



Dynamics between the trust transfer process and intention to use mobile payment services: A cross-environment perspective

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ABSTRACT

Many Internet-based services have already been ported to the mobile-based environment, embracing the new services is therefore critical to deriving revenue for services providers. Based on a valence framework and trust transfer theory, we developed a trust-based customer decision-making model of the non-independent, third-party mobile payment services context. We empirically investigated whether a customer's established trust in Internet payment services is likely to influence his or her initial trust in mobile payment services. We also examined how these trust beliefs might interact with both positive and negative valence factors and affect a customer's adoption of mobile payment services. Our SEM analysis indicated that trust indeed had a substantial impact on the cross-environment relationship and, further, that trust in combination with the positive and negative valence determinants directly and indirectly influenced behavioral intention. In addition, the magnitudes of these effects on workers and students were significantly different from each other.

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1. Introduction

"Around the world, there is no other market like the market in China that highlights a convergence trend of Internet and mobility."

- YuanKe Deng, Vice president of Nokia Global

After becoming a leading Internet search engine, Google launched mobile search services in 2000; after its success in the Internet mail market, Yahoo launched its mobile mail services in 2005. In China, after becoming a popular instant messenger provider, Tencent launched its mobile instant messenger services in 2002 (see Table 1).

In recent years, the development of China's third-party electronic payment market has also experienced a shift toward diversification. More and more Internet payment providers provide a wide range of services to satisfy users' various needs by extending their services to the mobile environment. Undoubtedly, by providing these services, companies are trying to take advantage of this new market by leveraging their relationship with current users. The underlying assumption made by these

providers was that their users' experiences with Internet payments would positively influence their perception of the companies' extension to mobile payment services. This poses an interesting question: *What are the determinants of the acceptance of mobile payment services and how do prior Internet payment experiences influence users' perceptions of their mobile payment services counterparts?*

Literature on modern IS mostly looks at the determinants of the mobile-based environment and has not addressed their effect on customers. According to trust transfer theory, customer trust accumulated over time in Internet payment services may influence customer trust in mobile-based payment services. Mobile channels are prone to information eavesdropping and are more uncertain than traditional offline and online channels. Surveys have shown that customers' initial lack of trust in mobile payment services is a barrier in the development of the mobile payment industry because 73.5% of all customers worry about security and transaction risks when using mobile payment services. Therefore, building customer trust is critical for helping mobile payment services to become more accepted and used and thus makes the business more successful. In China, mobile payment services are still in an early implementation stage. Thus experience with or knowledge-based trust that usually develops via frequent interaction may not exist because potential adopters have no prior experience. Would the well-established trust that a customer has in current Internet payments influence or transfer to trust in mobile payments? How does this history interact with other determinants and affect the customer's acceptance of mobile

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Table 1
Examples of mobile applications launched from Internet applications.

Corporation	Internet application	Mobile application
Google	Google.com (search engine)	M.Google.com (search engine)
Yahoo	yahoo.com (mail)	wap.yahoo.com (mail)
Tencent	QQ (instant messenger)	Mobile QQ (instant messenger)
AliPay	alipay.com (payments)	wap.alipay.com (payments)

payment services? There is clearly a need to study the adoption of mobile payment service from this standpoint.

2. Mobile payment services in China

Mobile payment services are one of the most critical applications needed for successful mobile e-commerce. Mobile payments involve billing and paying for goods and services using a mobile device [2]. Mobile payments can be achieved in two ways. One provides mobile payments as a seamless part of the system, while the other involves a variety of payment methods, including payment: in stationary e-commerce settings, at vending machines, at manned POS terminals, and money transfer between consumers. The subject of this study is the first type third-party mobile payment services. Such services free customers from the spatial and temporal constraints of a traditional payment channel, while simplifying the complex and time-consuming issues inherent in traditional payments.

2.1. Key characteristics for developing mobile payment in China

Two factors are similar between China and Japan today. First, both countries have large populations of mobile phone and mobile Internet service users. As of, the total number of mobile Internet service subscribers was 105.83 million in Japan as of December 2008. Japan has been leading with mobile Internet services since 1999, when “i-mode” service was introduced by NTT DoCoMo [15]. This has become the world’s most popular mobile Internet service, and it offers a broad range of business functions including financial transactions, ticket reservations, weather forecasts, banking, shopping, etc. Similarly, by June 2009, the number of mobile Internet users in China exceeded 155 million, accounting for 22.6% of the 687 million cell-phone subscribers. China Mobile, China’s leading mobile operator, launched its mobile market (MM) services in August 2009. This was a platform that integrated members in the mobile e-commerce value chain. It provided broad mobile-based applications and digital content in various types of mobile operating systems and terminals. In September 2010, the number of end users of MM reached 20 million. This customer group provides a substantial base target market and clearly presents an opportunity for market growth, which will contribute to the success of mobile payment service options.

Second, both China and Japan have cash-centric payment cultures and therefore they are not like the USA and France, whose populations make heavy use of checking and credit cards as their payment methods. Substantial evidence from the marketplace indicates that payment habit does not change when a customer moves from traditional to e-commerce and mobile e-commerce settings.

Because these two factors have been key in the success of mobile payment services in Japan, it may be expected that they will also affect the acceptance of mobile payment services in China.

Also, unlike developed countries that have mature land line Internet infrastructures, China has a relatively strong mobile telecommunication infrastructure. For this reason, we expected that resources to develop the infrastructure would go into new technologies that would further encourage the development of mobile payment services. The national policy of China has also

supported the development of most businesses. In 2007, mobile e-commerce was included in the core guiding projects of the “E-commerce Eleventh Five-Year Plan” at the national level, indicating that the development of mobile e-commerce is important to national policy makers, especially in the following five years. In addition, on January 7, 2009, the Ministry of Industry and Information Technology (MIIT) issued three third-generation (3G) licenses to China Mobile, China Unicom, and China Telecom, indicating that mobile payment service applications would be factors in the growth and development of mobile e-commerce.

However, establishing a large user base dedicated to cash payments, even with a favorable policy environment is not easy, therefore the current market share of mobile payment service applications is still relatively small in China. There were 75.7 million Internet payment users in China as of June 2009, representing 22.4% of the 338 million Chinese Internet users. The number of mobile payment service subscribers reached only 19.2 million by June 2009, accounting for 12.4% of the 155 million Chinese mobile Internet users. In addition, the bulk of the revenue from this market share came from customers paying for mobile phone services and products (such as ring tones, music, logos, mobile instant messaging, and games) with only a small percentage coming from payment for other services and products.

Indeed, just as mobile phones gradually replaced the dominating position of the fixed-line telephones, mobile e-commerce was starting to be the new wave in e-commerce in China. As one of the most critical mobile e-commerce applications, mobile-based payment services bring additional benefits and values to customers and will probably evolve into services common in our daily life [19]. However, the current situation indicates that mobile payment services are likely to experience resistance.

2.2. Key characteristics of third-party mobile payment in China

Unlike Internet payment services, the success of mobile payment services depends on effective collaboration between financial institutions and mobile network operators (MNO). China utilizes three principle mobile payment models: (1) mobile network operator centric; (2) financial institution centric; and (3) third-party operator centric, which uses an intermediary who provides mobile payment services by integrating the functions of the MNOs’ communications network with the financial institutions’ payment accounts.

China’s third-party mobile payment market has two unique characteristics that are likely to help it become the most successful of the three models. First, China’s mainstream banking institutions and MNOs are monopolies, giving them strong bargaining power in the payment market: they tend to overemphasize their leading status in the payment industry. Thus, unlike the successful MNO centric model in Japan and the MNO-centric or financial institution-centric models in Korea, China’s MNOs and financial institutions lack an effective cooperative mechanism and do not naturally form “powerful alliances.” In addition, both mobile network operator-centric and financial institution-centric models restrict payment services to their own customers and offer limited payment scenarios. For instance, MNOs usually concentrate on micro-payments, such as phone bills or mobile wallets and financial institutions typically focus on macro-payments. In contrast, the third-party operator-centric model provides both micro- and macro-payments and also offers broader payment services by supporting a wide range of mobile networks and bank accounts.

As a whole, the current credit system in China is imperfect. Users have more confidence in financial institutions than MNOs when choosing mobile payment services. Unfortunately, China’s mobile payment services market is primarily of micro-payments. Financial institutions are unwilling to move to such a system

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