

# Foreign Students' Intention towards a China's Third-Party Mobile and Online Payment Platform Based on Alipay

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## Abstract

As the times progressed, so many features of smartphones that are developed by producers in manufactures. Hardware and software are fused to deliver comfort and increase the productivity of users' smartphone. The example of software that can help users for a convenient transaction is Alipay and Wechat Pay, a China's third-party mobile and online payment platform developed by Alibaba group and Tencent respectively. This research aimed to observe expats' motives in the use of Chinese third-party online payment platform with the sample was some foreign students in Nanjing as the Alipay users. Based on Unified Theory and Acceptance and Use of Technology (UTAUT) which consists four key constructs (effort expectancy, performance expectancy, social influence, and facilitating conditions), the results found that behavioral intentions were significantly carried out by effort expectancy, performance expectancy, and facilitating conditions, while social influence factors were found to be insignificant.

## Keywords

*Consumer Intention, UTAUT, Technology Adoption, Online Payment, Third-party, Online Payment*

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## 1. Introduction

The development of information and telecommunication has unconsciously changed our daily cultures. Some handled devices such as mobile phone, Personal Digital Assistant (PDA), and smartphone are not only used for the communication, but also for the business purposes because of the mobility owned by the devices. In China, handled devices with internet features will also encourage local users to do various needs such as entertainment, online communication, lifestyle, etc.

Third-party online payment platform is also an example of technology products that utilizes internet feature. The users are required to link the personal account bank, debit, or credit card into the platform so that two parties (sender and recipient) are able to do an exchange of transactions. The exchange works when money is placed under control of an independent and licensed party in order to protect both sender and recipient then the money will be released after both parties verify the transaction. If there is a dispute between both parties during the transaction, it will be directed to dispute resolutions and its outcome determines what happens to the money in escrow [1].

However, for some foreigners who live in China, a third-party online payment on a

smartphone may be something very new to be applied due to its utilities and various unique features provided. A prior comparative study on retail payment behavior in Germany and China also revealed that German and Chinese customers used different payment methods in various situations (such as on peer-to-peer, gas station payment, fast food restaurant, rent payment, etc.) and found that Chinese consumers mainly used third-party online platforms (such as Alipay and Wechat Pay) for dealing transactions while German consumers used online payment in certain situation such as on e-commerce and P2P with Paypal [2]. The author assumed that foreigners who live in China may have a different perception of China's third-party online platform since they think it is unusual things to do for daily transactions in their home country.

It is very important to understand the theory of technology acceptance in order to explain users' intention towards technology products. Venkatesh (2003) proposed UTAUT as a mixed theory from various models and had been applied by many scholars in different scopes.

This paper aims to observe expats' intentions towards third-party online payment platform based on Alipay. By following up UTAUT theory, we attempt to observe the influence of performance expectancy, effort expectancy, social influence, and facilitating conditions towards behavioral intention to use third-party online payment platform.

The systematic writing is as follows. Section 2 reviews the theoretical basis of third-party online payment system on Alipay platform and the fundamental of UTAUT, and also presents the conceptual model and hypothesis. Section 3 refers to the research methodology including data collection methods, variable measurement techniques, and analysis instruments. Section 4 reports the results of data analysis. Section 5 presents discussions and implications. Conclusions are also provided in section 6.

## **2. Literature Review**

### *2.1. The overview of third-party online payment and Alipay*

Mobile payment is a form of payments that is carried out electronically and allows individual to make a transaction online anywhere and anytime due to its flexibility and convenience [3]. In addition, mobile payment can also be done in 2 ways namely proximity and remote payments. Proximity works when payers and recipients communicate directly and make payments at the same location, and generally use contactless communication technology (such as Bluetooth, NFC, and infrared). Conversely, remote payments do not depend on the location of the payer and recipient to make payments and only depend on telecommunication networks (such as Global System for Mobile Communications (GSM) and internet). In third-party online payments, in addition to functioning as an independent platform which helps to pay through the internet, it also has the responsibility to ensure the security of transactions between buyers and sellers [4].

Alipay is a third-party online payment platform established on October 18, 2003, by Alibaba group. This application is designed for an online shopping website called Taobao, and had an authorization to do payment activities because Alipay owned the first payment business permit issued by the People's Bank of China, so that this application allows its users to do such transaction activities as peer-to-peer payment, making payment to mobile phone companies, prepaid cards, and municipal services [5]. Alipay currently has 520 million users and operates many financial institutions including Visa and Mastercard by providing payment services for China's e-commerce website (Taobao and Tmall), and 460,000 Chinese businesses [6]. Alipay also dominates its shares

(28.05%), followed by China UnionPay (25.58%), Wechat Pay (11.72%), and other competitors in the online payment industry in China [7].

Many features provided by Alipay such as doing transactions through QR code, utility payment, and mobile top up [5]. In addition, Alipay invented the first digital services to provide “simple, safe, and fast” online payment services by providing strong transaction security [8]. Alipay increased security by providing the account with two-password. The first password is to log into the system, check the accounts, and amend customer information, and another one is for the operation involving the cash flow. The absence of the second password results in the fail of transferring funds and changing personal information. Moreover, the users of Alipay are able to make such a protected question added on Alipay to protect the available risk in cash flows [8].

## *2.2. The Unified Theory of Acceptance and Use of Technology (UTAUT)*

UTAUT is one of technology adoption theories which is able to explain the behavior and intention towards technology products. The model was proposed by Venkatesh et al. (2003) and is the mix of various leading models including Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Model of PC Utilization (MPCU), and Social Cognitive Theory (SCT) [9]. The model of UTAUT has also been utilized by many scholars to explain the behavioral intention to use various technology products including the adoption of mobile devices, health information technology, e-learning websites, Automated Road Transport Systems (ARTS), an online shopping app, etc. [10-14]. This theory also consists of 4 main constructs namely effort expectancy, performance expectancy, social influence, and facilitating conditions.

Effort expectancy refers to the degree of ease that users feel when using the system. It has the similarity of perceived ease of use in the TAM model, and this construct was also referred from the ease of use in DIT model and complexity in the MPCU model [9]. Some findings also found that effort expectancy determined the adoption of mobile banking in Sudan, mobile payment in Malaysia, mobile banking in Jordanian, and mobile payment framework in Philippines [15-18]. In this study, foreign students may feel the ease when they are free from the obstacles to run Alipay, spend a short amount of time to learn the use of Alipay, and able to adapt to the interface provided by the system. Therefore, we propose hypothesis 1 to observe the ease perceived by foreign students may influence the use of Alipay system.

H1: Effort expectancy perceived by foreign students may positively influence behavioral intention to use Alipay

Performance expectancy refers to a situation where the users believe they feel the growth in performance and productivity while using the system [9]. This key construct also has the similarity of perceived usefulness in the TAM model [9]. It was developed from various constructs namely extrinsic motivation in MM, job-fit in MPCU, relative advantage in DIT, and also outcome expectations in SCT [9]. The previous study found that performance expectancy had positive relationship towards the adoption of mobile payment [15]. In another finding, performance expectancy was also found to significantly influence behavioral intention to adopt mobile payment based on near field communication (NFC) [19]. Performance expectancy was also the strongest predictors of adopting NFC payments by American iPhone users' and mobile banking in a private university in Kuala Lumpur, Malaysia [20], [21]. Foreign students may feel benefits from the Alipay platform since this technology product is also useful in everyday life. Alipay

provides the ease of transaction by delivering convenient ways in sending or transferring money, as well as shortening the time in matters of money transfers. We develop hypothesis 2 as we assume performance expectancy may also impress foreign students to have an intention of Alipay use.

H2: Performance Expectancy perceived by foreign students may positively influence behavioral intention to use Alipay

Social influence is a situation where other important people believe or feel that the users must use a new system. It was also referred from prior constructs namely subjective norm (TRA, TAM2, TPB), image (DIT), and social factors (MPCU) [9]. Prior research found social influence had a significant relationship to behavioral intention on the use of mobile wallet in Indonesia, on the use of remote mobile payments in the UK, and on the use of Near Field Communication (NFC) in China [22-24]. Another finding also found that social influence was also the strongest factor on the intention to use NFC based mobile payments in North American restaurants [25]. Foreign students may also be aware that having Alipay account is very important since many Chinese locals always rely on third-party online payment platforms for doing transactions. In addition, it is also such a fashionable way to do a payment by pulling out the smartphones from the pocket to settle the payment. Hypothesis 3 is proposed to identify social influence among foreign students which may also affect the intention of Alipay use.

H3: Social influence among foreign students may positively affect behavioral intention to use Alipay

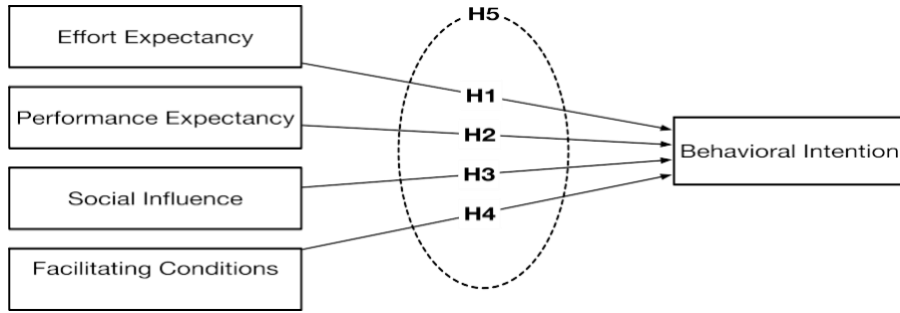
Facilitating conditions refer to organizational and technical infrastructure which encourage users to use a system. This key construct was referred from different variables including perceived behavioral control in the TPB model and compatibility in DIT [9]. Prior studies revealed that facilitating conditions had a significant association with the behavioral intention of using mobile banking adoption in Pakistan, e-government system in India, electronic tax filling in Thailand, and mobile payment in Malaysia [26][27][28][15]. We assume that foreign students have an intention to use third-party online payment platform after having its resources including the knowledge towards online payment platform, supported hardware, operating system, stable internet connection, etc. until they feel this technology product fits well as they do a transaction. We also develop hypothesis 4 in order to observe facilitating conditions owned by foreign students may also influence the intention of Alipay use.

H4: Facilitating conditions owned by foreign students may positively influence behavioral intention to use Alipay

In addition, we also assume that four key constructs namely effort expectancy, performance expectancy, social influence, and facilitating conditions have a simultaneous effect on behavioral intention to use Alipay system. Therefore, we also add another hypothesis 5.

H5: Effort expectancy, performance expectancy, social influence, and facilitating conditions may simultaneously effect on behavioral intention to use Alipay system

Based on the proposed hypothesis above, the research framework can be seen in Fig.1:



**Fig. 1.** Proposed research framework

## 3. Research Methodology

### 3.1. Sampling and location

The valid sample used in this research was foreign students studying in Nanjing who have used Alipay system for more than three months. The questionnaire was also applied for data collection and made online with the online questionnaire service called Wenjuan. Wenjuan system created the link directing respondents to a questionnaire form. The link was also sent to the group of Nanjing expats' community on Facebook and Wechat. In addition, the respondents were also allowed to forward the link to other participants.

### 3.2. Variable measurement technique

The questionnaire was divided into 3 parts, the first part was a screening question by determining whether respondents have accessed Alipay for more than 3 months or not. The second part was the main items which measure the attributes of the research object, all items were adopted from previous studies then adjusted to the items of Alipay use. A total of 21 items to measure behavioral intention (3 items) and selected variables including effort expectancy (4 items), performance expectancy (5 items), social influence (4 items), and facilitating conditions (5 items). All variable items are shown in Table I. These items also used a five-point Likert scale to determine the level of agreement and disagreement of each item. And the last part was the demography questions including gender, nationality, pursued degree, university, and respondents' age.

### 3.3. Analysis techniques

We used Pearson product moment correlation to determine the level of instrument accuracy by finding the correlation between each question with the total score. For reliability test, Cronbach's alpha coefficient was also utilized to see the level of internal consistency respondents' answer to the measurement. In addition, we applied a descriptive analysis to show respondents' demography. Multiple linear regressions, Independent sample T-test, F-test, and coefficient of determinant  $R^2$  were also used in this study. The significance level of probability of 5% was used. And, all analyses were performed using Statistical Package for Social Sciences (SPSS) for MacOS Version 25.

TABLE I  
VARIABLE ITEMS

Variables	No	Dimensions	Items
Effort expectancy (X1)	X1.1	Perceived ease of use	At the beginning of use, it is easy for me to learn how to use Alipay
	X1.2	Perceived ease of use	I found no difficulties while using Alipay
	X1.3	Ease of use	I can adapt with menu interface provided by Alipay
	X1.4	Complexity	It would not spend so much time in learning to use Alipay
Performance expectancy (X2)	X2.1	Extrinsic motivation	Alipay is useful in everyday life
	X2.2	Outcome expectations	I can save my time while doing transaction with Alipay online payment
	X2.3	Relative advantage	I believe Alipay will increase my productivity
	X2.4	Perceived usefulness	Alipay makes payments easy in every transaction
	X2.5	Perceived usefulness	Sending and transferring money with friends is more convenient with Alipay
Social influence (X3)	X3.1	Subjective norm	Knowing or seeing my groups/friends who use Alipay encourages me to use
	X3.2	Subjective norm	My groups/friends recommend me to use Alipay
	X3.3	Image	In China's society, Using Alipay is such a fashionable way in transaction
	X3.4	Social factors	It is very important to have Alipay account while studying and living in China
Facilitating conditions (X4)	X4.1	Perceived behavioral control	Alipay is compatible with the devices I am using
	X4.2	Perceived behavioral control	After having resources and knowledges, it would be easy for me to access Alipay
	X4.3	Compatibility	Alipay fits well with the way I like to do transactions
	X4.4	Perceived behavioral control	The internet connection on my smartphone is good and stable to access Alipay
	X4.5	Facilitating conditions	My important people/groups/friends assist me to use Alipay when I face difficulties
Behavioral Intention (Y)	Y.1		I intend to use Alipay online payment for daily transactions
	Y.2		I will keep using Alipay online payment in the future
	Y.3		I intend to use Alipay in e-commerce site

## 4. Data Analysis

There were 208 valid respondents collected in the research. Demography item included gender, age, respondent's origin, pursued degree, and respondent's university. Table II shows that 126 (60.58%) respondents are male, and 82 (39.42%) respondents are female. In this study, the majority was the respondents at the age 22-28 years old (48.08%), then also followed by respondents at the age 18-21 years old (39.90%). The largest number is the respondents from Asia (64.90%) and Africa (27.88%), then according to pursued degree, the majority of the sample is foreign students pursuing bachelor's degree (52.40%), followed by master's degree and non-degree comprising 24.04% and 18.27%. Moreover, the respondents from 19 universities in Nanjing took apart as a valid sample, then we found that foreign students from Nanjing University of Information Science and Technology were dominating with the number of respondents comprising 40.87%, and followed by foreign students from Nanjing University of Aeronautics and Astronautics (9.62%) and Nanjing Polytechnic Institute (9.62%).

TABLE II  
DEMOGRAPHY OF RESPONDENTS

Measures	Items	Frequency	%
Gender	Female	82	39.42
	Male	126	60.58
Age	18 – 21 years old	83	39.90
	22 – 28 years old	100	48.08
	19 – 35 years old	19	9.13
	> 35 years old	6	2.88
Respondent's origin	Asia	135	64.90
	South America	2	0.96
	North America	5	2.40
	Africa	58	27.88
	Europe	6	2.88
	Australia	2	0.96
Pursued Degree	Non-degree	38	18.27
	Bachelor's	109	52.40
	Master's	50	24.04
	PhD	11	5.29
Respondent's university	China Pharmaceutical University	4	1.92
	Hohai University	8	3.85
	Jiangsu Institute of Commerce	4	1.92
	Nanjing Agricultural University	2	0.96
	Nanjing Army Command College	1	0.48
	Nanjing Institute of Railway Technology	3	1.44
	Nanjing Institute of Technology	1	0.48
	Nanjing Medical University	2	0.96
	Nanjing Normal University	13	6.25
	Nanjing Polytechnic Institute	20	9.62
	Nanjing Technology University	5	2.40
	Nanjing University of Aeronautics and Astronautics	20	9.62
	Nanjing University of Finance and Economics	2	0.96
	Nanjing University of Information Science and Technology	85	40.87
	Nanjing University of Post and Telecommunications	3	1.44
	Nanjing University of Science and Technology	11	5.29
	Nanjing University	7	3.37
	Nanjing Xiaochuang University	10	4.81
	South East University	7	3.37
Total		208	100

Validity and reliability test must have conducted first before being processed into further analysis. From Table III, it can be seen that all questionnaire items can still be kept since the results of the validity test of each item are acceptable (Sig. < .005). Moreover, Table III also shows that effort expectancy (X1), performance expectancy (X2), social influence (X3), facilitating conditions (X4), and behavioral intention (Y) are reliable since each construct has Alpha which is greater than 0.6.

TABLE III  
VALIDITY AND RELIABILITY TEST RESULTS

Variables	No	Pearson Correlation	Sig. (2-tailed)	Cronbach's Alpha
Effort expectancy (X1)	X1.1	.737**	.000	.659
	X1.2	.799**	.000	
	X1.3	.673**	.000	
	X1.4	.602**	.000	
Performance expectancy (X2)	X2.1	.700**	.000	.791
	X2.2	.754**	.000	
	X2.3	.703**	.000	
	X2.4	.813**	.000	
	X2.5	.760**	.000	
Social influence (X3)	X3.1	.805**	.000	.688
	X3.2	.785**	.000	
	X3.3	.640**	.000	
	X3.4	.633**	.000	
Facilitating conditions (X4)	X4.1	.643**	.000	.705
	X4.2	.716**	.000	
	X4.3	.792**	.000	
	X4.4	.697**	.000	
	X4.5	.613**	.000	
Behavioral intention (Y)	Y.1	.834**	.000	.752
	Y.2	.856**	.000	
	Y.3	.762**	.000	

TABLE IV  
RESULT OF REGRESSION ANALYSIS

No	Variables	Unstandardized B	t	Sig.
1	(Constant)	-.679	-.717	.474
2	Effort expectancy (X1)	.140	3.214	.002
3	Performance expectancy (X2)	.215	3.972	.000
4	Social influence (X3)	.038	.676	.500
5	Facilitating conditions (X4)	.276	4.757	.000
R <sup>2</sup> = .496		F = 50.024	Sig. = .000	

Independent sample T-test was conducted to test whether there was a positive influence of effort expectancy, performance expectancy, social influence, and facilitating conditions on behavioral intention. We collected 208 valid samples and 4 variables. The significance level of probability 5% was used in the study.

Table IV shows hypothesis 1 is accepted (t=3.214, Sig. < .005), which confirms that effort expectancy has a positive influence on behavioral intention, and every single increase of effort expectancy leads to an increase in behavioral intention by 0.140. Hypothesis 2 is accepted (t=3.972, Sig. < .005) which proves performance expectancy also positively influences behavioral intention, and the increase of one unit of performance expectancy leads to an increase in behavioral intention by 0.215. Hypothesis 4 is also accepted (t=4.757, Sig. < .000) which results there is a positive influence between facilitating conditions with behavioral intention, and the increase of one unit of the variable (facilitating conditions) also leads to an increase in behavioral

intention by 0.276. However, only hypothesis 3 is rejected ( $t=.676$ ,  $\text{Sig.}>.005$ ) which indicates social influence has a negative influence on behavioral intention.

F-test was also conducted to test hypothesis 5 and proved that effort expectancy, performance expectancy, social influence, and facilitating conditions had a simultaneous influence on behavioral intention ( $F=50.024$ ,  $\text{Sig.}<.005$ ). Moreover, based on the coefficient of determinant  $R^2$ , the 4 key constructs in this study explains 49% and the rest (51%) could still be explained with other external variables.

## 5. Discussions and implications

The finding shows that effort expectancy, performance expectancy, and facilitating conditions significantly influence behavioral intention of Alipay use by foreign students, while social influence gives insignificant results as in Table IV so that this finding is contrary to most previous studies [22-25]. However, these findings can also be used as part of implications concerning other third-party online payment platforms.

The behavioral intention was found to be positively influenced by effort expectancy. It supported prior studies which concluded that effort expectancy had significant influences on the behavioral intention of technology products [15-18]. Based on effort expectancy, foreign students feel the ease and free of complexity in using or operating Alipay. However, still important for developers to always receive feedback from users in regard to the convenience of use, such as on the improvements of Alipay user interface.

Performance expectancy was found to positively influence on behavioral intention. It confirmed previous studies which resulted in performance expectancy significantly influenced the behavioral intention to use various technology products [15][19][20][21]. According to performance expectancy, Alipay also succeeds in promoting the convenience of secure transactions and payments, so that many foreign students also feel interested in using it. It is very important for marketers to always improve marketing strategies by convincing users that using Alipay is much easier, faster, and safer compared to conventional payments.

The results also confirmed that facilitating conditions had a positive influence towards behavioral intention to use Alipay system. The result supported prior studies that revealed facilitating conditions significantly influenced the behavioral intention to use various technology products [26][27][28][15]. In regard to facilitating conditions, the developers succeed developing Alipay to be installed with the most devices which foreign students used since nowadays smartphone has many features such as camera for QR code scanning, fingerprint for dealing payments, etc. In addition, China also has a good and stable internet connection, and many users who have a lot of knowledges concerning the use of Alipay are willing to assist new Alipay users when they face any troubles in using the system. However, the developer still needs to improve and stabilize the Alipay so that it can always be run smoothly on the smartphone even though with the minimum specifications.

## 6. Conclusion

This paper aimed to observe the intention of Alipay use among foreign students. The sample used in this research was foreign students who study in Nanjing and this study also relied on an online questionnaire for data collection. Started from the validity and reliability of instruments, the validity results indicated that used instruments in this study were valid and verified. The reliability test also approved that respondents' answers in this study were reliable for further analysis.

UTAUT has 4 key constructs namely effort expectancy, performance expectancy, social influence, and facilitating conditions. We also used descriptive statistics, T-test, and F-test besides regression analysis. According to our analysis, the three variables namely effort expectancy, performance expectancy, and facilitating conditions were confirmed to have a positive influence on behavioral intention to use Alipay among foreign students. Only the variable of social influence resulted in a negative influence towards behavioral intention which is contrary to the most prior studies. Moreover, this study also showed that 4 key constructs (effort expectancy, performance expectancy, social influence, and facilitating conditions) had simultaneous effects on behavioral intention, and the key constructs for our case were still able to explain 49%.

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