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Determinants of Chinese Travellers' Use of Mobile Payment Applications when Staying at an Overseas Hotel

Paris Xu, Chloe S. Kim , Blake Bai, and Peter B. Kim 

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ABSTRACT

This study examines the factors that determined the use of the mobile payment applications (apps) WeChat Pay and Alipay by Chinese travelers in a New Zealand hotel. It further investigates whether social influence has an impact on their use. The second Unified Theory of Acceptance and Use of Technology model was used to develop and test research hypotheses using an online survey. The findings showed that performance expectancy, facilitating condition, perceived security and cost efficiency, significantly affected travelers' intention, and that social influence intensified the impact of performance expectancy, while attenuating cost efficiency. Implications are discussed for researchers and practitioners.

KEYWORDS

Chinese outbound travelers; mobile payment applications (apps); WeChat pay; Alipay; social influence

Introduction

Mobile commerce (m-commerce) has exploded in recent years due to the high popularity of smartphones among contemporary consumers (Hew, 2017). M-commerce takes many forms, such as mobile shopping, mobile banking, and mobile payments (Alalwan et al., 2017; Faulds et al., 2018; Li et al., 2019). Among these forms, mobile payment has become one of the key driving forces of m-commerce due to its feasibility and convenience (de Albuquerque et al., 2016). Mobile payments have dramatically changed the human lifestyle; daily e-commerce practices are being rapidly adopted by stores and service organizations in global businesses. According to Mordor Intelligence (2022), the compound annual growth rate of mobile payment transactions is forecast to be 29.5%, from 2022 to 2027. The COVID-19 pandemic appears to have led to the wider adoption of mobile payment systems, as the use of technology in hospitality enables safe and contactless service encounters (Hao et al., 2022).

In China, the world's largest e-commerce market, consumers' purchasing practices have undergone a dramatic shift from offline to online (GlobalData, 2021). Mobile payment applications (apps) such as WeChat

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and Alipay have become indispensable payment technologies in the daily lives of Chinese consumers (Shehzad et al., 2019). China is also the world's largest outbound travel market; in 2019, Chinese travelers undertook 169.21 million overseas trips (National Bureau of Statistics of China, 2020). Despite this statistic, there has been little reported on the usage or availability of mobile payment apps for Chinese travelers in overseas hotels. Recent literature notes that there is still a level of uncertainty when it comes to understanding the performance of hotel reservations by use of mobile payments (Sun et al., 2020), and according to Tangit and Law (2021), broader research progress relating to mobile payments within the tourism and hospitality sectors is on the whole, slow. This study attempts to address this research gap by examining Chinese travelers' use of the popular mobile payment apps "WeChat Pay" and "Alipay" in overseas hotels, through application of the second version of the unified theory of acceptance and use of technology model, i.e., UTAUT2 (Venkatesh et al., 2012).

People living in a collectivist country, such as China, are heavily influenced by groups and societies, and therefore, social influence plays a key role in influencing consumer behavior (Khan et al., 2017, 2021). The majority of existing studies have investigated the impact of social influence on the behavioral intention of consumers (e.g., Feng, 2017; Koenig Lewis et al., 2015), whereas this research has chosen to extend the literature on mobile technology adoption in the tourism context, by examining social influence as a boundary condition of the impacts of the determinants of the UTAUT2 model on "intention to use mobile payments apps." Extant studies have, in fact, reported the moderating role that social influence has on the impact of attitudinal factors on the quality of customer experience (Gao et al., 2020) and behavioral intention (Youn & Jin, 2017), referring to the theories of desired social identity and the need for conformity (Chan et al., 2012; Cialdini & Goldstein, 2004).

This study, being the first attempt to understand Chinese outbound travelers' intentions to use mobile apps on their overseas trips, contributes to the literature on mobile payment adoption in the tourism industry. The results of the research model testing will add empirical evidence to the validation and extension of the UTAUT2 model, and will shed new light on technology adoption in terms of the moderating effects of social influence. On a practical level, the findings of this study will offer guidance to hotel managers and decision-makers relating to the implementation of appropriate mobile payment options. By doing so they will be able to better meet the needs of the growing numbers of Chinese tourists in Chinese tourism-leading countries.

Literature review

Mobile payment applications for Chinese travelers

Mobile payment has been defined as “mobile devices utilizing wireless and other communications to settle payments, which are enabled by technologies, such as near-field communication (NFC), quick response (QR) codes, or short message service (SMS)” (Dahlberg et al., 2015; Dennehy & Sammon, 2015). Mobile payment has radically reshaped the ways in which consumers conduct purchases, and businesses accept payments, resulting in considerable benefits for both parties (Taylor, 2016). From a business perspective, mobile payment improves the efficiency and performance of the operation (de Albuquerque et al., 2016). According to Taylor (2016), the efficiency of mobile payments would substantially help labor-intensive industries, such as hospitality, to save time and labor in relation to settling transactions. From a customer’s perspective, the unique features of mobile payment could improve the consumption experience. For instance, mobile payment not only enables customers to avoid long waiting times but also allows them to settle the payment at any time without having to carry cash or a credit card (Chuang et al., 2020). Customer perceptions of smart tourism applications, such as those that enable mobile payments, have been found to potentially enhance the image of a destination, and in turn, affect tourist’ behavioral intentions (Tavitiyaman et al., 2021).

Previous studies in hospitality and tourism relating to mobile payments have predominantly focused on NFC types, such as Apple Pay, Samsung Pay, and Android Pay (Esfahani & Bulent Ozturk, 2019; Khalilzadeh et al., 2017; Morosan & DeFranco, 2016;). Chinese consumers, however, predominantly use the QR code-based mobile payment apps, WeChat Pay, and Alipay, and these have not yet been fully examined (Li et al., 2019). In fact, WeChat Pay and Alipay are the primary mobile payment apps in China, where over 92% of the mobile payments are made through the platforms (Klein, 2020). These apps offer a variety of useful functions and are similar to the PayPal platform commonly used in Western countries (Feng, 2017). Not only are customers able to purchase goods or services by scanning QR codes on websites or through their smartphone apps, they can also do so at participating merchants and vending machines (DeLuna, 2018).

Despite the widespread adoption, the paucity of studies in the hospitality sector, or more specifically, the hotel sector, into the use of WeChat Pay and Alipay has left a research gap. There are two explanations as to why this may have occurred. The first is that as far as apps are concerned, WeChat Pay and Alipay are fairly new, having become popular relatively recently. Alipay was launched in 2003 and WeChat Pay in 2011 (DeLuna, 2018). The second point is that WeChat Pay and Alipay are pervasive in China and, therefore, most of the published research articles are in the Chinese context. These two factors may have had a limiting impact on

research interest into this area. In more recent times, given the resurgence of outbound Chinese tourists, studies have begun to focus on the importance of mobile payments and their impact for Chinese travelers, such as their mediating effects (Sun et al., 2020), and the role of industry in terms of mobile payment facilitation (Tangit & Law, 2021). However, this area of research is still in the early stages, and there is much yet to be examined. The aim of the current study, therefore, was to fill the research gap and shed light on Chinese travelers' intentions around using WeChat Pay and Alipay within an overseas context.

UTAUT2 model and research hypotheses

Venkatesh et al. (2003) established the UTAUT model to examine organizations and employees and their acceptance of technology, and following its introduction, the model has been investigated and tested by vast numbers of studies related to technology adoption (Cimperman et al., 2016; Magsamen-Conrad et al., 2015; Zhou et al., 2010). According to Law et al. (2018), the most cited theories in mobile technologies research in the hospitality and tourism context are the technology acceptance model (TAM) and the unified theory of acceptance and use of technology (UTAUT) model.

UTAUT identified four main constructs that determine people's intentions to use new technology: performance expectancy, effort expectancy, social influence, and facilitating conditions. It has since been further modified to fit a customer context, with the addition of the following three new constructs: hedonic motivation, price value, and habit, bringing the total constructs to seven, to establish the UTAUT2 model (Venkatesh et al., 2012).

The consumer context, as noted in the UTAUT2 model, fits well with this study's context, i.e., the investigation of Chinese travelers' intentions to use mobile payment technology (WeChat Pay or Alipay). Therefore, the UTAUT2 model is relatively more compatible with this study's context and the nature of the technology in the current research, than are other technology adoption models. The UTAUT2 model's seven constructs were categorized into three groups: individual-related factors, environmental factors, and technology-feature-based factors. This categorization was based on Lorenz et al. (2017) conceptualization of the three key players in technology adoption, i.e., user, social referents, and technology, and similarly, Oliveira et al. (2016), identification of the three areas that influence customers' mobile payment adoption intentions: customer-specific characteristics, technology-specific characteristics, and environmental characteristics.

The key question posed by this study was whether Chinese consumers would use WeChat Pay and Alipay, technologies already utilized in their day-to-day lives, in an unfamiliar environment.

Determinants of Chinese outbound travelers' use of mobile payment apps

In this study, the determining factors for the technology adoption intentions that are directly related to the functionality of the technology, are termed *technology-based factors*. *Performance expectancy* also fits into this category. Performance expectancy can be defined as the degree to which an individual's use of technology assists them in improving job performance (Davis, 1989; Venkatesh et al., 2003). Studies have found that performance expectancy can be the most significant and strongest predictor of customers' intentions to adopt new technology (Khan et al., 2017; Morosan & DeFranco, 2016; Venkatesh et al., 2012). In the hotel context, the performance of mobile payment apps could offer customers more efficiency through a faster, and more accurate transaction experience, which in turn, could lead to an elevated overall consumption experience (Morosan & DeFranco, 2016). Due to Chinese customers' familiarity with mobile app transactions, the performance expectancy could positively impact their usage intentions. Therefore, it is proposed that the likelihood of Chinese travelers' intention to use mobile payments such as WeChat Pay or Alipay in overseas hotels would be greater when performance expectancy is higher.

H1: Performance expectancy (PE) positively affects Chinese guests' intentions to use (INT) WeChat Pay or Alipay when they stay in an overseas hotel.

Environmental factors, such as facilitating conditions, can be defined as external factors which, in comparison with technology-based factors, are independent of technology or users in promoting individuals' adoption intentions (Oliveira et al., 2016). In commercial settings, facilitating conditions have been defined as "consumers' perceptions of the resources provided by the service supplier that facilitate the completion of tasks through using certain technologies" (Morosan & DeFranco, 2016). For instance, hotels may inform overseas travelers about the availability of WeChat Pay and Alipay at their service counters prior to booking. Employee assistance for consumers using the technology (e.g., language and technical support) can be regarded as another facilitating condition. Previous studies have indicated that facilitating conditions significantly influence intention to adopt payment technology in hospitality sector businesses, such as restaurants and hotels (Esfahani & Bulent Ozturk, 2019; Morosan & DeFranco, 2016; Rita et al., 2018). Therefore, the following hypothesis is formed:

H2: Facilitating conditions (FC) positively affect Chinese guests' intentions to use (INT) WeChat Pay or Alipay when they stay in an overseas hotel.

The term "individual-related factor" refers to individual differences in perceptions, perceived values, and beliefs in relation to technology adoption. In the UTAUT2 model, *perceived security* and *cost-efficiency* can be categorized as individual-related factors.

Perceived security can be defined as "an individual's perception of the level of security and risk free status in using a technology to complete tasks" (Shin, 2010). As mobile payment technology is directly related to monetary transactions, personal information, and bank details, the level of security provided by the payment technology significantly affects adoption intention (Kim et al., 2010). This study proposes that the likelihood of customers' use of WeChat Pay or Alipay will be greater when there is higher perceived security for these technologies. Thus, the following hypothesis was developed:

H3: Perceived security (PS) positively affects Chinese guests' intentions to use (INT) WeChat Pay or Alipay when they stay in an overseas hotel.

The "price value" construct from the UTAUT2 model was modified in this study to "cost efficiency," adapted from the work of Greenleaf et al. (2016) which highlighted the importance of looking at how "partitioned pricing" (i.e., when a product's price is divided into a base price and one or more mandatory surcharges) can impact consumer attitudes. According to the UTAUT2 model, price value is described as a cognitive relationship between consumers' perceived benefits relating to the use of certain technologies, and the monetary cost of using such technologies (Venkatesh et al., 2012). However, as there is no cost involved in the initial download and use of the mobile payment apps, the transaction cost (e.g., currency exchange rate and surcharge) was instead explored, as per Greenleaf et al.'s notion of cost efficiency. In this study, "cost" not only refers to monetary costs, such as cost efficiency or price value, but also refers to cognitive efforts and time convenience (Byun & Byun, 2013; James et al., 2006). Thus, the following hypothesis was developed.

H4: Cost efficiency (CE) positively affects Chinese guests' intentions to use (INT) WeChat Pay or Alipay when they stay in an overseas hotel.

Moderating role of social influence

“Social influence” is the extent to which a consumer perceives that others are important when it comes to decisions around using certain technologies (Venkatesh et al., 2003). Lorenz et al. (2017) conceptualized a three-dimensional model stating the reciprocal interactions between users, social referents, and technologies in technology adoption research. Their model implies that there is an interplay between what the different social referents (e.g., family, friends, and social media users) perceive about a particular technology, and the overall acceptance level of that technology in broader society. This study thus proposes that social influence could interact with the aforementioned four factors (performance expectancy, facilitating conditions, perceived security, and cost efficiency) on customers’ intentions to use mobile payment apps. It is proposed that social influence derived from the travelers’ family and friends, as well as information from hotel-related social media sites, could drive Chinese travelers to use mobile payment options in overseas hotels. In previous major technology adoption models, social influence as a predictor, significantly influenced people’s intentions to adopt new technology (Ajzen, 1991; Venkatesh & Davis, 2000; Venkatesh et al., 2003).

Previous major technology adoption models found that social influence as a predictor significantly influenced people’s intentions to adopt new technology (Ajzen, 1991; Venkatesh & Davis, 2000; Venkatesh et al., 2003). However, social influence as a moderator for technology adoption has not been well researched, especially in the context of mobile payments. For examples, Gao et al. (2020) suggested that social influence moderated the impact of brand and value equity on the quality of the customer experience, while Youn and Jin (2017) found that social influence played a moderating role in the impact of evoked nostalgia on behavioral intention given the theories of desired social identification (conformity) and social comparison (accuracy) (Chan et al., 2012; Cialdini & Goldstein, 2004). To broaden the perspective of the UTAUT2 model, the authors investigated social influence as a boundary condition in affecting the impacts of the key antecedents of the UTAUT2 model.

In a study based on word-of-mouth theory, Zeng and Seock (2019) pointed out that Chinese customers were more likely to consider the opinions posted by friends, family, and key opinion leaders on social media platforms, than they were to consider official news sources and advertising. Therefore, the impacts of the determinants of the UTAUT2 model on the intention to use mobile payment apps can be contingent on social influence, which may either strengthen or weaken its impacts. For example, Gao et al. (2019) found that social influence strengthened the impact of brand equity on customer experience quality given desired social identification but weakened the impact of value equity on

customer experience quality given the need for accuracy through social comparison with other customers. Consequently, and relevant to the mobile payment context, social influence was expected to play a moderating role on the impacts of the determinants on Chinese travelers' intentions to use WeChat Pay and Alipay. The conceptual model of the study is shown in [Figure 1](#).

H5: SI moderates the relationship between PE and INT, where customers with high SI have stronger intention to use WeChat Pay and Alipay than those with low SI.

H6: SI moderates the relationship between FC and INT, where customers with high SI have stronger intention to use WeChat Pay and Alipay than those with low SI.

H7: SI moderates the relationship between PS and INT, where customers with high SI have stronger intention to use WeChat Pay and Alipay than those with low SI.

H8: SI moderates the relationship between CE and INT, where customers with high SI have stronger intention to use WeChat Pay and Alipay than those with low SI.

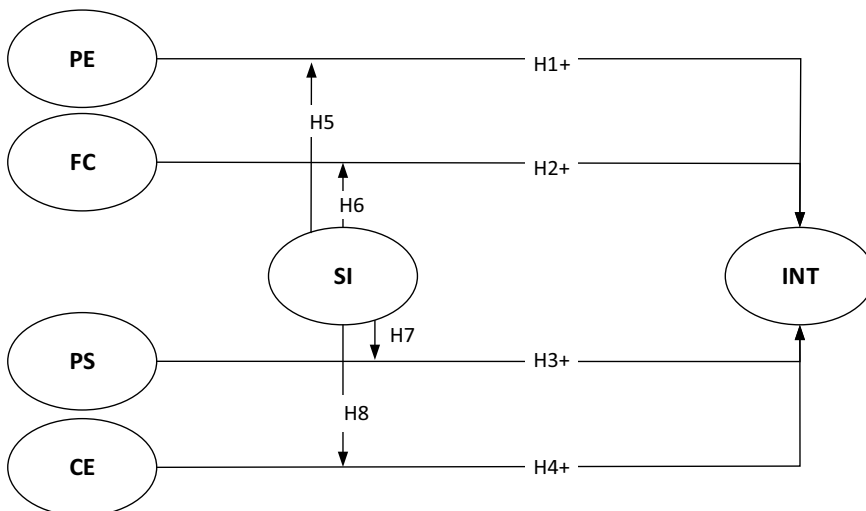


Figure 1. Conceptual model and hypotheses. Note: PE = Performance expectancy; SI = Social influence; FC = Facilitating conditions; PS = Perceived security; CE = Cost efficiency; HAB = Habit; INT = Intention to use

Methods

Survey design and measurements

To address the research questions, an online questionnaire was used to collect data from Chinese guests who were visiting New Zealand at the time of the survey. Before the online survey was distributed, ethics approval for the research was sought and granted by a university's ethics committee. Measurements for the research model constructs were adopted based on a rigorous review of the literature on mobile payment adoption. All questions were measured by a 5-point Likert-type scale ranging about the level of agreement.

Four items measuring performance expectancy were adopted from the TAM (Davis, 1989). The scales for social influence (four items), facilitating condition (three items), and habit (three items) were adopted from the influential work of the UTAUT2 model (Venkatesh et al., 2012). Cost efficiency was added based on its extensive use in previous studies and the payment characteristics of New Zealand hotels, and the three items measuring cost efficiency were adopted and modified as per Greenleaf et al. (2016). The perceived security scale consisted of three items, two of which were modifications from Vatanasombut et al. (2008), and one of which was adopted from Morosan and DeFranco (2016). Measurement of the dependent variable, intention to use (four items), was adopted from Davis (1989) and Venkatesh et al. (2012). Please see [Appendix 1](#) for the measurements used for this study.

Data collection and analysis

A New Zealand hotel chain was approached to participate in the research; five hotels situated in three different cities agreed to participate. A non-probability sampling strategy was employed to collect data from Chinese international visitors who stayed at these hotels due to their proximity and accessibility. Posters displaying a QR code linked to the online survey were prepared and printed off, and displayed in hotel lobbies and restaurant reception areas in order to reach a wider customer base. Potential participants were able to scan these with their mobile phones, to take part. Hotel staff were also asked to informally encourage their Chinese guests to participate in the survey. Two filter questions were applied at the beginning of the survey to ensure participants were over 18 years old and were international visitors from China.

In total, 299 responses were collected from participating hotels, from which 116 responses were excluded due to too many missing values. The final number was 183 responses. These were retained for data analysis. For data analysis purposes, LISREL9.1 and Statistical Package for Social Science were used.

A frequency table was generated to represent respondents' demographic details and payment behavioral characteristics. Factor analysis, correlation, and confirmatory factor analysis (CFA) were used to test reliability and validity, while hierarchical multiple regression was applied to test the hypotheses.

Results

Respondents' profile

Table 1 shows the respondents' profiles, including demographic data and behavioral characteristics. From the 183 participants, over half of the respondents (56%) were female ($N = 103$).

The average age of the respondents was 34 years old, with 66% respondents ($N = 121$) aged from 25 to 38 years. The majority of the respondents were relatively highly educated with 93% holding an undergraduate degree or higher. In terms of respondents' behavioral characteristics, nearly 84% of respondents had used WeChat Pay or Alipay while traveling overseas, indicating a tendency among the participants to use mobile payment options. In terms of overseas hotel payment method preference, mobile payment was selected by most as their favorite payment method when settling bills in hotels ($N = 78$, 43%).

Factor analysis and correlations between study variables

A CFA was performed using LISREL (version 9.1), to evaluate each measurement's reliability and validity in the expected factor structure (Table 2).

Table 1. Respondents' profiles.

	Frequency (N)	Percentage%
Gender ($N = 183$)		
Male	80	43.7
Female	103	56.3
Age ($N = 183$)		
18–24	29	15.8
25–31	66	36.1
32–38	55	30.1
39–45	7	3.8
46–52	12	6.6
53–59	13	7.1
≥ 60	1	.5
Education ($N = 183$)		
Nine years of compulsory education	5	2.7
High School	8	4.4
Undergraduate	110	60.1
Postgraduate	62	32.8
Overseas WeChat Pay/Alipay Payment Experience ($N = 183$)		
Yes	154	84.2
No	29	15.8
Overseas Payment Preference ($N = 183$)		
Local cash	33	18.0
Credit card	72	39.3
Mobile payment	78	42.6

Table 2. Properties of the study constructs.

Constructs and indicators	Item loading	t-value	Composite reliability	AVE
Performance expectancy- PE			0.90	0.69
PE1	0.85			
PE2	0.81	13.29		
PE3	0.81	13.46		
PE4	0.85	14.19		
Social influence - SI			0.93	0.78
SI1	0.82			
SI2	0.90	15.17		
SI3	0.90	15.24		
SI4	0.90	15.22		
Facilitating condition - FC			0.88	0.72
FC1	0.91			
FC2	0.83	15.17		
FC3	0.80	14.20		
Cost efficiency - CE			0.88	0.70
CE1	0.87			
CE2	0.82	13.84		
CE3	0.82	13.62		
Perceived security - PS			0.88	0.70
PS1	0.89			
PS2	0.76	12.11		
PS3	0.86	14.62		
Intention to use - INT			0.93	0.77
INT1	0.87			
INT2	0.89	22.26		
INT3	0.83	18.81		
INT4	0.91	24.06		

Note. Fit indices: Chi-square (174) = 315.601, $p = .00$; Goodness-of-Fit Index (GFI) = 0.87;

Adjusted Goodness-of-Fit Index (AGFI) = 0.82; Comparative Fit Index (CFI) = 0.96;

Root Mean Square Error of Approximation (RMSEA) = 0.066.

The CFA results showed that the proposed factor structure was a good fit to the data; $X^2 = 31.601$, $df = 174$, $p = .00$, Room Mean Square of Approximation (RMSEA) = 0.066, Goodness-of-Fit Index (GFI) = 0.87; Adjusted Goodness-of-Fit Index (AGFI) = 0.82, and Comparative Fit Index (CFI) = 0.96. Table 2 shows that all factor loadings (completely standardized) of measurement items were statistically significant ($p < .01$) indicating convergent validity, and the average variance extracted (AVE) met the threshold of 0.5 for all six constructs (Fornell & Larcker, 1981). All AVEs were larger than the squared correlation (R^2) for each pair of constructs, and composite reliability (CR) exceeded the cutoff level of 0.7 (Hair et al., 2006), showing discriminant validity.

Common method bias (CMB) was checked using Harman’s one-factor test, using confirmatory factor analysis (CFA), and correlation analysis (Bagozzi et al., 1991). The results of CFA showed that the hypothesized model had a much better fit to the data – Chi-square (174) = 315.601, $p = .00$; GFI = 0.87; AGFI = 0.82; CFI = 0.96; RMSEA = 0.066 than did the one-factor model – Chi-square (189) = 1324.356, $p = .00$; GFI = 0.56;

Table 3. Pearson's correlations, means, and standard deviations.

	Mean	S.D.	GEN	AGE	PE	FC	PS	CE	SI	INT
GEN	0.56	0.50	1							
AGE	33.03	9.39	0.02	1						
PE	4.41	0.93	0.04	0.15*	1					
FC	4.39	0.88	0.07	0.13	0.73**	1				
PS	3.88	1.04	-0.04	0.05	0.50**	0.56**	1			
CE	4.35	0.88	0.08	0.11	0.62**	0.70**	0.58**	1		
SI	3.33	1.34	0.02	0.06	0.43**	0.36**	0.33**	0.58**	1	
INT	4.33	0.89	0.05	0.21**	0.64**	0.70**	0.59**	0.76**	0.35**	1

Note: Significance at * $p < .05$, ** $p < .01$ (2-tailed); $N = 183$ (pair-wise); GEN = Gender.

AGFI = 0.46; CFI = 0.65; RMSEA = 0.181. All correlation values were less than 0.8 indicating that CMB was not present in the data analysis (Bagozzi et al., 1991).

As shown in Table 3, the relationships of intention to use mobile payment apps were positively related to the determinants, including performance expectancy, facilitating influence, perceived security, cost efficiency, and social influence. Among the demographic variables, age was significantly related to performance expectancy and intention to use.

PE = Performance expectancy; FC = Facilitating influence; PS = Perceived Security;

CE = Cost efficiency; SI = Social influence; INT = Intention to use.

Hypotheses testing

Hierarchical multiple regression (HMR) was used to assess the predictive power of the four independent variables in explaining guests' intention to use WeChat Pay or Alipay in the New Zealand hotels, and the moderating role of social influence in the links between the determinants and intention to use. HMR also allowed the authors to control the two demographic variables, age, and gender, which have previously been reported to have an influence on technology adoption (e.g., Hong et al., 2021; Ozturk & Hancer, 2015).

Table 4 shows the results of the multiple regressions. Gender and age were entered (controlled) at step one, explaining 5% of the variance in guests' intention to use WeChat Pay or Alipay. Regarding the demographic variables (age and gender), age was found to be significantly related to Chinese guests' intention to use ($\beta = 0.21$).

After entry of the four independent variables at step two, the total variance explained by the model as a whole was 70%, $\Delta F(5, 172) = 7.49$, $p < .01$. The four independent variables explained an additional 65% of the variance in guests' intention to use WeChat Pay or Alipay ($\Delta R^2 = 0.65$). Performance expectancy, facilitating condition, perceived security and cost efficiency all showed a statistically significant influence on intention to use, with cost

Table 4. Hierarchical multiple regression.

Step	Dependent Variable: INT		
	1	2	3
Beta			
<i>Control variables</i>			
GEN	0.05	0.01	-0.01
AGE	0.21**	0.10*	0.09*
<i>Independent variables</i>		0.13*	0.30**
PE			
FC		0.21**	0.24**
PS		0.18**	0.15**
CE		0.41**	0.32**
SI - Moderator		0.03	0.13
<i>Interaction variables</i>			0.44**
PE x SI			
FC x SI			-0.13
PS x SI			-0.07
CE x SI			-0.23**
R²	0.05	0.70	0.73
Δ R²		0.65**	0.03**
Δ F		7.49**	4.56**
df		5, 172	4, 168

Note: * $p < .05$. ** $p < .01$, ΔR^2 = R-squared change, ΔF = F change; PE = Performance expectancy; SI=Social influence; FC = Facilitating condition; PS = Perceived Security; CE = Cost efficiency; INT = Intention to use.

efficiency showing the highest beta value ($\beta = 0.41, p < .01$), followed by facilitating condition ($\beta = 0.21, p < .01$) and perceived security ($\beta = 0.18, p < .01$), respectively.

To test the moderation effects of social influence on the independent variables, four interaction variables (i.e., SI x PE, SI x FC, SI x PS, and SI x CE) were created and entered at step three, explaining 73% of the variance in guests' intention to use WeChat Pay or Alipay in hotels with a value of $\Delta F(4,168) = 4.56, p < .01$. The final model indicated that social influence positively moderated the relationship between performance expectancy and intention to use ($\beta = 0.44, p < .01$). The relationship between cost efficiency and intention to use was negatively moderated by social influence ($\beta = -0.23, p < .01$).

Discussions

Theoretical implications

As the first study to address Chinese outbound travelers' intention to use familiar mobile payment technologies in overseas hotels, this study has made several notable contributions. Overall, this study has addressed an important lacuna in technology adoption research in terms of consumers' intention to re-adopt a familiar technology in a unique consumption environment (i.e., overseas traveling).

This study uncovered the ways that a change of environment influenced Chinese consumers' intentions to use WeChat Pay and Alipay. Given the unique context, the authors discovered that the determinants of the UTAUT2 model, i.e., "performance expectancy," "facilitating conditions," "perceived security," and 'cost efficiency,' significantly influenced Chinese travelers' intention to use mobile payment apps when staying at a hotel in New Zealand, and that *cost efficiency* was the strongest predictor. Using WeChat Pay and Alipay in an overseas trip can benefit travelers by saving extra charges, as well as time and cognitive effort, when making payments (Ma et al., 2018). In the context of this study, *cost efficiency*, refers to the Chinese travelers' perception of whether a payment method was good value for money (saving currency exchange rates and credit card surcharges), as well as saving cognitive effort and time. Thus, future research on payment technology adoption could consider contextual influencers, such as extra charges and differentiate between different research contexts (e.g., inbound and outbound travel). These findings are similar to previous studies that have suggested that a tourist's perception of monetary value, significantly influences their satisfaction with restaurant and hotel experiences (Kansal et al., 2015; Nam & Lee, 2011).

Facilitating condition, as an environmental factor, was also a significant determinant of the intention to use mobile payment apps. This finding is similar to the findings of previous studies that emphasized the critical role that service providers play in helping customers feel supported in the completion of tasks through the use of new technologies (Cimbaljević et al., 2021; Morosan & DeFranco, 2016). *Perceived security* was also a significant determinant, although less so than for previous studies. This finding could suggest that because Chinese travelers are familiar with mobile payment apps, they are less concerned with security issues. Although *performance expectancy* was a significant predictor of adoption intention, other factors, such as cost efficiency were more relevant. This finding can be explained given the context of this study. Chinese travelers' perceptions of mobile payment apps have already been tempered by their familiarity with the use and functions of mobile technologies in their daily lives. This is in line with the recent study by Hatamifar et al. (2021) which also cites tourists' increasing familiarity with mobile apps as causing a decrease in the impact of performance factors. Therefore, the performance expectancy of WeChat Pay and Alipay was not the most significant factor in adoption intention for Chinese customers traveling overseas.

Lastly, this study found that *social influence* as a critical boundary condition, moderated the effects of *performance expectancy* and *cost efficiency* on Chinese travelers' intention to use mobile payment apps when staying at a hotel in New Zealand. In comparison with previous studies where direct and indirect effects of social influence on behavioral intention have been

extensively discussed (Feng, 2017; Koenig Lewis et al., 2015), this study has extended the general UTAUT2 model by adopting a different perspective to examine social influence as a boundary condition affecting adoption intention. It should be noted that social influence intensified the impact of performance expectancy but attenuated the impact of cost efficiency on Chinese travelers' intention to use mobile payment apps at hotels in New Zealand. The findings can be explained by the theories of desired social identification (conformity) and social comparison (accuracy) (Chan et al., 2012; Cialdini & Goldstein, 2004). Influenced by others, customers construct a desired social identity, which intensifies the impact of performance expectancy. When constantly comparing themselves with others (cf., a need for accuracy), the impact of cost efficiency is softened (e.g., credit card surcharges) reducing its influence on travelers' intention to use mobile payment apps (Chan et al., 2012; Cialdini & Goldstein, 2004).

Practical implications

The findings provide practical suggestions for international hotels that accommodate Chinese travelers. The provision of mobile payment services at their front counters would better accommodate their Chinese guests, a significant proportion of whom prefer to settle their bills by using mobile payment apps. This suggests that hotel managers could consider setting up WeChat Pay and Alipay services not only at reception desks for checking-in and checking-out service, but also at service counters for other facilities, e.g., hotel spas, gyms, or concierge services. Before adopting mobile payment apps, however, hotels should provide their employees with training on how to make payments through these apps, to ensure problem-free implementation and use. The critical determinants, i.e., cost efficiency, performance expectancy, perceived security, and facilitation condition, could be highlighted. As Chinese travelers have limited access to overseas hotel information, official hotel websites, and travel agency websites can be effective channels for the dissemination of knowledge relating to hotels' services (e.g., mobile payment apps) prior to arrival. In particular, as cost efficiency was discovered to have the strongest impact on intention to use mobile payment apps, information relating to exchange rates and credit card surcharges should be clearly outlined.

Industry practitioners may find the unique moderating roles of social influences useful in their marketing efforts. Hotel marketers could promote mobile payment options both online (e.g., hotel websites, online travel agency websites, and social media sites) and offline (e.g., family, friends, peers, and other travelers) to attract potential customers. In particular, as social influence strengthens the impact of performance expectancy, mass marketing methods

could be desirable to promote the functional advantages of mobile payment apps. However, as social influence weakens the impact of cost efficiency, direct marketing methods (cf., personalized/customized) would be more appropriate for the promotion of cost information associated with mobile payment apps. Overall, to increase and promote favorable word-of-mouth promotion from family members, peers, friends, and other travelers, hotels could offer small incentives for travelers who use WeChat Pay or Alipay, and additional discounts for sharing their mobile payment experiences on their social media accounts.

Limitations and future research

There are a range of limitations given the sample used in this study. The surveys were only completed by international Chinese visitors staying in hotels in New Zealand, and therefore, the data was limited to this sub section of travelers (i.e., international Chinese, who were traveling at the time of the survey, and were customers of the participating hotel brand). The findings of this study, therefore, can only be generalized to the Chinese travelers who stayed in the specific chain hotels in New Zealand. To strengthen the external validity of the findings, future research is warranted to replicate the study in differing hospitality and tourism contexts, such as restaurants or airlines, and in different countries.

COVID-19 has also had an influence on this area of research, as new hygiene and safety measures have been implemented worldwide, especially within the hospitality and tourism industry. Contactless payment, as one of these measures, is being encouraged in service sector encounters more frequently than before, which could be a factor that reinforces customers' intentions to use mobile payments in a wider consumption context. Future studies could incorporate (1) the overall impact of COVID-19 on consumer behavior as a dimension of social influence and (2) the influence of safety and hygiene protocols applied in the service encounter as facilitating conditions, into the investigation of consumers' mobile payment adoption.

Disclosure statement

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Appendix 1. Construct measurements

Construct	Reference
Performance expectancy – PE (1) Using WeChat Pay or Alipay would increase the efficiency of my hotel consumption experience (e.g., faster transaction) (1) Using WeChat Pay or Alipay would allow me to have a better view of my purchasing history in hotels (1) Using WeChat Pay or Alipay would reduce my need to carry cash or credit cards when staying in hotels (1) Overall, I believe that WeChat Pay or Alipay is useful when I am staying in hotels	Venkatesh et al. (2012)
Social influence – SI (1) Family members influence my intention to use WeChat Pay or Alipay in hotels (1) My peers or friends influence my intention to use WeChat Pay or Alipay in hotels (1) Other travelers influence my intention to use WeChat Pay or Alipay in hotels (1) People on social media influence my intention to use WeChat Pay or Alipay in hotels	Venkatesh et al. (2012)
Facilitating condition – FC (1) I have the resources necessary to use WeChat Pay or Alipay (1) I have the knowledge necessary to use WeChat Pay or Alipay (1) I can get help from others when I have difficulties using WeChat Pay or Alipay in hotels	Venkatesh et al. (2012)
Perceived security – PS (1) I feel secure providing personal information when using WeChat Pay or Alipay in hotels (1) I am not worried that information I provide when using WeChat Pay or Alipay could be used by other people (1) Overall, I feel that WeChat Pay or Alipay transmits sensitive information safely	Venkatesh et al. (2012)
Cost efficiency – CE (1) Given that in most cases there is a 2% surcharge on credit card transactions in hotels, I prefer to use WeChat or Alipay to settle my bill (1) I feel that the currency exchange rates are generally better in WeChat Pay or Alipay than with credit cards or cash (1) Overall, I think using WeChat Pay or Alipay to pay in hotels is good value for money	Greenleaf et al. (2016)
Intention to use – INT (1) I intend to use WeChat Pay or Alipay in New Zealand hotels in the future (1) I will always try to use WeChat Pay or Alipay when I am staying in New Zealand hotels (1) I will recommend others to use WeChat Pay or Alipay in hotels if they are traveling in New Zealand (1) WeChat Pay and Alipay are two of my preferred technologies for payment when I am staying in New Zealand hotels	Davis (1989); Venkatesh et al. (2012)