An analytical framework for an m-payment ecosystem: A merchants' perspective

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ABSTRACT

In comparison to the rapid adoption and growth of mobile technologies worldwide, mobile payment services are being adopted at a slower pace than anticipated. One of the interesting characteristics of the Chinese market, for both academicians and practitioners, is that, although m-payment evolved from the convergence of payment and tele-communication industries (traditionally dominated by state-owned enterprises in China), it was private, third party payment companies that developed m-payment platforms, which gained a competitive edge over state-owned enterprises. While standardization, regulation and policy play an important role in stimulating the Chinese m-payment market, these factors alone are not sufficient to establish a sustainable two-sided market and generate a critical mass of merchants and end-users. Although merchants play a crucial role in the m-payment ecosystem, there is a lack of insight into merchant behavior, and their interaction with other actors in the m-payment ecosystem. In this study, we propose a framework for the analyses of the m-payment ecosystem. Starting from a set of propositions, we conducted in-depth interviews to analyze the multifaceted nature of the Chinese m-payment market. We identified the connection between the adoption process and the business ecosystem configurations. The proposed framework can be used as a basis for future studies of complex business ecosystems.

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1. Introduction

The development of mobile payment (m-payment) varies from country to country in terms of maturity and penetration. In most developed Western markets, adoption rates are marginal. A few applications are being used extensively (e.g., remittance, ticketing and vending) in some developing regions/countries (e.g. Philippines and Kenya) or Eastern economies (e.g. Japan and South Korea). The low adoption rates in western economies can be traced back to several factors, including the availability of many payment alternatives, the dominance of conservative banks, due to regulation regarding bank licenses, a lack of innovative capabilities and strategic behavior, especially from MNOs, in m-payment consortia (De Reuver, Verschuur, Nikayin, Cerpa, & Bouwman, 2015), and a lack of interoperable m-payment platforms, which increases costs and efforts regarding adoption for both merchants and consumers. Although m-payment has been pushed by service providers, including third party payment (TPP) providers, mobile network operators (MNOs), financial institutions and over-the-top

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(OTT) providers, it is a complex system that requires the involvement of at least two sides (merchants and end-users) to create a viable platform. Based on the lessons from other countries, the question arises what factors play a role in creating a viable m-payment platform in the increasingly converged and liberalized Chinese payment market, which is a result of recent rapid changes related to mobile technology, market conditions and regulations (Xia, 2011).

China has the world's largest mobile subscriber base: the number of mobile subscribers in China reached 1198 million as of August 2013 (MobiThinking, 2013). 3G is also developing robustly in China and the number of 3G users reached over 300 million (Millward, 2013). At the same time 4G has already been rolled out and will further boost the growth of mobile internet usage. In light of these and other recent developments, e.g. the large number of mobile subscribers and mobile internet users and a total of 3.694 billion issued bankcards (The People's Bank of China, 2013), it is evident that there is a huge market and growth potential in China. Although all the potential key actors in an m-payment ecosystem have strong market positions in their respective industries in China including MNOs (i.e. China Mobile, ranked No.1 in the world), handset manufacturers (such as HuaWei), financial institutions/banks (China Unionpay, the second-largest payment network in terms of transactions processed (Wu, 2012)), TPP providers (such as Alipay, subsidiary of Alibaba, one of the world's biggest Internet retail network), etc., a nationwide m-payment scheme has not yet been implemented. However, several m-payment platforms managed to acquire a large customer base in different regions of China, while the overall value of the m-payment market is increasing (iResearch, 2015). As an important prerequisite of the rollout process, regulatory authorities and key players are currently in the process of finalizing standards and regulations for the future rollouts of m-payment.

Although the current situation in China is favorable to the development of m-payment, several challenges, still remain, most importantly in relation to the multi-side market characteristic of m-payment platforms (Campbell-Kelly, Garcia-Swartz, Lam, & Yang, 2014). The 'start-up' problem of multi-sided platforms often must contend with the familiar chicken-and-egg problem, which states that one side of a platform receives value only if it is also true for the participants on the other side of the platform (Gawer, 2009, pp. 99). M-payment platforms are crucial to the interactions between merchants and end-users. M-payment platforms have long faced the chicken-and-egg adoption problem involving these two groups (Leinonen, 2009). Merchants are hesitant to invest in m-payment solutions without assurance of consumer adoption, while consumers will not adopt without being sure that merchant will make the necessary investment.

Although there is extensive research into the adoption of m-payments by consumers (Dahlberg, Mallat, Ondrus, & Zmijewska, 2008), the same cannot be said about the merchants involved, especially with regard to on their position in the m-payment ecosystem. The few existing studies focus on explaining the adoption behavior of merchants, based on, among other things, merchants attitudes and behavioral intention, assessment of consumer behavior, technology related issues and organizational conditions, without paying specific attention to their position in the m-payment business ecosystem. In this study, we focus on the dynamics of the relationship between merchants and end-users from a holistic perspective. The focus of this article takes into consideration multiple other actors in the m-payment ecosystem, since all the participants have to build the platform collectively to provide m-payment solutions to merchants and end-users. As such, the aim of this paper is to study: (i) which factors influence merchants as crucial actors within the m-payment ecosystem to adopt m-payment platforms; (ii) how those factors are interrelated; and (iii) how the decision process of merchants leading to the adoption or rejection of m-payment evolves. Building on insights from business ecosystem concepts, an analytical framework is developed to identify factors influencing merchants' acceptance of m-payments by considering the ecosystem as a whole and adopting a qualitative approach, e.g. in-depth interviews with experts and managers from carefully selected merchants in China.

The paper is structured as follows. Section 2 presents a literature review of research into m-payment from a merchant perspective. Section 3 describes the research framework, which is designed to analyze merchants' adoption of m-payment platforms in the business ecosystem, including a motivation, discussion and explanation of the three tiers of the framework. Section 4 discusses the methodology and background of data collection and analysis, with the results being presented in Section 5. Section 6 contains the discussions and conclusions.

2. Literature review

Based on an overview of definitions as used in m-payment studies (Pousttchi, 2003; Karnouskos, 2004; Au & Kauffman, 2008; Ondrus & Pigneur, 2005; Dahlberg et al., 2008; Dennehy & Sammon, 2015), there are two core elements that stand-out: (i) the emphasis on the mobile devices used to realize the payment and (ii) the function of payments, i.e. the transfer of monetary value. The main difference lies in the technology being used (wireless or other communication technologies) to realize m-payment and the phase in which the payment process is described (initiation, authorization and confirmation). We propose the following definition: *m-payment is a transaction of a monetary value for services or products with a mobile device (such as mobile phones, smartphone, tablet, or any wireless enabled device or card) for the initiation, authorization and confirmation of payment processes, using wireless and/or other communication technologies.*

Based on a literature review, 188 papers were identified on m-payment between 2007 and 2014 (Dahlberg, Guo, & Ondrus, 2015), with a main focus on technological and consumer-related aspects, which is consistent with the earlier findings by Dahlberg et al. (2008). The focus of academic research has not changed significantly since 2008, although a growing number of articles analyze m-payments from an ecosystem perspective. While there are numerous studies from the customer perspective (adoption-theory-based articles, such as by Liébana-Cabanillas, Sánchez-Fernández, and Muñoz-