 Third-party payment advantages and risks**

The third-party payment platform usually cooperates with various banks and integrates into the venue. It also provides a variety of payment methods, for example, online card swiping, linking bank accounts and online accounts provided by operators, etc., not only can provide consumers with an additional layer of protection, but also more convenient and faster service. Its main advantages include reducing the risk of online fraud and achieving the effect of supervision and restraint, reducing the risk of personal data outflow, convenient cross-border payment channels, and increasing sales opportunities for micro-sellers.

Third-party payment does bring positive benefits to both buyers and sellers in terms of payment methods. Still, its potential risks may also give rise to the following problems, such as the formation of considerable funds in transit, Money laundering, or the system being hacked, and other risks.

Chen Peiwen (2014) Risks of in-transit funds and virtual account funds during the payment process, whether the third-party payment platform mode

or the internal transaction mode, there is a behavior of fund absorption and deposit. When the absorbed funds reach a considerable scale, the problem of fund security arises and payment risk. In the third-party payment platform model, the deposited funds in transit are often placed in the third-party payment account opened in the bank. Generally, the merchant's funds will stay for two days to several weeks. For funds in transit, the risks that may occur are classified into the following points.

I. The continuous increase of funds in transit has increased the credit risk index of the third-party payment platform itself. Third-party payment platform provides guarantees for online transactions only. So who will offer contracts to third-party payment?

II. There is a large number of funds deposited in the third-party payment platform. If there is a lack of adequate liquidity management, it may cause payment risks.

III. Users can use multiple accounts to conduct money laundering and other illegal activities.

Compared with traditional credit cards and money transfer tools, the additional value that an intermediary's role in third-party payment is security and anonymity. In the past, common online fraud tactics such as a phishing attempts to obtain information from electronic communications. The criminal

act of pretending to be a reputable company is to deceive the user's name, password, credit card details, and other private financial information. Still, the third-party payment intermediary plays information custody, which makes the fraud group challenging to succeed.

## 2.3 Consumer behavior

Cheung et al. (2003) compiled literature on online consumer behavior. They concluded that five significant factors affect online consumer behavior: consumer characteristics, environmental impact, product and service characteristics, media characteristics, and Internet enterprise characteristics. Cheung et al. (2003) also pointed out that although classical consumer behavior theory can help researchers understand online consumer behavior, it does not consider Internet technology characteristics.

The current mainstream theory for studying online consumer behavior is :

- I. Theory of Reasoned Action (TRA)
- II. Technology Acceptance Model (TAM)
- III. Planned Behavior Theory (TPB)

Others, such as Expected Confirmation Theory (ECT) and Innovation Diffusion Theory (IDT), are also used to verify online consumer behavior.

### **2.3.1 customer satisfaction**

Cardozo (1965) introduced satisfaction into marketing, and then he began to study whether customers are satisfied. After decades of theoretical research and empirical testing, the idea of "customer satisfaction" has been accepted and valued more and more. It has become an integral theory widely recognized and promoted in modern warp knitting management. Scholars and experts around the world have studied the concept of "customer satisfaction." This concept puts forward a different understanding.

Howard & Sheth (1969) believes that customer satisfaction is a psychological state of cognition produced by customers comparing the cost paid in the purchase process with the benefits obtained. Bickel (1977) pointed out that satisfaction is an essential indicator of the difference between customers' expectations of a product or service and the degree of difference after using the product or service. Oliver (1980) proposed that satisfaction runs through consumers' pre-sales and after-sales in marketing activities, reflected in consumer attitudes and brand loyalty changes. Bearden & Teel (1983) pointed out that satisfaction is the degree to which a product is liked or not based on consumer experience and is a cumulative overall attitude. Finally, Folkes (1984) argues that satisfaction is a perception gap. This gap is

between the customer's expectations before purchasing the product and the actual situation of the product.

This study finds customer satisfaction refers to the cognitive effect produced by consumers after comparing the difference between product quality and consumer expectations. It is a relative concept. The influencing factors can be found objectively through survey data and statistical methods to analyze the degree of influence.

### **2.3.2 Expectation-difference theory**

Expectation-difference theory is the basis of satisfaction model research. Expectation-difference theory reflects and compares the cognitive process between the customer's expectations before purchasing the product and the perception of the quality of the product after buying the product.

The degree of discrepancy between pre-consumption expectations and post-consumption quality perception is the key to determining customer satisfaction. The earliest scholar who validated the expectation-difference theory was Cardozo (1965). Through experimental verification, he believed that consumers whose purchase expectations are consistent with reality have a higher degree of acceptance of the product than consumers whose expectations have not been realized. In addition, consumers who spend less

energy in the consumption process have a higher recognition of the product than consumers who spend more energy.

Olshavsky & Miller (1972) proved through experiments that quality evaluation is significantly affected by user expectations. It is found that consumers with high expectations have higher product quality evaluations than consumers with low expectations. Positive consistent (high expectations, High-quality) consumers' evaluation of product quality is higher than positively inconsistent (low expectations, high-quality) consumers and negatively conflicting (high expectations, low quality). Consumers' pre-purchase expectations, expected quality differences, and customer satisfaction, Verifies the relationship between product attitude and purchase intention, construct customer satisfaction cognition model of the cause and effect, and finds that satisfaction is significantly affected by the difference in expected quality. Satisfaction is used as an intermediate variable to determine customer attitudes and, at the same time, affect purchase willingness.

### **2.3.3 User Satisfaction Theory Model**

From the development of expectation-difference theory, scholars began to establish models from different angles to explore the influencing factors of customer satisfaction. The most typical ones include Sweden Customer Satisfaction Barometer (SCSB), American Customer Satisfaction Index



(ACSI), Chinese Customer Satisfaction Index (CCSI, 中國顧客滿意度指數模型).

#### Sweden Customer Satisfaction Barometer (SCSB)

Sweden's Customer Satisfaction Barometer is the earliest established national customer satisfaction index model. It puts forward the concept of Customer Satisfaction Elasticity. Customer satisfaction flexibility refers to the sensitivity of customer loyalty to customer satisfaction. For example, if customer satisfaction increases by one percentage point, how many percentage points will customer loyalty increase. In this way, it is possible to study the impact of different levels of customer satisfaction on customer loyalty from a quantitative perspective. There are two leading variables of satisfaction: the customer's perception of the value of the product/service; and the customer's expectation of the product/service. The variables of satisfaction are customer complaints and customer loyalty. Loyalty is the final dependent variable in the model and can indicate customer retention and corporate profits.

These Latent Variables (LV) in the model are all measured indirectly through Manifest Variables (MV). Research on customer satisfaction in Sweden shows that the police, postal, telephone, insurance, and other industries have a high monopoly. The cost of switching customers from one

company to another is relatively high. Therefore, the elasticity of customer satisfaction is low, that is, customer satisfaction. However, the impact on customer loyalty is not significant; for industries such as automobiles, food, and computers, the cost of customers switching from one company to another is lower, and the flexibility of customer satisfaction is higher. Thus, customer loyalty is primarily affected by customer satisfaction.

Since customers have different quality perceptions of different products and services if the quality perception variable is added to the model, how to measure it? Fornell et al. (1996) believe that it is possible to compare the effects of quality factors and value factors on satisfaction by including quality perception in the model. At the same time, we can also examine the connection between the two. According to the findings of Deming (1981) and Juran & Gryna (1988), quality perception mainly includes two parts-the degrees to which products/services meet customer needs (customization) and the degree of reliability (reliability) with which these needs are met. Therefore, these two aspects are used to measure quality perception respectively.

Formell proposed the Swedish customer satisfaction barometer model in 1992, and it is also the earliest satisfaction model. The model contains five variables: expectation, perceived value, customer satisfaction, customer complaints, and loyalty. There is a correlation between these five variables. Expectation and perceived value affect customer satisfaction; satisfaction

further affects complaints and customer loyalty. Formell conducted a satisfaction survey of 25,000 customers from more than 100 companies in multiple industries in Sweden and verified that the impact of expected and perceived value on satisfaction is significant.

Figure 2-2

*Model of Customer Satisfaction*



Formell et al. (1996) built an American satisfaction index model based on SCSB and added perceived quality factors. It was verified by a survey of nearly 50,000 customers from 200 companies in 7 major economic sectors in the United States. It is currently the most widely used model. The model is composed of target variables, cause variables, and result variables. The target variables correspond to customer satisfaction, the cause variables

correspond to customer expectations, perceived quality, and value, and the result variables correspond to customer complaints and loyalty.

**Customer Expectations** refer to the customer's estimation before consuming a specific product or service. It comprises three observation variables: the customer's own clear demand expectations for the product, the customer's expectation of product reliability, the customer's expectation of the product, and overall quality expectations.

**Perceived Quality** Customers' experience of product quality after using the product and experiencing the product service is composed of a true feeling of whether the product meets their own individual needs, the customer's product reliability, and overall quality feeling. Conversely, the perceived value reflects the customer's subjective sense that the product can benefit customers after comprehensively considering product quality, price, and after-sales service.

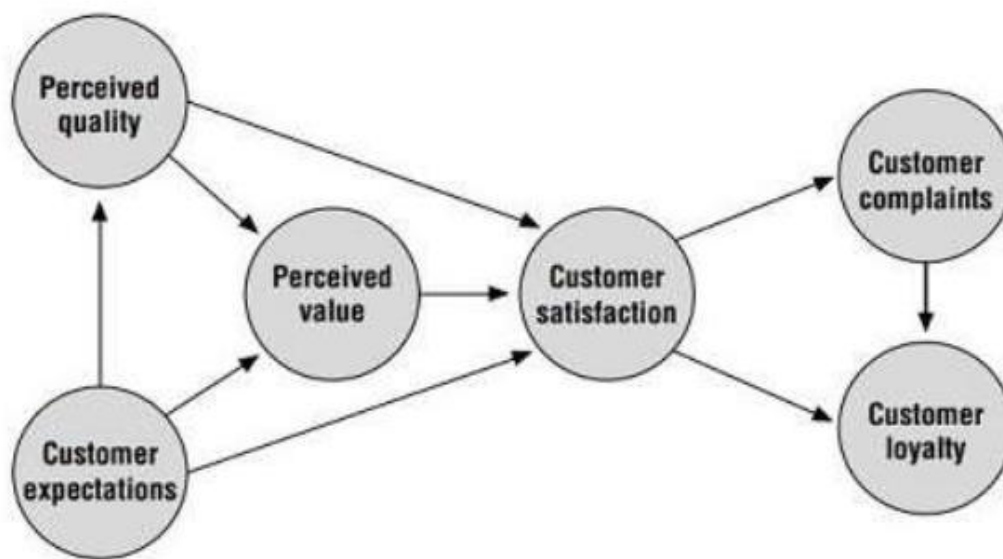
**Customer Satisfaction** It is used to measure whether the products and services used to meet or exceed expectations.

**Customer complaints** are customers' dissatisfaction with the product quality or service of a company. It is a variable to measure the degree of customer dissatisfaction, which directly affects customer loyalty. Customer

Loyalty can be divided into whether the customer will rebuy the product and whether the customer can bear the burden caused by the price change. (See the Figure 4).

Figure 2-3

*Customer Satisfaction Index Model*



American Customer Satisfaction Index (ACSI) model adopts the above results to modify the SCSB model:

I. Separate quality perception from value perception. Three quality perception questions were added to the survey: the degree to which the product/service meets customer needs (customization), the degree to which these needs are met with reliability (reliability), and overall quality. In 1996, for durable consumer goods, the quality perception was further divided into product quality perception and service quality perception.

II. Corresponding to the apparent variables of quality perception, the ACSI survey has added "expectation of meeting customer needs" and "expectation of reliability" to measure customer expectations together with the original "overall expectation."

## 2.4 IS Continuance Model

Karahanna et al. (1999) integrated the innovation diffusion theory and the attitude theory. They believed that the consideration of the use of behavioral in information systems could be divided into personal "pre-adoption" and "post-adoption" (or post-adoption). This is the belief or attitude of "continuance use." In the past research in scientific and technological acceptance, the focus was on the initial stage of the valuable life cycle, the pre-adoption behavior.

In fact, "IS continuous," "IS continuous behavior," or "IS continuous use behavior" reflect the "continuous use" of IS. The so-called "continuous" refers to "post-adopted behavior." In the past, scholars defined "post-adoption," whose behavior was mainly followed by the initial "acceptance" (Roger, 1995).

In the research of IS Continuance Model, there are mainly organizational and individual levels. In terms of the executive level, it is primarily used to understand whether the organization is committed to using or adopting IS. Regarding the personal level, it is mainly for whether users

use it, which is part of routine work activities (Limayem et al., 2007).

Therefore, in information management, the continued use of IS has always been an important research topic (Szajna, 1996; Davis, 1989; Venkatesh & Davis, 1996). In terms of acceptance theory, it is mainly derived from social psychology. Its theoretical models mainly include the technology acceptance model, rational behavior theory, planned behavior theory, etc. The primary theoretical model for IS continuance behavior is A post-acceptance model of IS continuance.

At present, scholars have relatively abducted research on mobile payment-related technologies, system security, and business models. For example, Ondrus & Pigneur (2006) studied the case of the Swiss mobile payment market and learned that multiple entities and standards in the mobile payment market affect the popularization of mobile payment. Although the mobile payment market is still immature, different stakeholders have begun to deploy, and many consortia are trying to establish a common standard to regulate the mobile payment market. However, there are still loopholes in technology, such as security issues.

Scholars have relatively well-organized research on mobile payment user's willingness to use. Most of the literature is based on the Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Technology Acceptance Model (TAM), and Technical Diffusion. Analyze the influencing

factors of mobile payment users' willingness to use. The leading research influencing factors include usefulness, perceived entertainment, perceived ease of use, perceived risk, attitude, subjective norms, perceived cost, trust, and demographic characteristics. Based on the innovation diffusion theory, Pham & Ho (2015) studied the influencing factors of NFC mobile payment users' willingness to use in Taiwan. The research showed that the product's perceived ease of use, perceived usefulness, system compatibility, perceived risk, and perceived cost, trialability, etc., are the main influencing factors. Among them, the product's perceived usefulness and system compatibility have the most significant positive effect on the intention to use. On the other hand, the perceived risk negatively affects the user's choice to use. Still, the impact of the perceived cost has not been effectively verified.



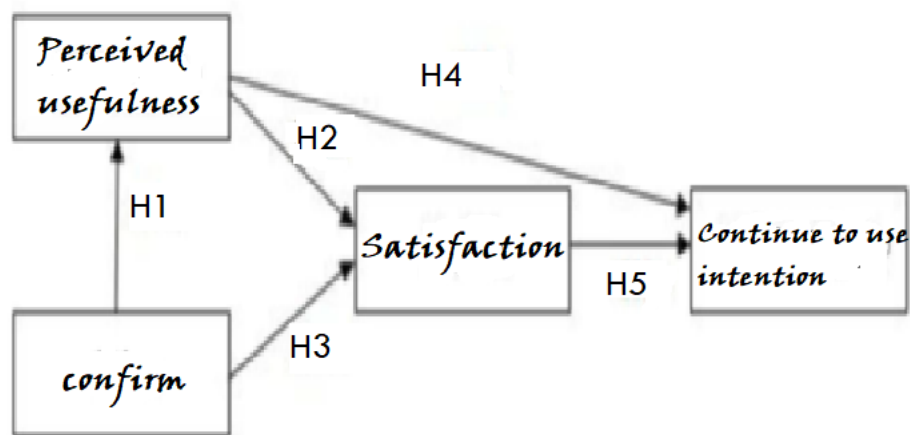
## Chapter 3 Methods

### 3.1 Research model

This study is based on the model of continuous use of IS proposed by Bhattacherjee (2001a) to explore the influence of third-party payment on the continued use of online community users. By sorting out, expectations recognize the relevant literature of the theory and use it as the research model of this research to verify whether the proposed model is Suitable for third-party payment scenarios. (See Figure 5.)

Figure 3-1

*Research Model*



### 3.2 Research Objective

The object of this research is third-party payment users, using a questionnaire survey method to investigate the relationship among third-party payment community users' confirmation, perceived usefulness, satisfaction, and continued use intentions, and whether they are affected by the reference group. The returned questionnaire will use SPSS 12.0 statistical software for statistical analysis, including narrative statistics, reliability and validity analysis, correlation analysis, regression analysis, and other methods, as well as partial least squares (PLS). This is an analytical technique for detecting or constructing predictive models, especially for causal model analysis between potential variables, and is superior to the general linear structural relationship model (LISREL). The advantages of PLS are:

- (I) It can handle multiple dependent variables and multiple independent variables.
- (II) It can overcome the problem of multivariable collinearity.
- (III) Robust processing of interference data and missing values.
- (IV) Input response variables have a strong predictive ability for potential variables.
- (V) It can handle both reflective and formative indicators at the same time.

(VI) Suitable for small samples.

(VII) Not no restrictions on data distribution (Pirouz, 2006).

Cause there is a small number of cases in this study, used PLS will not be restricted by the variable allocation type and the size of the sample, and it has good predictive and explanatory capabilities. Therefore, the Smart PLS software developed by Ringle, Wende & Will (2005) is used for PLS analysis.

Use descriptive statistics of narrative statistics to analyze primary data such as gender, age, occupation, education level and measure the reliability and validity of the questionnaire to ensure the consistency and stability of the measurement results of the scale. And use regression analysis to verify the path relationship between the constructs to verify whether the proposed model is suitable for research in the third-party payment community.

#### Operational definition and questionnaire design

The definition of variable operation type is summarized as shown in Table 2. It mainly refers to the meaning of previous research literature and considers the situation of third-party payment modification; the measurement items are shown in Table 2 and the 5 points. Likert scale is used: 1 wildly disagrees, 5 is very agreed, the higher the score, the higher the satisfaction of the intention of continuous use.

Table 3-1

*The Definition of Variable Operation Type in This Study*

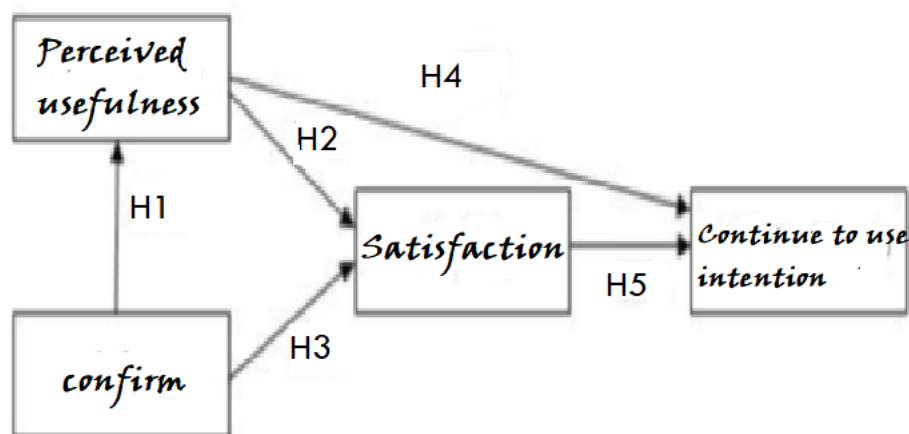
Research construct	Variable operation type definition	Reference source
Degree of confirmation	After the user has used the third-party payment, the expected performance of the third-party payment before use is consistent with the performance obtained after the actual use of the third-party payment.	Bhattacharjee (2001a)
Perceived usefulness	Users believe that the use of third-party payment will improve their mastery of friends and various information.	Gefen et al. (2003)
Satisfaction	The user's evaluation of the third-party payment experience and the psychological state they feel.	Bhattacharjee (2001a)
Continuous use intention	The user will continue to use third-party payments in the future.	Bhattacharjee (2001a)
Reference group	Friends around you have an impact on the attitude or behavior of third-party payment users.	Veloutsou & Moutinho

### 3.3 Research hypothesis

According to the framework of this study, this research will explore the factors that influence users' intention to continue using third-party payment. It also discusses the continued use of IS after acceptance proposed by Bhattacharjee (2001a) and establishes the following hypotheses regarding the relationship between the various dimensions proposed in this study.

Figure 3-2

*Thesis Research Model*



There are five hypotheses in the study.

Hypothesis 1: The degree of confirmation has a significant positive impact on perceived practicality.

Hypothesis 2: Perceived usefulness has a significant positive impact on satisfaction.

Hypothesis 3: The degree of confirmation has a significant positive impact on satisfaction.

Hypothesis 4: Perceived usefulness has a significant positive impact on continued use intention.

Hypothesis 5: Satisfaction has a significant positive effect on the intention to pay for continued use.

### **Perceived usefulness**

Davis (1989) defines perceptual usefulness as when users feel the product or service is subjectively useful. As a result, they will have a positive reaction to it. Bhattacharjee (2001) also defined the user's expectations after using the product or system as the perceived usefulness and designed a total of four items to be measured after the user uses a third-party payment. There are four questions. (See Table 3-2)

Table 3-2

*Perceived Usefulness Measured Variables*

construct	Measured variables	Provenance
Perceived usefulness	<p>1. I think using third-party payment is helpful for payment and shopping.</p> <p>2. I think using third-party payment can make my payment and shopping faster.</p> <p>3. I think the use of third-party payment can improve the efficiency of my payment and shopping.</p> <p>4. I think using third-party payment can make payment and shopping easier for me.</p>	Gefen et al. (2003)

**Confirmation**

According to Bhattacharjee (2001), the degree of confirmation is the consistency between the user's actual performance and previous expectations after using the information system. Therefore, this study defines confirmation as the consistency between the user's expectations and experience of the

performance of the prior use of the third-party payment system and refers to Bhattacharjee (2001) to design a measurement item confirmed by the user after using the third-party payment. There are three questions. (See the Table 3-3)

Table 3-3

*Confirmation Measured Variables*

construct	Measured variables	Provenance
confirmation	<p>1. My experience after using third-party payment is better than I expected.</p> <p>2. The services and functions provided by third-party payment are better than I initially expected.</p> <p>3. I think the widespread use of third-party payment meets my original expectations.</p>	Bhattacharjee (2001a)



## Satisfaction

Locke (1976) defines satisfaction as evaluating objects or activities that lead to a happy or positive emotional state. Therefore, in this study, satisfaction is defined as the overall degree of user satisfaction with third-party payment services and refers to Bhattacharjee (2001a) to design a measurement item for user satisfaction after using third-party payment services. There are four questions. (See the Table 3-4)

Table 3-4

### *Satisfaction Measured Variables*

construct	variables	Provenance
Satisfaction	1. Overall, I am satisfied with using third-party payment.  2. Overall, I think there is still a long way to go with third-party payment  3. I am satisfied with the overall process of using a third-party payment.	Bhattacharjee (2001a)

	<p>4. Overall, I am satisfied with the practicality of using a third-party payment User interface</p> <p>5. Overall, I am satisfied with using the stored value function of third-party payment.</p>	
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### Continuous use intention

According to Bhattacharjee (2001a), behavior is continued when satisfaction means that the user can get help or benefit from it. Therefore, this study defines continuous use intention as the user's intention to continue using the third-party payment system in the future. This study refers to Bhattacharjee (2001a) to design a suitable measurement item for users to use third-party payment services after they continue using the service. There are three questions. (See the Table 3-5)

Table 3-5

*Continuous Use Intention Measured Variables*

construct	Measured variables	Provenance
Continuous use intention	<p>1. I intend to continue to use third-party payment, and I will not stop using it.</p> <p>2. Even if there is another third-party payment, I still choose to use third-party payment.</p> <p>3. I will continue to use third-party payment in the future.</p>	Bhattacharjee (2001a)

## Chapter 4 Research Findings

This chapter explains research methods, recovery and analyzes the recovered samples, including sample analysis and recovery, fundamental data analysis, scale quality testing, structural model analysis, and verification.

### 4.1 Sample Analysis and Recovery

The sample collection method of this study is to issue online questionnaires. Through electronic questionnaires it is limited by the personal information protection law. It is not easy to obtain school-wide student information. It is impossible to collect student lists from schools and send them questionnaires via email. Therefore, data collection is carried out on the NCCU network platform and student associations, school LINE groups, classmates, etc. The objects are filled in for users with "experience in using third-party payment platforms." To effectively collect questionnaires, this study asked whether they are users of third-party payment platforms at the beginning of the questionnaire and whether they have experience using third-party platforms. It is estimated that the number of cases obtained is 600, and a total of 640 cases were collected during the survey period, of which 572 were valid cases, and 68 of them were not answered accurately to whether there was a third-party payment platform. According to the author's opinion, those cases were invalid, and only valid cases were used for analysis.

## 4.2 Basic data analysis

This is the basic information of those case interviewees. Among the 572 cases, women accounted for 69.23%, and men accounted for 30.77%. The gap between the third-party payment used by women and the third-party payment used by men is 38.46%. Female users are about twice as high as men. From the perspective of third-party payment, female users have higher acceptance. From satisfaction, it is easier for girls to use the third-party payment to pay for goods. Men's third-party payment is relative. Women are weak. The reason is that women may use the third-party payment to pay for the goods they buy or some commonly used daily commodities, so it can be known that women are using the willingness of third-party payment is greater than that of men.

The education level is undergraduate students (university) accounting for about 58.74%, followed by graduate students accounting for 39.86%, doctoral degree students 1.4% (See Table 4-1). For new technologies, young people are the first choice for the acceptance of technology. This is because young people are easier to use the technology.

Table 4-1

*Basic Data Analysis of Sex and Education*

		The adequate number of recovered samples	%
sex	Male (M)	176	30.77%
	Female (F)	396	69.23%
Education	Bachelor	336	58.74%
	master	228	39.86%
	doctor	8	1.40%

**4.3 Scale quality testing**

In this study, exploratory factor analysis was used to test the sample's convergent validity and discriminative validity. And Cronbach's coefficient is used to test the reliability. And use the software SPSS12 to verify factor analysis. In addition, this study named the questionnaire items as corresponding item codes (Table 4-2).

Table 4-2

*The Code Corresponding to the Questionnaire*

Variables	Number of Questions	code
Perceived usefulness	4	PU1~PU4
confirmation	3	C1-C3
Satisfaction	5	S1-S5
Continuous use intention	3	CI1~CI3

Alpha reliability(信度) Cronbach (1951) is a method of checking reliability. It overcomes the shortcomings of the split-half reliability and is currently the most used reliability analysis method in social science research.

Split-half reliability (折半信度) used is to divide all questions of a specific aspect into two equal groups of questions, count the average scores of their answers separately, and then calculate the correlation coefficient of these two scores for all cases, which is the half-by-half coefficient. The halving method usually folds in half according to the odd and even numbers of the title number, but this lacks rigorous academic support. Cronbach proposed to exhaust all possible halving combinations for a set of questions,

and then calculate the average of all halving coefficients, thus becoming the basis for Cronbach's alpha coefficient (克隆巴赫係數).

In psychometrics, there are often multiple different questions or even multiple different scales for the same construct; the consistency of the results measured by additional questions or different scales is expressed by the expected value of the correlation coefficient, which is "Alpha reliability."

Reliability is mainly to evaluate the consistency of measurement tools. This study uses Cronbach's  $\alpha$  coefficient to measure the internal thickness of the cases. The higher the reliability, the lower the error value. Nunnally (1978) recommended that this value reach 0.70 as the standard. The Cronbach's  $\alpha$  values of all measurement variables in this study are above 0.7, going a reasonable degree of reliability, as shown in Table 4-3.



Table 4-3

*Cronbach's Alpha Analysis*

	Cronbach's Alpha	Cronbach's Alpha
PU1	0.895	0.908
PU2	0.876	
PU3	0.888	
PU4	0.863	
C1	0.826	0.880
C2	0.822	
C3	0.842	
S1	0.677	0.766
S2	0.860	
S3	0.667	
S4	0.658	
S5	0.708	
CI1	0.255	0.509
CI2	0.791	
CI3	0.078	

Perceived usefulness, Confirmation, Satisfaction, and Continuous use intention have reached the significant level of Cronbach's  $\alpha$ , indicating that the questionnaire data is reasonable and positively correlated.

Regarding reliability and convergence validity of measurement model analysis, this study adopts the judgment criteria proposed by Hair et al. (2010) to consider individual item reliability and potential variable component reliability (CR). And Cronbach's and Average Variation Extraction (AVE) and other three indicators, in turn, are verified as follows:

(1) Reliability of individual measurement variables: Consider the reliability of each measurement variable. Each measurement variable can be the degree of explanation of the potential variables, Hair et al. (2010) suggested that the factor load should be above 0.5. All the factor loads of the measurement variables in this study are more significant than 0.5, indicating that the measurement variables of this study have good reliability.

(2) The reliability of the composition of potential variables (CR) and Cronbach's  $\alpha$ : Refers to the consistency of the internal variables of the dimension. If the CR value and Cronbach's  $\alpha$  of the potential variable are higher, the measurement variables are highly correlated, meaning they are all highly correlated. Therefore, when measuring the same possible variable, the more likely the variable can be measured. Hair et al. (2010) suggested that

the CR value and Cronbach's  $\alpha$  should be greater than 0.7. The CR value and Cronbach's  $\alpha$  of the potential variables of this study ranged from 0.761 to 0.936. Both are greater than 0.7, indicating that the possible variables of this study have good internal consistency.

(3) Average Variation Extraction (AVE): represents the value that measures the percentage of potential variables that can be measured. Therefore, it can not only be used to judge reliability but also represents discriminative validity. Fornell and Larcker (1981) suggested that the AVE value is more significant than 0.5 means convergent validity. The AVE values of the potential variables in this study ranged from 0.56 to 0.785, which are all greater than 0.5, indicating that the possible variables of this study have good convergent validity (see Table 4-4).

Table 4-4

*Cronbach  $\alpha$  Reliability Reference Range*

Cronbach $\alpha$ reliability reference range	
Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor

In the research model of this study, as to the factors affecting the satisfaction of third-party payment users, the measurement variables are four variables: Perceived usefulness, Confirmation, Satisfaction, and Continuous use intention. Table 11 shows that the internal consistency of the influencing factors of third-party payment user satisfaction has reached an acceptable range.

In this regard, if a measurement model has discriminative validity, the degree of relationship between its latent variables must be less than the degree of connection within the latent variables. Therefore, the correlation matrix between variables is used to test Hair et al. (2010). The suggested criterion is that the root value of the potential variable's average extraction amount (AVE) must be larger than the correlation coefficient between the other variables. For example, the value of the AVE of each variable in this study, ranging from 0.56 to 0.785, is greater than the value of the correlation coefficient between the potential variables, indicating that the possible variables of this research should be significantly different and have good discriminative validity (See Table 4-5,4-6).

Table 4-5

*Reliability and Validity*

	Average	Standard deviation	Factor loading	CR	AVE
PU1	4.363636	0.001066	0.860256	0.936	0.785
PU2	4.41958	0.001063	0.895566		
PU3	4.41958	0.00116	0.871604		
PU4	4.398601	0.001173	0.914914		
C1	4.153846	0.00123	0.900481	0.926	0.807
C2	4	0.001292	0.9033		
C3	4.090909	0.001223	0.890689		
S1	4.237762	0.001013	0.876419	0.86	0.585
S2	3.727273	0.001295	0.167898		
S3	4.125874	0.00115	0.87158		
S4	4.055944	0.001289	0.861129		
S5	3.909091	0.001561	0.792837		
CI1	4.181818	0.001367	0.889263	0.761	0.56
CI2	3.636364	0.001675	0.25228		
CI3	4.027972	0.001418	0.909402		

Table 4-6

*Convergence Validity and Discrimination Validity*

	Perceived usefulness	Perceived usefulness	Perceived usefulness	Perceived usefulness
Perceived usefulness	0.785			
Confirmation	0.589321	0.807		
Satisfaction	0.577713	0.736632	0.585	
Continuous use intention	0.495942	0.767969	0.686308	0.56

**4.4 Structural model analysis and verification**

Then, use Smart PLS3 software to analyze and verify the causal relationship between the potential variables of the structural model and use  $R^2$  (R-squared) to judge the explanatory power of the research model (Pavlou and Fygenson, 2006). For the five hypotheses proposed and the results of the overall pattern relationship path verification shown in Figure 6 (statistically significant is represented by a solid line), the five path relationships are all significant. The results of the hypothetical verification are summarized as shown in Table 4-7.

Table 4-7

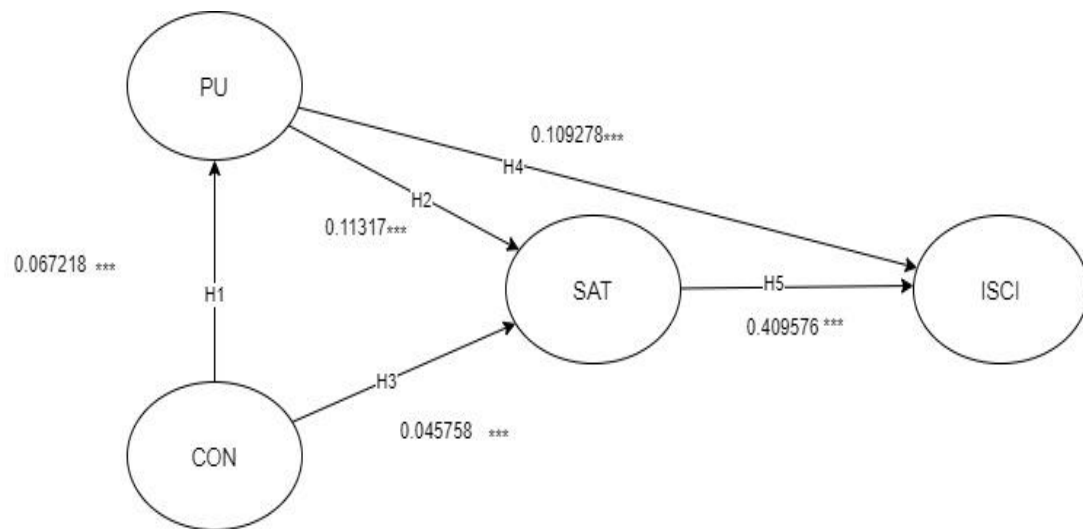
*Path coefficient value and correlation significance*

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics ( O /STERR)	P-Value
<b>Satisfaction -&gt; Continuous use intention</b>	0.41278	0.409576	0.13496	0.13496	3.058543	0.001
<b>Perceived usefulness -&gt; Continuous use intention</b>	0.466161	0.488202	0.109278	0.109278	4.265831	0.001
<b>Continuous use intention -&gt; Satisfaction</b>	0.309963	0.322657	0.11317	0.11317	2.738911	0.001
<b>confirmation -&gt; Satisfaction</b>	0.760945	0.768142	0.045758	0.045758	16.62961	0.001
<b>confirmation -&gt; Perceived usefulness</b>	0.663145	0.674844	0.067218	0.067218	9.865657	0.001

This study uses Smart PLS 3.3.3 to test the structure model, uses the explanatory power  $R^2$  (R-squared) to detect the model's predictive ability, uses the Bootstrapping algorithm to perform this analysis, and calculates the main effect of the filter value in the model of this research. Path coefficient value and correlation significance.  $R^2$  is the model's predictive ability for dependent variables, and an asterisk indicates the significant result on the path.

Figure 4-1

*Smart PLS Model*



Note 1 : \* :  $p < 0.05$  ; \*\* :  $p < 0.01$  ; \*\*\* :  $p < 0.001$

Note 2 : CON : confirmation ; PU : Perceived usefulness ; SAT : Satisfaction ;

ISCI : IS Continuous use intention

H1: confirmation -> Perceived usefulness Has a significant positive impact.

H2: Perceived usefulness -> satisfaction Has a significant positive impact.

H3: confirmation -> Satisfaction Has a significant positive impact.

H4 Perceived usefulness -> Continuous use intention Has a significant positive impact.

H5: Satisfaction -> Continuous use intention Has a significant positive impact.



H1 : confirmation -> Perceived usefulness Influence.

Bhattacharjee (2001), Perceived usefulness is the degree to which users feel that the product or service can improve their work performance when using a new product or service. Since it has not been used initially, the perceived usefulness is usually low. Still, after a period of use, consumers will begin to modify their original expectations of third-party payment and gradually adjust to the perceived usefulness after use. Thus, the continued use of the information IS model is a mature theory. Many related studies use this as a framework, and the results also support that the degree of confirmation has a positive impact on perceived usefulness (Bhattacharjee, 2001; Lin et al., 2005; Limayem et al., 2007; Roca, Chiu, & Martínez, 2006; Liao, Palvia, & Chen 2009; Hong, Thong & Tam, 2006).

In terms of third-party payment experience, the user's expectations will gradually match the expectations after use after a period of use. The degree of confirmation is higher because they gradually understand and get used to third-party payment. The payment and operation process of the platform, so when the user's confirmation level is positive, the user will also have a positive attitude towards the perceived usefulness of third-party payment.

H1: Confirmation has a significant positive impact on perceived usefulness.

H2 : Perceived usefulness -> Satisfaction Influence

Related studies have also shown that perceived usefulness has a significant impact on satisfaction and continuous use intention. “Bhattacharjee, 2001; Lin et al., 2005; Limayem et al., 2007; Roca, Chiu, & Martínez, 2006; Liao, Palvia, & Chen, 2009” when users have a positive attitude towards the perceived usefulness of third-party payment platforms, their satisfaction increases.

H2: Perceived usefulness has a significant positive impact on Satisfaction Influence.

H3 : confirmation -> Satisfaction Influence

Oliver (1980), in the IS continues to model, after users use a product or service, whether the feedback obtained after use is consistent with the expectation before use is the degree of confirmation. In terms of third-party payment use, Bhattacharjee (2001) also pointed out that when the user's degree of confirmation of the information system is positive, their satisfaction will also be positive. The user's intention to continue to use the information system and many related studies have also confirmed the degree of confirmation and satisfaction Positive influence “Bhattacharjee, 2001; Lin et al., 2005; Limayem et al., 2007; Roca, Chiu, & Martínez, 2006; Liao, Palvia,&Chen,2009”.In other words, when the user is satisfied with the third-party payment, the degree of confirmation is positive, increasing the user's satisfaction with the third-party payment.

H3: confirmation has a significant positive impact on Satisfaction Influence

H4 : Perceived usefulness -> Continuous use intention Influence

Perceived usefulness has a significant impact on continuous use intention (Bhattacharjee, 2001; Lin et al., 2005; Limayem et al., 2007; Roca, Chiu, & Martínez, 2006; Liao, Palvia, & Chen, 2009). When users have a positive attitude towards the perceived usefulness of third-party payment, their satisfaction increases.

H4 Perceived usefulness has a significant positive impact on Continuous use intention Influence.

H5 : Satisfaction -> Continuous use intention Influence

The user's satisfaction with the previous use of third-party payment will affect the willingness to reuse it next time (Bhattacharjee, 2001). Satisfaction has always been a significant indicator to measure the user's continued use intention (Oliver, 1980). In the research on continuous use intention, satisfaction is also shown as an essential indicator (Oliver, 1980; Bhattacharjee, 2001; Lin et al., 2005; Limayem et al., 2007; Roca, Chiu, & Martínez, 2006; Liao, Palvia, & Chen, 2009).

The user's satisfaction level with the use of third-party payment platforms will affect their continued use intentions. Therefore, this study assumes that when users' satisfaction with third-party payment platforms reaches a certain level, they will have stronger continuous use intentions.

H5: Satisfaction has a significant positive impact on Continuous use intention Influence

## Chapter 5 Conclusion

In the past year, the COVID-19 epidemic was encountered, and the frequency of mobile payment usage has increased significantly due to home-based epidemic prevention and reduced human-to-human contact. In addition, according to the latest "Mobile Payment Use Habits Survey Report" released by MasterCard, the epidemic has increased hygiene.

At the same time, the users of third-party payment platforms are increasing significantly, and they will be a significant part of the business landscape in the future. Therefore, the influencing factors of third-party payment user satisfaction are of great research value.

### 5.1 Research Findings and Results

The purpose of this research is to explore the influencing factors that affect the satisfaction of third-party payment users, and based on the theory of continuous use of the IS continue to model to understand the impact of user confirmation on perceived usefulness, as well as satisfaction and ongoing use after payment. Furthermore, through the distribution of online questionnaires, after surveying users who have experience using third-party payment platforms as subjects, they found that the research can be strengthened in the future.

I. Use more accurate methods to ask questions about the papers, such as focus group interviews, paper questionnaires, telephone interviews, to obtain

more reliable questionnaire information.

II. The data collection method is strengthened. The sampling is more rigorous, such as paper questionnaires, a more comprehensive range of age groups, a wider range of regions, and a list of identifiable third-party payment users.

III. Will income affect the use of the third-party payment, for example, consumption level and customer focus... etc.

## **5.2 Contributions and Limitations**

### **5.2.1 Research Contribution**

Many scholars use IS model to study various influencing factors of user satisfaction. However, in the context of third-party payment platforms, there is very little literature on the influencing factors of user satisfaction of third-party payment platforms. By exploring the key factors that affect satisfaction and continued use intentions, this research provides a reference model for third-party payment platform operators to improve the willingness of third-party payment platforms for users to continue to use and make critical marketing plans. In addition, to better the services provided by the venue, the function has positive benefits.

Based on IS continue model, this research explores the influencing factors of third-party payment user satisfaction. Through this research on the influencing factors that affect the satisfaction of third-party payment users, we can know the factors that users consider when choosing third-party payment.

In the future, third-party payment companies must consider the time of action.

Provide accurate services based on the needs of consumers, such as consumer feedback, the convenience of payment, and so on. It is also possible to understand the willingness of the people in Taiwan for third-party payment platforms and provide third-party payment platform operators' considerations for marketing models based on the results of this research.

In the past, there was not much research on the influencing factors of third-party payment user satisfaction. Therefore, this study takes third-party payment as the main body of research, designs a research questionnaire based on third-party payment user satisfaction, and explores the influencing factors of third-party payment user satisfaction. I hope this research can become a reference for future research-related topics.

### **5.2.2 Research Limitations**

Although this research strives to be rigorous in the research process, it still has its research limitations in many aspects. The various limitations of this research describe as follows:

#### **I. Research variables cannot be enumerated and verified**

This study explores user satisfaction regarding perceived usefulness, degree of confirmation, satisfaction, and continuous use intention. There are many influencing structures and factors for user satisfaction. Unfortunately, due to time, cost, and the researcher's ability, this research cannot list all

possible aspects for verification, analysis, and discussion. This is one of the limitations of this research.

## II. Research sample limitations

Due to factors such as time, cost, and the ability of the researchers. In addition, this study only surveyed National Chengchi university students as the test subjects. Therefore, it did not extend to other schools or even third-party payment platform users off-campus, which led to users' use of third-party payment platforms. Therefore, there are varying degrees of difference and influence between the acceptance level and the viewpoint.

Since this research used an electronic questionnaire and no hard copy questionnaire has been sent out. Therefore, the sample's scope is still mainly the students of National Chengchi University who use the Internet to fill in the questionnaire. Furthermore, the questionnaires are on certain network clubs related to the National Chengchi University, gender, and age group. Therefore, the sample ratio is not much different, and the sample source cannot be more abundant, limiting the results.

## III. cross-sectional study limitations

The study takes the cross-sectional survey method. It collects data from a specific point in time, so there is no long-term observation of user behavior. During the research period of the study, due to the covid-19 epidemic, the

frequency of people using third-party payment platforms has increased.

Therefore, this part of the possible gap data is not available in this research, so the research results cannot fully represent the actual situation

### 5.3 Research Results and Discussions.

#### 1. Extend the research model

This research is based on the IS Model and explores user satisfaction's influencing factors based on perceived usefulness, confirmation, satisfaction, and continuous intention. In addition, researchers can find other influencing factors that affect the satisfaction of third-party payment users from the literature. Add them to future research models, verify and discuss them to find other potentially influencing factors, and make the research model more complete.

Explore user behavior on third-party payment; this research uses IS persistence theory as a measurement model. And conduct a single group analysis. The research results show that "perceived usefulness" is the most critical factor affecting "third-party payment," and "satisfaction" will significantly positively affect its "sustainable use intention." Furthermore, it shows that the behavior of third-party payment users considers based on use as the most important factor, regardless of the ethnic group. Therefore, the use of third-party payment will affect its satisfaction and continued use ( Lee et al., 2012; Venkatesh, 2000 ) .



Therefore, it is recommended that developers of third-party payment can think about how to continue to provide valuable tools and friend's environments to improve the satisfaction of their users. For example, the continuous development of valuable functions, such as famous LINE, PayPal, etc., will be essential for maintaining users. The results of this study roughly verify the model of IS continuance theory. Past studies have pointed out that continued third-party payment usage intentions will be affected by factors such as perceived usefulness, satisfaction, continued use, and confirmation. The conclusion of this research, the feeling of benefit will be the greatest motivation to continue use. However, this study obtained different results through a single group comparison and found that users of the same ethnic group have a significant positive relationship with the perception of third-party payment.

In addition, the "perceived usefulness" in the conclusion of this article positively affects "satisfaction." It indirectly affects "sustained use," and this perceived usefulness is a situation where the third payment is worthy of continuous use. If it is not worthy of help, familiarity reduces the degree of constant use, which can also be used for follow-up research topics in the future.

2. Focus group interviews, telephone interviews, paper interviews

This article uses Chengchi University students as the test objects, so the research conclusions should not be over-generalized. The follow-up research can be extended to other scopes and compare diverse groups. Finally, this article does not include personal preferences as a variable. Some people may be easier to use the third-party payment to satisfy others (such as payment speed, which makes the payee more satisfied), while others do not. For data collection methods, the popularization of sampling should be strengthened so that the public can conduct questionnaire sampling through third-party payment. The weakness of questionnaires in this study is also due to the epidemic (covid-19). It should be changed to online collection to prevent the outbreak because the survey ethnic group is relatively single. It will lead to the possibility of distortion in the data, so to speak, follow-up research can also be carried out in this direction.

This article is an exploratory study. This article analyzes the number of collected cases samples and the statistical ratio. It is found that there are more female users (69.23%) than male users (30.77%). Road electronic questionnaires are also concentrated in National Chengchi University. The proportion of female users of this questionnaire data is relatively high. The possible reasons are: There may be more female students at the National Chengchi University, and the proportion of female students using third-party

payment is high. Future can explore the use of third-party payment. And gender differences (satisfaction differences, consumer behavior differences).

Some topics can be further explored, such as whether income affects the use of third-party payment (consumption level, customer focus), etc.

Some suggestions are also worth considering.

## 1. Scope of the study

This study only conducted surveys on the students of National Chengchi University. A Follow-up study can expand the collection methods of questionnaires in different regions and allow more users to participate. The paper can obtain more information from focus group interviews, paper questionnaires, and telephone interviews in the questionnaire. Strengthen sampling methods in data collection, and conduct in-depth interviews will make the data more vibrant. Whether the income will affect the use of third-party payment can also be implemented in the follow-up discussion of the paper.

## 2. Subjects

This study is limited in geography. University students are study objects. In future research, it is necessary to have the third-party payment platform industry's cooperation and investigate the existing users of the third-party payment platform.

### 3. Comments

From questionnaire design, survey and recovery, data analysis, and discussion, the study found that focus group interviews or in-depth interview methods can be used to understand better factors affecting user satisfaction and obtain more reliable information.



Questionnaire									
		1	2	3	4	5			
		strongly disagree	disagree	Acceptable	agree	strongly agree			
<b>Perceived usefulness</b>									
1. I think using third-party payment is helpful for payment and shopping.									
2. I think using third-party payment can make my payment and shopping faster.									
3. I think the use of third-party payment can improve the efficiency of my payment and shopping.									
4. I think using third-party payment can make payment and shopping easier for me.									
<b>confirmation</b>									
1. My experience after using third-party payment is better than I expected.									
2. The services and functions provided by third-party payment are better than I originally expected.									
3. I think the overall use of third-party payment meets my original expectations.									
<b>Satisfaction</b>									
1. Overall, I am satisfied with using third-party payment.									
2. Overall, I think there is still a long way to go.									
3. I am satisfied with the overall process of using a third-party payment.									
4. Overall, I am satisfied with the practicality of using a third-party payment User interface									
5. Overall, I am satisfied with using the stored value function of third-party payment.									
<b>Continuous use intention</b>									
1. I intend to continue to use third-party payment, and I will not stop using it.									
2. Even if there is other third-party payment, I still choose to use third-party payment.									
3. I will continue to use third-party payment in the future.									

## References

- Bearden, W. O., & Teel, J. E. (1983). Selected determinants of consumer satisfaction and  
Bhattacharjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly*, 351-370. complaint reports. *Journal of Marketing Research*, 20(1), 21-28.
- Bhattacharjee, A. (2001). Understanding information systems continuance: An expectation-confirmation model. *MIS Quarterly*, 351-370.
- Bickel, P. J., Breiman, L., Brillinger, D. R., Brunk, H. D., Pierce, D. A., Chernoff, H., ... & Wahba, G. (1977). Discussion: Consistent nonparametric regression. *The Annals of Statistics*, 5(4), 620-640.
- Cardozo, R. N. (1965). An experimental study of customer effort, expectation, and satisfaction. *Journal of Marketing Research*, 2(3), 244-249.
- Churchill Jr, G. A., & Surprenant, C. (1982). An investigation into the determinants of customer satisfaction. *Journal of marketing research*, 19(4), 491-504. Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334.
- Deming, W. E. (1981). Improvement of quality and productivity through action by management. *National Productivity Review*, 1(1), 12-22.
- Folkes, V. S. (1984). Consumer reactions to product failure: An attributional approach. *Journal of Consumer Research*, 10(4), 398-409.
- Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., & Bryant, B. E. (1996). The American customer satisfaction index: nature, purpose, and findings. *Journal of Marketing*, 60(4), 7-18.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. Hair, J. F., Celsi, M., Ortinau, D. J., & Bush, R. P. (2010). *Essentials of Marketing research* (Vol. 2). New York, NY: McGraw-Hill/Irwin.
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics.
- Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage publications.
- Howard, J. A., & Sheth, J. N. (1969). *The theory of Buyer Behavior* (No. 658.834 H6).
- Juran, J. M., & Gryna, F. M. (1988). Juran's quality control. *Handbook*, 4ème éd., New York.

- Kalakota, R., & Whinston, A. B. (1997). *Electronic Commerce: a Manager's Guide*. Addison-Wesley Professional.
- Khai, N. T. N., & Huyen, N. T. T. Factors of Satisfaction and Intention Toward Using Peer-to-peer Accommodation-A Case of AIRBNB.
- Lee, T. H., & Suh, C. K. (2008). Effects of Individual Characteristics and Subject Norm on User Acceptance of e-Learning for Voluntary Studies. *The Journal of Information Systems*, 17(4), 99-127.
- Liao, C., Palvia, P., & Chen, J. L. (2009). Information technology adoption behavior life cycle: Thong, J. Y., Hong, S. J., & Tam, K. Y. (2006). The effects of post-adoption beliefs on the expectation-confirmation model for information technology continuance. *International Journal of human-Computer Studies*, 64(9), 799-810.
- Toward a Technology Continuance Theory (TCT). *International Journal of Information Management*, 29(4), 309-320.
- Lin, J., Handschin, C., & Spiegelman, B. M. (2005). Metabolic control through the PGC-1 family of transcription coactivators. *Cell Metabolism*, 1(6), 361-370.
- Limayem, M., Hirt, S. G., & Cheung, C. M. (2007). How habit limits the predictive power of intention: The case of information systems continuance. *MIS Quarterly*, 705-737.
- Locke, E. A. (1976). The nature and causes of job satisfaction. *Handbook of Industrial and Organizational Psychology*.
- Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78(1), 98.
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460-469.
- Olshavsky, R. W., & Miller, J. A. (1972). Consumer expectations, product performance, and perceived product quality. *Journal of Marketing Research*, 9(1), 19-21.
- Ondrus, J., & Pigneur, Y. (2006). Towards a holistic analysis of mobile payments: A multiple perspectives approach. *Electronic Commerce Research and Applications*, 5(3), 246-257.
- Pavlou, P. A., & Fygenson, M. (2006). Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *MIS Quarterly*, 115-143.
- Pham, T. T. T., & Ho, J. C. (2015). The effects of product-related, personal-related factors and attractiveness of alternatives on consumer adoption of NFC-based mobile payments. *Technology in Society*, 43, 159-172.

- Regnault-Roger, C., & Hamraoui, A. (1995). Fumigant harmful activity and reproductive inhibition induced by monoterpenes on *Acanthoscelides obtectus* (Say)(Coleoptera), a bruchid of kidney bean (*Phaseolus vulgaris* L.). *Journal of Stored Products Research*, 31(4), 291-299.
- Rich, J. R., Rahi, G. S., Opperman, C. H., & Davis, E. L. (1989). Influence of the castor bean (*Ricinus communis*) lectin (ricin) on the motility of *Meloidogyne incognita*. *Neotropical*, 99-103.
- Roca, J. C., Chiu, C. M., & Martínez, F. J. (2006). Understanding e-learning continuance intention: An extension of the Technology Acceptance Model. *International Journal of Human-Computer Studies*, 64(8), 683-696.
- Venkatesh, V., & Davis, F. D. (1996). A model of the antecedents of perceived ease of use: Development and test. *Decision Sciences*, 27(3), 451-481.

#### Chinese Literature Reference

- Chen Peiwen 陳珮文. (2014). The Necessity and Development Thinking of the Legalization of Taiwan's Third-Party Payment — Take the US PayPal and China Alipay as examples 台灣第三方支付法制化的必要性與發展思考—以美國 PayPal 與中國支付寶為例. Degree Thesis of the Institute of Industrial Economics, Chuo University 中央大學產業經濟研究所學位論文, 1-127.

#### Website

<https://www.lawinsider.com/dictionary/third-party-payment>