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Understanding mobile payment through the lens of continuity theory

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ABSTRACT

This study investigated whether mobile payment (MP) adopters in China extend their MP usage during their travel abroad, through the lens of continuity theory. The findings from in-depth interviews articulated six major concerns while using MP at home, namely perceived risks, costs, incompatibility, complexity, customer support, and social influence. Three major concerns for not using MP when travelling abroad include perceived security risk, costs, and incompatibility. Discontinuity of usage include past experiences and concerns about using MP in the home country, together with their negative evaluation of the MP service environment of the travel destinations. This study answers why some Chinese tourists abandon MP when they travel. Practical implications are offered to service providers to enhance users' experiences.

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Introduction

Since 2015, there has been a significant shift to mobile payment (MP) from online payment because of consumers' reliance on smartphones or mobile devices to look for information, buy, and pay (Sun et al., 2021). During the COVID-19 pandemic, MP boomed further, as MP is an appealing transaction method to consumers who are worried about the health risks of handling coins and bank notes. In China, the Quick Response Code (QR code) operation for cellphones launched in August 2006, greatly promoted the popularization and application of MP, with Alipay and WeChat wallet taking a dual position as giants in the MP market (Zhang et al., 2012). Apple Pay and Google Pay, both using Near Field Communication (NFC) technology, require users to wave their device near a sensor for payment instead of scanning the QR code. Google Pay is not available in China and Apple Pay is not widely adopted due in part to its hardware requirements. Cashless payments using credit cards from UnionPay, Visa, and MasterCard are also available in China but they have not gained widespread adoption among local companies and users (Palmer, 2019), as compared to MP.

MP facilitate payments by tourists when they travel. Approximately 56% of merchants expressed that after enabling Alipay their sales improved (The Drum, 2019). However, a majority of Chinese travellers prefer to use cash and credit cards instead of MP services. Given the benefits of the MP system, it is crucial to understand why Chinese tourists prefer not to use MP system when they travel. This is important because China is the world's largest outbound travel market. Investigation

of this segment can also help in designing strategies to encourage MP adoption during their travel. If a person has the MP app, they may use it at home but they may or may not use it overseas. Our research aims to determine the continuity or discontinuity of the usage of MP as no studies have investigated whether individuals who continue using MP in their daily lives would continue/discontinue using MP when they travel abroad. Hence, this gap in the literature remains unaddressed.

Moreover, despite the proliferation of MP adoption, little is known about factors influencing the continued use of MP over time or in specific situations/environments. Additionally, the changing nature of a person's habits and lifestyle implies that a person's MP habit can change over time. This fluidity underscores the need for continuous research on MP adoption. Given that an adopter may discard the technology, a gap in our understanding of MP adoption remains. For example, would MP adopters continue or abandon MP when they travel abroad?

This study utilizes the continuity theory as the study framework. By applying the continuity theory, this study attempts to explain whether MP adopters extend the MP usage from home during their travel abroad. Specifically, two research questions were posed:

- (1) Would prior experiences and/or concerns of the MP at home extend to MP usage when one is travelling? Why or why not?
- (2) Are there any conditions of the travel destinations that may impact the continuity/discontinuity of MP?

This research contributes to the existing acceptance and continuance intention literature by offering insights regarding why Chinese MP adopters continue or discontinue the use of MP when they travel abroad. The findings can help MP designers and mobile service providers to facilitate and foster continued MP usage.

Literature review

MP generally refers to payment in which a portable tool is utilized to initiate, authorize and confirm a trade of economic worth in return for services and goods (Wu et al., 2021). MP adds value to both customers and business owners, as the payment method is considered convenient, safe, easy and effective (Xu et al., 2023). Although mobile banking allows payments over the internet, this study focuses on MP by non-financial companies. In other words, the focus is on third-party payment providers.

Tourists' concerns about MP when travelling

Despite the growing popularity of using mobile phones in travel planning, MP adoption amongst tourists is low (Vallespín et al., 2018). Mobile transactions represent only 15% of total online volume in the tourism industry (Dealroom, 2016). A majority of Chinese travellers prefer to use cash and credit cards instead of MP services (McKinsey & Company, 2018). The low volume suggests there are concerns among users about adopting MP services when travelling.

Consumers are more willing to adopt MP when they perceive their transactions are secure when using it (Wu et al., 2021), while a lack of trust is a major barrier to adopting MP in tourism (Gao & Waechter, 2017). Fast transactions and low exchange cost are important considerations for tourists when adopting MP (Becker, 2007). Many tourists are unwilling to purchase products and services priced higher due to the exchange cost when using MP. Therefore, if a new payment method cannot provide significant added value such as fast transactions, lower exchange cost and ease of use, consumers are unlikely to adopt it (Gao & Waechter, 2017).

Knowledge of the destination also affect travellers' usage of MP services. System characteristics (i.e. perceived compatibility; perceived security), and tourism characteristics (i.e. knowledge of MP

at destination and receptiveness to interpersonal influence) are two additional factors that determine customer acceptance of MP in tourism destinations (Peng et al., 2012). Visitors with less knowledge of MP at a destination are less likely to find the MP systems at the destination to be more secure, more useful, and easier to use than tourists with more of such knowledge (Peng et al., 2012).

Major concerns of Chinese tourists include user interface, local information supply, convenience, security, and interactivity (He et al., 2019), trust, facilitating conditions, task fit (Wu et al., 20021), and perceived risks (Yang et al., 2015). Finally, cost efficiency, performance expectancy, perceived security, and facilitating conditions are factors influencing the intention of Chinese travellers to adopt MP when staying at a hotel in New Zealand (Xu et al., 2023). In sum, common concerns between tourists about MP include perceived security risks, speed of transaction, cost, previous usage experiences, and destination MP knowledge.

Continuity of MP adoption: Continuity theory

The continuity theory can be applied to explain the continuity/discontinuity of the adoption of MP from home to abroad. Initially proposed by Atchley (1989) as a psychosocial theory for normal ageing, continuity theory provides a “framework or lens through which to explore the processes that people employ to create a sense of continuity in the face of change” (Cuskelly & O’Brien, 2013, p. 56). Adaptation and continuity involve both internal and external dimensions. Internal dimensions refer to one’s past experience, preferences and belief. External dimensions relate to one’s environment such as social relationships, social norms and environmental conditions (Atchley, 1989).

In order to maintain a state of continuity, the individual will tend to seek a match between their inner psychological belief and past experiences and the present environment. If an individual has concerns about the use of MP in his own city, such as unstable Wi-Fi, he may bring this concern when he travels abroad and may become careful in evaluating the destination’s Wi-Fi network provision before deciding to use MP there. The theory also posits that discontinuity may arise resulting from the loss of meaning and a discrepancy between the former environment and the present environment (Atchley, 1989). For example, if an individual finds that the Wi-Fi network of a destination is less stable than in their own town, they may stop using the MP services in the destination.

In domains such as tourism and sports, Lohmann and Danielsson (2001) used continuity theory to argue that past experiences of German seniors could be applied to predict their travel pattern and behaviour. They found that the travel patterns and tourist activities stayed the same for up to 20 years for a given generation. Cuskelly and O’Brien (2013) found that some young professional sport players who are no longer able to play have shifted to become volunteers in the sport in order to maintain their sense of identity, preferences and interests in a familiar environment.

Research gap

Although Chinese tourists are the topmost spenders in many destinations where they holiday (McKinsey & Company, 2018), there are no academic studies investigating the continuity/discontinuity of MP adoption from home to travel abroad. Hence, we use the interpretivist paradigm to gain further understanding regarding Chinese concerns and to identify whether they continue to use MP outside their natural surroundings. We followed the stance of the subjectivist inductive researchers to explore the participants’ perspectives, guided by continuity theory as the interpretive tool (Varpio et al., 2020). Figure 1 shows the framework.

The study framework proposes that decision to adopt MP at home in China involves personal experiences and concerns towards MP. Whether MP adopters will continue to adopt MP when travelling abroad depend on their prior experiences and concerns about MP usage at home together with the evaluation of service environment of the destination.

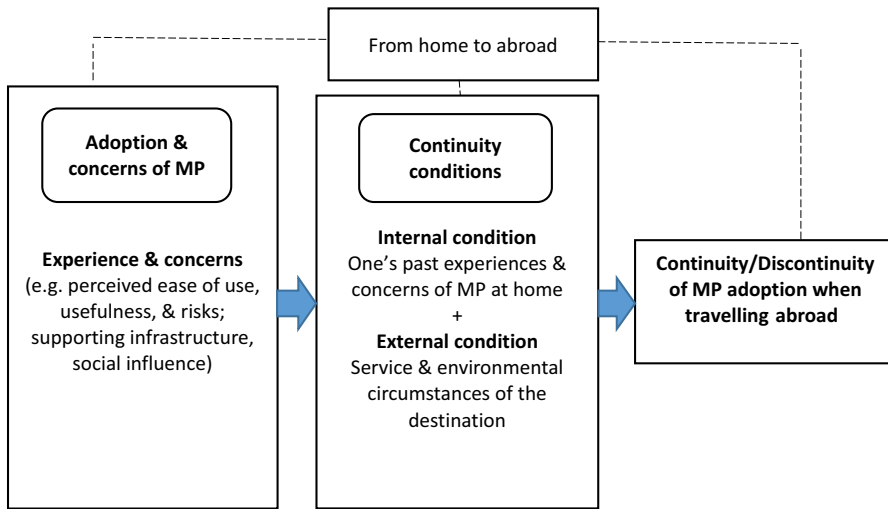


Figure 1. Continuity/Discontinuity of mobile payment from home to abroad.

Methodology

The market for third-party MP in China has grown quickly in the last decade. The two main MP platforms in China are Alipay and WeChat Pay. Together, these two platforms hold 92% of the market share in China (Aveni & Roest, 2017). Established by Alibaba Group in February 2004, Alipay has more than 400 million users who can pay at more than 200,000 stores by June 2015 (Alipay, 2018). On the other hand, WeChat Pay was launched by Tencent in January 2011 as a function of WeChat. WeChat had approximately 900 million users by the first quarter of 2017 (Tencent, 2018). Today, Alipay and WeChat Pay can be used at most stores or streets in China, and in the rural areas.

Choice of method and interview guide

As qualitative research is valuable for gaining in-depth knowledge, face-to-face interviews were conducted to gather deeper insights on Chinese usage of MP at home and during their travel abroad. This approach provides a deeper understanding of human behaviour through their descriptions of their world (Lune & Berg, 2017). Other researchers also adopted this approach to gain information about customers' adoption of MP (e.g. Sun et al., 2021).

The semi-structured dialogues were guided by a list of open-ended questions that were formed based on literature review (e.g. He et al., 2019; Yang et al., 2015). Apart from enhancing the interaction, the flexible open-ended questions allow the interviewer to discuss or probe the issues that may arise during the interview. The interview guide initially drafted in English was later translated into Chinese to cater to the language choice of the participants. Pilot tests were conducted with 11 participants to check whether the questions were appropriate and understandable (Creswell & Poth, 2017). Certain words were changed for clarity based on the comments from the pilot test participants.

The interview guide had three sections. Section One acquired the background data of the participants. Section Two asked about their experiences and concerns when using MP at home. These questions included: "How often do you use mobile payment?"; "How would you describe the mobile payments process?"; and "Why do you adopt mobile payment in your daily life?" Section Three asked about MP usage when they travel outside of mainland China. Examples of questions included: "Did you use MP when you travel abroad?"; "Why

or why not?"; "Do you have any concerns about using MP when you travel abroad? What are they?"

Sampling and data collection

This study utilized the stratified random sampling method, a method of sampling from a population that is grouped into some non-overlapping groups, called strata (Lune & Berg, 2017). With reference to the mobile internet users' age structure, from China Internet Network Information Center (CNNIC) statistics regarding China's mobile internet users (CNNIC, 2014), and the sampling procedures described by Mallat (2007), the sample was divided into five different age groups – namely, teens, college students, young adults, parents and middle-aged persons. Interviewees were selected within each age group by simple random sampling. The size of every group varied from 9 to 14 samples. In total, 56 interviews were conducted with the willing participants. Interviewees fulfilled four criteria: they had experience with MP (were MP adopters); they belonged to one of the five age groups; they were born and raised in mainland China; and they had travelled previously.

The interviews were conducted before the COVID-19 outbreak by one of the co-authors and two student helpers. The co-author coordinated the data collection process; providing training on how to carry out the interviews, how to identify prospective interviewees, and monitoring the data collection process (e.g., requesting the student helpers to report their interview progress from time to time, and checking if they had any problems or issues during the interviews). The interviewers were stationed at parks, schools, college campuses, local community areas, and residential areas to reach the target interviewees. After gaining the prospective interviewees' attention, the interviewers identified themselves, informed the potential interviewees the purpose of the interviews, and verified whether they fulfilled the selection criteria. The interviewer informed the interviewees of their rights, and obtained their consent to participate in the study.

The interviews with the willing participants were carried out in Mandarin, a language used by the interviewees. The interviews were taped with the consent of interviewees. Interviewees were asked to expand on their answers through probing questions including "Why?" and "Can you explain further?"

Each interview lasted between 20 and 60 minutes. A Jingdong online shopping coupon of 50 yuan (US\$7.60) was offered to each participant after the interview as a small token for their time. Of 118 potential interviewees approached, 94 fulfilled all four criteria. Only 56 were willing to participate in an interview. The interviews were considered sufficient because data saturation was reached (Creswell & Poth, 2017). The interviewees represented well the five age groups.

Data analysis

Inductive content analysis method was used, including abstraction, open coding, and creating categories. Open coding was used to write observations and captions in the text while reading it (Lune & Berg, 2017). After the interviews, the recordings were transcribed, and the transcriptions were coded in Chinese. Transcriptions of conversations were read carefully line by line, and the headings and notes were written.

Excel worksheets were used. All headings were collected to a coding sheet and duplicate headings were removed. The intention of this step was not to compute the incidence of the headings' occurrence but to catalogue all of the themes emerging in the interviews. These headings were grouped into several categories freely. After this open coding, the categories were grouped into higher order headings (Lune & Berg, 2017). The higher order headings were categorized according to the interpretation of their subject in the circumstantial context. As categories were created, the researcher determined which headings or codes should be put into the same categories (Lune &

Table 1. Example of coding.

Data	Open coding	Axial coding	Selective coding
I have many bad experiences of using MP in China such as unstable network and limited one hour of using free Wi-Fi. I am very frustrated about these. I will be very cautious about these issues when I use MP when I am travelling. When I travel to other countries, I do not pay by MP because the use of mobile phone payment requires a mobile network, but many shops in Macau and overseas do not provide free network services. Even in resorts, the public network can also be very unstable. Mobile payment is not as convenient as using cash or credit card.	<ul style="list-style-type: none"> ● Unstable network ● Limited time of free Wi-fi ● Need mobile network ● No free network service ● Unstable public network 	Network limitation	Incompatibility

Berg, 2017). Table 1 shows an example of the coding. Subcategories with similar characteristics were gathered into the same main groupings.

The validity of findings was monitored throughout the research process. First, the three researchers independently analysed the data, and the coding findings were compared and cross-checked. The three researchers achieved a high level of intercoder agreement (Lune & Berg, 2017). Second, interviewees were also specifically informed not to develop interpretations when conducting the conversations. Third, the validity of the decisions was also confirmed since no participant made frequent statements dominating the entire dataset (Lune & Berg, 2017). In sum, the results were derived based on conscious analysis.

Results

Of the 56 participants, 53.6% were male. The majority were aged between 19 and 24 (25.0%), had used MP for 3–4 years (37.6%), and had an average monthly consumption of 2001–5000 yuan (US \$305–763) (32.1%) through MP transactions. The transactions were made mostly for transportation (19.8%), online shopping (19.8%) and grocery purchases (15.1%).

Concerns about using MP at home

The six themes related to concerns about using MP that emerged include perceived risks, costs, incompatibility, complexity, customer support, and social influence. Overall, the concerns are similar across the various age groups.

Perceived risks

Perceived risks were the most commonly cited concern among the interviewees. Perceived risks can be categorized into three main aspects: *distrust of merchants*, *concerns about network reliability*, and *concerns about privacy exposure*.

Most interviewees expressed concerns related to the QR code, which led to their distrust of merchants who provide MP services. Participants were concerned because they had previously read articles regarding security, privacy exposure and the lack of standardization in MP market supervision. These participants revealed they still held distrust of MP apps, and use MP only when they conduct transactions involving small amounts so that they would not lose large sums of money. For example:

I cannot 100% trust merchants because there is always news that people have used WeChat to defraud others or spread a virus through QR codes. So, I'm very careful with using mobile payment. If I'm not sure that the trading environment is safe, I will choose cash payment or credit card. (Participant 22, Teens, Female)

Participants indicated that public networks may present safety risks because of the relatively simple verification process. Some interviewees were worried about privacy-related risks, such as data breaches, with their private data being sold by third parties for commercial purposes. A majority of these participants also reported being annoyed with the various spam advertisements sent to them after using the app. They fear that hackers may access their personal information or steal money from their accounts after unlocking their mobile phones. For example, “*Alipay and WeChat have payment passwords for every transaction, [but] I’m still afraid that those passwords could be cracked*” (Participant 46, Parent, Male). Another commented:

I do not trust the public network. I’m worried about the security risks. If I run out of my data package, I will choose either cash or debit card as the payment method. (Participant 50, Middle-aged, Male)

Costs

Cost is another theme that emerged. Both Alipay and WeChat wallet charge a withdrawal fee and set limits on the amount for the transactions that affects users’ overall experience with MP. One participant revealed:

In the past, Alipay and WeChat did not have a deposit withdrawal fee. Now, if you need to withdraw a large amount of cash from Alipay or WeChat, you still need to pay a considerable withdrawal fee. So, lately, I do not transfer much money in m-payment APPs. I just transfer enough to cover daily life expenditures. (Participant 55, Middle-aged, Female)

Moreover, some purchases had to be paid using a specific MP provider because of the arrangement between the provider and the apps. For example, “Elema” (an app providing an online meal-ordering service) cooperates exclusively with WeChat wallet. So, Alipay users who order food delivery using “Elema” will need to register a WeChat account, rebind their personal bank cards and reinput their personal information for registration. The participants considered these actions as time-consuming and a further risk of privacy exposure. One interviewee said,

Now, the most popular m-payments are Alipay and WeChat, but some websites cooperate with only one of them. For example, Jingdong Online Shopping Mall can only accept WeChat as m-payment method. If you have Alipay, that doesn’t work. You must re-register a WeChat account, bind your bank card again, enter the mobile number for verification and input your personal identifiable information. It is not only a time-consuming procedure but also creates a burden on managing so many accounts and passwords. (Participant 1, Teen, Female)

Incompatibility

Two issues related to incompatibility that emerged from the interviews include unavailability of the mobile network and restriction, and unstable network signal. Many interviewees indicated that MP “*is not available for paying metro pass card recharge or the metro tickets*” (Participant 22, College student, Female), and “*the vending machines in some metro stations or other places do not support MP*” (Participant 38, Middle-aged, Female). They cannot use MP in some outlying places or on some occasions when the data network signal is unavailable or weak. Although mobile payments services are provided in some dining areas, supermarkets and retail stores, the mobile network is sometimes unavailable or unstable, which makes MP impossible. Moreover, mobile network operators provided different data services, such as 3G or 4G cellular mobile networks. One participant revealed,

Using MP outside certainly cannot be separated from support of the mobile network. I have two mobile phones, one using the telecommunication mobile network and the other using the Unicom mobile network. Unicom’s network signal is not as good as telecommunication’s. In some places such as underground malls, where mobile network signals are limited, it is not convenient to use MP. (Participant 42, Parent, Male)

Complexity

The participants revealed the burdensome management of separate accounts, and complex page setup. It is also troublesome to remember all the accounts and passwords. Moreover, each MP account requires inputting users' personal information, mobile phone number or email, and financial information of at least one personal bank card. These procedures place a heavy burden on the usual management and usage of MP. One participant commented:

Alipay provides comprehensive services and various functions but its page setup is complex. In addition, some functions in Alipay are difficult to understand because they have similar names such as "Yue" and "Yuebao" and "Huabei" and "Jiebei." This problem caused some confusion for users with these functions and services in the initial usage. (Participant 22, College student, Female)

Customer support

Some interviewees shared their experience about transaction errors and system failure when using Alipay and WeChat wallet, such as making manual mistakes in transaction amounts, or sending money to the incorrect recipients while using MP. When such problems happened, the participants were either uncertain about how to deal with them, or were not given timely and thoughtful customer service. One participant recounted:

I personally experienced transaction errors. I made a mistake on the transaction amount, but then I contacted the customer service support. They helped me recover the money quickly. However, in my experience, the WeChat Pay customer service staff would not provide such a quick response. (Participant 39, Parent, Male)

Social influence

Several participants felt that they were forced psychologically by the debts of gratitude to maintain *Guanxi* by sending "red envelopes" (a function in WeChat wallet) through MP to generate personal relationships with others during the Chinese Spring Festivals. For example:

When Yuebao [a financial product initiated by Alipay] first appeared in the market, it became a hot topic in my circle of friends. My friends were talking about how much interest they can earn from Yuebao at parties. To have a common topic for conversations with my friends, I began to use Alipay and explore the functions it provides. (Participant 46, Parent, Male)

Concerns about MP when travelling abroad

Most participants had used MP in their overseas consumption. Reasons that they gave included convenience, not needing to exchange foreign currency, and habitual consumption patterns. The concerns of interviewees who abandon MP during overseas travel fell into three categories: perceived security risk, costs, and incompatibility. These concerns were associated with their past experiences and concerns about using MP in their home country, together with the service conditions of the destinations, although the context may be slightly different (see [Table 2](#)).

Perceived security risks

A majority of participants could not trust merchants to protect their personal information – a similar concern with using MP at home. They often projected their unfavourable MP experiences at home to MP usage when travelling abroad. One participant said:

While in China I am afraid of using MP because I often receive unknown sales calls after using MP in particular shops. My personal information must have been released. Because of that, I am not willing to use it when I am traveling abroad. Also, because the security environment is unknown in foreign countries, if personal information is leaked or stolen while traveling abroad, the compensation process could also be very troublesome. (Participant 1, Teens, Female)

Table 2. Summary of the reasons for the discontinuity of mobile payment when travelling.

Concerns	Using MP in Mainland China	Using MP when travelling outside Mainland China (Concerns of using MP in China + Service & environmental conditions of the destination)	Unique environmental conditions when using MP abroad
Perceived risks	<ul style="list-style-type: none"> • Distrust in merchants who provide MP services • Network reliability 	<ul style="list-style-type: none"> • Privacy exposure (a concern when using MP in China + unfamiliar with the security environment in the destination) 	
Costs	<ul style="list-style-type: none"> • Privacy exposure • Withdrawal fee • Other unknown costs under the monopoly of MP Apps 	<ul style="list-style-type: none"> • Unknown fees charged by MP when using it in China + worry about more unknown fees are charged (i.e., exchanging money) when travelling abroad • Amount limit (US\$771) when using MP abroad 	
Incompatibility	<ul style="list-style-type: none"> • Restriction and unavailability of mobile network • Unreliable network 	<ul style="list-style-type: none"> • Unavailability of mobile network when using MP in some places in China + more worries about the unavailability of mobile network abroad, and slow payment speed 	<ul style="list-style-type: none"> • Lack of infrastructure facilities (i.e., phone charger, MP is not commonly used in shops)
Complexity	<ul style="list-style-type: none"> • Burdensome management of separate accounts • Complex setup and overlapping functions 		
Customer support	<ul style="list-style-type: none"> • Unfavourable customer service support 		
Social influence	<ul style="list-style-type: none"> • Need to maintain "Guanxi" 		

Costs

While the cost concerns at home involved the withdrawal fee and unknown additional fees charged by specific MP provider, the cost concerns about using MP abroad were related to the currency exchange rate. Again, their concerns were linked to their cost experiences when using MP at home. A participant said:

When I am using Alipay in China, there are a lot of extra costs charged to me, and many of the charges are unknown to me. I assume this also applies to other countries and the extra charges could be even greater such as the foreign exchange rate conversion costs. Also, there is a limit of 5000 yuan [US\$771] when using my mobile payment Apps abroad. So, when I travel to Hong Kong or Macau, credit card is my first choice. (Participant 40, Parent, Female)

Another participant revealed:

I didn't use mobile payment when I travelled in Hong Kong or Macau, because paying bills by mobile payment is not settled by real-time exchange rates, and banks offer more favorable exchange rates. So, I prefer paying by bank card, and almost all shops in Hong Kong or Macau support UnionPay card for settlement. (Participant 33, Young adult, Male)

Incompatibility

Incompatibility can be categorized into three aspects: unavailability of MP, network limitation, and lack of supporting infrastructure. The first two concerns are connected with the user's past experiences of using MP at home together with the experience at the tourism destination. The last concern is related to the unique MP service conditions of the tourism destination as Alipay or WeChat wallets is not widely adopted overseas. One participant noted:

WeChat and Alipay are not widely adopted in the shops. Octopus card and Macau Pass are much more convenient to pay in some small shops in Hong Kong and Macau. I brought along with me a lot of cash and credit card when I visited these two places. (Participant 29, Parent, Female)

Network limitation is another concern. Interviewees had experienced unstable Wi-Fi services and the 1-hour free access limitation at home, and similar problems in the tourism destinations abroad. Additionally, they will not purchase local mobile network packages or data services, especially for short-term tourism.

Usually, I travelled to Hongkong or Macau just for one or two days, so there is no need to buy the local mobile network package. Bank card or cash is more convenient for me. (Participant 50, Middle-aged, Male)

When I travel in Macau, I do not pay by mobile payment because the use of mobile phone payment requires a mobile network . . . many shops in Macau do not provide free network services. Even in resorts, the public network is also very unstable. Mobile payment is not as convenient as using cash or credit card. (Participant 35, Young adult, Female)

Several participants perceived that the MP speed is slow due to network limitations. The payment process is extended because MP apps automatically detect the change in payment location, hence they require multiple verification procedures before the payment can be successful. The unique service condition of tourism destinations also hinders the usage of MP during tourists' travel abroad. This limitation includes the unavailability of supporting infrastructure at the tourism destinations, such as rechargeable stations in the shopping malls or free mobile power pack services provided for the customers' convenience. Comments include:

My smart phone consume power very quickly. In China, it is relatively easy to find mobile phone charging services, although there are still difficulties in finding these services. However, in Macau, you seldom see mobile power packs or mobile phone charging services provided by merchants. (Participant 42, Parent, Female)

Discussion

The purpose of this study was to determine whether Chinese MP adopters have any concerns when they are using MP in their home city, whether they would extend the MP adoption when they travel abroad, and whether the concerns experienced at home extend to concerns when they travel abroad. The findings show the utility of the continuity theory (Atchley, 1989) to explain a majority of the findings. Discontinuity of MP usage from home to abroad is mainly attributed to their prior MP usage experiences at home combined with their negative evaluation of the conditions of the travel destination. Overall, the study revealed concerns and experiences at home to influence discontinuity of using MP when travelling.

A majority of the prospective participants approached had used MP services. This suggests the high penetration of MP adoption. The participants expressed several concerns over the MP usage including perceived risks, costs, incompatibility, complexity, customer support, and social influence. Prior studies have noted these concerns as a deterrent to the adoption of MP (He et al., 2019; Lin et al., 2020). Although Alipay and WeChat have gradually improved their functions and services in recent years, issues related to complexity and perceived security risks were similar to those reported by Mallat (2007). Perceived ease of use also affected the adoption of MP (Gao & Waechter, 2017).

The findings for the second research questions are new and interesting. Approximately 33% of participants abandon MP when they travelled abroad. They preferred to use foreign currency (cash) and credit cards. Indeed, despite the risks of carrying much cash, participants drew from their prior experiences and concerns about MP usage at home, and evaluation of the MP service conditions of the travel destinations, and decided to avoid using MP.

The findings revealed some similarities between the concerns experienced at home and the concerns during their travel. For example, their perception of security risks and extra costs for using MP during their trip is linked to their prior concerns/experiences with untrustworthy merchants, information leakage, high withdrawal fees and other extra costs levied to them when using MP at home. These security and transaction risks are similar to concerns which are reported as barriers to adoption to MP elsewhere (e.g. Lu et al., 2011; Mallat, 2007). These concerns are further exacerbated by the uncertainties presented by an unfamiliar foreign environment, including the daily fluctuating exchange rate between RMB and overseas currencies, lack of information on data protection practices, and business ethics of the merchants overseas.

The notable factor that prevented participants from using MP is the incompatibility issue. While many retail or service outlets have not installed MP systems, the concerns associated with network access were a major hindrance of their continued use of MP. The issues include the lack of mobile network, lack of free network services by the outlets, unstable public network services, limited time for free Wi-Fi access (if available), and slow process to complete a MP. The availability of physical supporting infrastructure having great impact on the adoption of MP was reported previously (Mothobi & Grzybowski, 2017).

The unique factor of the destination preventing the use of MP includes the lack of supporting infrastructure and unique service condition of the tourism destination. The findings confirm that some Chinese consumers still prefer to carry cash when they travel. They are sensitive to the risks in MP. Moreover, their preferred MP methods are not widely adopted by merchants abroad. This finding suggests that MP providers can take further steps to collaborate with merchants at various travel destinations. Such effort may lead to more continuity of MP use. It is also vital for MP providers to enhance MP adopters' trust through education to reduce the perceived risks in using MP in a foreign environment.

Overall, the findings suggest that addressing concerns experienced while using MP at home may enhance adopters' confidence to extend MP usage when they travel abroad. The findings help to pave the way for further research on continuity of adoption of MP.

Conclusion and implications

This study provides some answers regarding why some Chinese tourists discontinue their usage of MP when they travel. The discontinuity of MP usage abroad is due to the unfavourable prior MP usage experiences in China, together with their negative evaluation of the MP service conditions of the travel destination in comparison to China. Although the major concerns about using MP abroad are similar to those when using the MP system at home, the findings reveal that the contexts of these concerns are different when MP is used in foreign countries. For instance, foreign exchange (cost), availability of networks and range of merchants adopting MP (compatibility) need to be considered. This study contributes to the existing body of knowledge on continuance intentions of using new technology.

The findings also contribute to the continuity theory itself. Specifically, continuity theory can be applied beyond/outside the lifespan context (Cuskelly & O'Brien, 2013). The findings further suggest that individuals refer to their prior MP usage experience at home together with the service environmental conditions at a destination to decide whether they want to continue using MP in the destinations.

As China's society goes cashless, there are several practical implications based on the findings. First, it is critical for MP service providers to improve customer satisfaction with the MP service experience. Issues of perceived risks, costs, and compatibility must be addressed, as these concerns are also relevant when using MP while abroad. To minimize perceived risks, companies must comply with stringent standards reflecting good practice for their MP systems. To reduce the perceived high costs, MP companies can consider charging a lower withdrawal fee or even removing it altogether to encourage their customers to adopt MP.

Second, MP operators should eliminate customers' worries relating to MP usage in overseas countries, publicize the safety of overseas payment to customers by presenting safety tools and features, and provide timely and effective post-transaction customer service. MP operators can also offer various promotions and discounts to both overseas merchants and customers, to expand the adoption range of merchants, and to attract more customers.

Third, MP service providers' efforts to extend availability of the services through integration of cross-border digital payments (such as Alipay⁺) would enable tourists to transact or pay conveniently, and manage expenses using their preferred home e-wallet. MP service provider can also sign agreements with hotels, travel-related service providers, and retail industry in various destinations to provide convenient mobile shopping to their customers globally. While cross-border payment involves many obstacles, these problems could be resolved. With more MP apps partnering with Alipay+, cross-border payment has become easier (Marques, 2023). For example, AlipayHK provides Hong Kong users with diversified mobile payment services, offers and value-added services, making life easier and convenient for users (Alipay Hong Kong, 2023).

To facilitate usage overseas, MP operators should also consider offering charging stations and convenient power source rentals in places where most overseas tourists gather. Lastly, MP operators could make the payment experience seamless even though it is in a different physical environment (e.g. Malaysia, Singapore, and Thailand) (Cordon, 2023; Kaur, 2023; Raguraman, 2023) by establishing offices in tourist destinations to develop collaborations with merchants, and to help answer tourists' concerns promptly. A MP system that assures customers of its stringent safety standards at home and abroad can help users to trust the system. In this way, Chinese MP users would have more confidence about using the MP system abroad.

Some limitations of this study need to be considered. First, although the underlying concerns of Chinese MP adopters were reported, the study does not statistically examine the expansion of the concepts discovered. Future studies could gather quantitative data from a representative sample to determine the degree of importance of each construct. Second, the technology and application environments for MP are changing. During the COVID pandemic, people were concerned about handling contaminated cash and they could not leave their home. So they had to use MP. As people's MP use habits may be changing, future studies should collect longitudinal data to track changes in habit over time (if any), since consumers' perceptions can change during and after the adoption of a new technology. Lastly, customers' perceived risks, threats, and concerns may be affected by contextual factors. Further research could study the effect of these contextual factors on MP adoption using a mixed-methods approach for further insights.

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