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Collective action for mobile payment platforms: A case study on collaboration issues between banks and telecom operators

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ABSTRACT

Mobile payment has long been discussed but has still not reached mass market in Western societies. Banks and telecom operators often struggle to develop platforms for authorization and authentication of mobile payment services. This paper analyses an in-depth case on collaboration between three major Dutch banks and three Dutch telecom operators who jointly developed a trusted service manager for mobile payment. Collective action theory and platform theory is combined to study the issues of collaboration and competition between banks and operators. We find that differing strategic objectives and interests, conflicts, lack of dependencies and governance issues led to dissolution of the mobile payment platform. These problems partly result from platform characteristics of openness to third parties, governance of relations with third parties and platform competition.

1. Introduction

Although mobile payment has been on the agenda for years, only few mobile handset-based or contactless card-based payment solutions have reached mass market in *Western* economies (Ghezzi et al., 2010). Various players are looking to dominate the advanced mobile payment market, including telecom operators, banks, credit card providers, payment providers and actors like Google (Ondrus and Lyytinen, 2011). Currently, market expectations are rising again thanks to increased penetration of Near Field Communication (NFC) on mobile phones (Juntunen et al., 2012).

Although various service models for mobile payment exist, most assume a trusted service manager that handles authentication, authorization and account-settlement (Gaur and Ondrus, 2012). As direct and indirect network effects are highly important (Au and Kauffman, 2008), such a trusted service manager (TSM) should be accessible for a critical mass of both consumers and merchants (Ondrus and Pigneur, 2007ab, 2009). Not only banks are required to provide accounting and settlement of payments, but also telecom operators to provide secure connections and equip phones with NFC SIM-cards. As such, bringing mobile payment to mass market ideally requires collaboration between multiple telecom operators and banks (Au and Kauffman, 2008). Establishing collaboration between banks and telecom operators is highly challenging (Dahlberg et al., 2008). Banks and telecom operators have their own strategic interests, business models and ways of doing business in their respective industries. Both banks and telecom operators are used to dominate relationships with external parties in innovation projects.

How competitors collaborate to achieve a common goal is the focus of strategic alliance literature (Eisenhardt and Schoonhoven, 1996; Gulati, 1998). In this paper, the common goal is to realize a mobile payment platform that is offered by all major banks and telecom operators. As such, especially collective action theory is relevant, which focuses on achieving a common goal that cannot be achieved by individual partners (Keohane, 1984). Collective action theory suggests various challenges to collaborating for a common goal: differing objectives and interests (Kollock, 1998), conflicts (Baland and Platteau, 1996; Streeck, 1990), interdependencies (Heckathorn, 1993; Marwell et al., 1988) and governance (Bianco and Bates, 1990; Ostrom, 2000; Sandholtz, 1993).

Collective action theory has been applied previously to study how organizations collaborate to develop information systems and standards (Klein and Schellhammer, 2011; Markus et al., 2006). However, a TSM is a specific type of information system as it will be used to connect various user groups (i.e. consumers,

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merchants and payment service providers) and to offer various services (e.g., payment, proximity marketing, loyalty schemes). As such, a TSM can be conceptualized as a digital platform (Boudreau, 2006; Tilson et al., 2010). Platforms pose various challenges that can affect the theoretical constructs of collective action theory: trade-offs on how to deal with openness towards third party service providers (Eisenmann, 2008) and pricing (Rochet and Tirole, 2003) can lead to differing objectives and conflicts; network effects (Evans, 2010; Gawer and Cusumano, 2008; Roson, 2005) can affect interdependencies; and platform leadership (Evans et al., 2006; Messerschmitt and Szyperski, 2005; Williams and Tapscott, 2006) can affect governance. While there are several studies on collaboration between a single platform provider and complementors (Ghazawneh and Henfridsson, 2010; Perrons, 2009), there are only few studies on how *multiple* platform providers collaborate to jointly establish a platform (Nikayin et al., 2013).

This paper examines how platform characteristics affect collective action problems in setting up mobile payment platforms by banks and telecom operators. Mobile payment is defined here as the use of a Near Field Communication (NFC) enabled mobile device or a contactless card on a SIM to conduct payment in a proximity setting by connecting to a server, perform authentication and authorization, make a payment, initiate accounting and finally confirm the completed transaction (Antovski and Gusev, 2003; Dahlberg et al., 2008; Ding and Hampe, 2003; Henkel, 2001). Mobile payments may be classified into those based on smart card schemes and those based on mobile smart devices (Ondrus and Pigneur, 2006). In practice this implies payments at point of sales as well as for instance transactions for public transport or access services, where face-to-face contact between buyer and seller is not necessary. The mobile payment system should be multi-functional rather than single-purpose systems like ticketing systems such as Oyster Card in the UK. Furthermore, mobile payment need not be limited in the amount of payment, i.e. both micro- and macro-payments are included.

We study a unique in-depth case in the Netherlands where all major banks and telecom operators collaborated in developing a NFC-based mobile payment platform. We were able to access key informants in *all* participating organizations and external stakeholders through interviews. An interesting aspect of the case is that the banks and telecom operators started to develop the TSM in 2009, but ended the project in 2012. As such, the case is especially suited to study why collective action between banks and telecom operators was discontinued, and which platform-specific issues led to the end of collaboration.

Theoretically, the paper contributes to collective action theory in information systems (Klein and Schellhammer, 2011; Markus et al., 2006) as well as platform theory (Boudreau, 2006; Tilson et al., 2010). Platforms are becoming increasingly relevant as a means to organize innovation in information systems (Yoo et al., 2010). Specifically, we bridge platform theory and collective action theory by studying how the characteristics of platforms affect collective action constructs (e.g., differing objectives and interests, conflicts, dependencies and governance).

The paper also contributes to the domain of mobile payment research. Previous research on mobile payment focuses either on technology (Karnouskos, 2004), business model issues (Juntunen et al., 2012; Pousttchi et al., 2009) or consumer adoption, acceptance, and usage (Chen, 2008; Schierz et al., 2010; Zhou, 2012). Empirical studies on interorganizational collaboration for mobile payment platforms do not exist, as far as we are aware.

Section 2 provides an introduction to the domain of mobile payment. In Section 3, we develop the theoretical framework for the study based on collective action theory and platform theory. In Section 4 we describe the case study method. Results and findings are presented in Section 5. Finally, discussion and conclusions are presented in Sections 6 and 7 respectively.

2. Overview of mobile payment

NFC-enabled mobile payment uses the antenna, NFC controller and secure element located in the phone. The secure element can be integrated in the device (embedded), in the SIM card or in a micro-SD memory card. Consumers conduct payments by holding the phone in front of an NFC-enabled payment terminal.

NFC payments have reached mass market in Japan, i.e. Osaifu-Keitai, where NTT Docomo enables the integration of electronic money, identity card, loyalty card, fare collection of public transport transactions or credit card on mobile phone with other mobile network operators and the trusted service manager. NFC payment is also offered in Korea (i.e., Hana SK Card), Hong Kong (i.e., Octopus Card). In Singapore (i.e., Smart Card and EZ-link), payments were initially made with RFID enabled cards (Mallat, 2007) but later evolved into NFC mobile payments. Since October 2008, over 200 trials, pilots, tests and commercial NFC and related services in fifty-four countries have been reported (NFC World, 2013). For example, experiments with NFC cards are initiated in the UK (i.e., Quick Tap and Mobile check out), France (i.e., Buyster and Cityzel), and the United States (i.e., Transcard, ISIS mobile wallet), while also in Kenya, Tanzania, and the Philippines the transition from SMS-based to NFC based payments is in progress (NFC World, 2013).

Several service models exist for mobile payment that involve different actors (Chaix and Torre, 2012; Ondrus and Pigneur, 2006; Pousttchi et al., 2009; Zhong, 2009). However, most models assume a trusted service manager (TSM) that mediates between banks, telecom operators, and the mobile payment service provider. The TSM provides the generic functionality for service deployment and authentication. The TSM could be provided by a bank, telecom operator, payment service provider or independent organization. A TSM could be centralized or split in a part offered by the service provider and another part offered by the telecom operator. If a telecom operator is involved, the secure element of the TSM can be placed on the SIM card of the phone.

In this paper, we conceptualize the TSM as the platform being developed. Jointly realizing the TSM through collaboration between banks and telecom operators is the object of collective action.

3. Theoretical framework

Strategic alliance literature deals extensively with how (potential) competitors collaborate to achieve a common goal, such as improving social or strategic positions in the industry (Eisenhardt and Schoonhoven, 1996; Gulati, 1998), joint R&D (De Jong and Klein Woolthuis, 2008), joint technology development (Hagedoorn, 1993) or exchanging goods (Heide and John, 1990). Scholars have studied how stability and performance of alliances depend on tensions between competition and collaboration (Bengtsson and Kock, 2000), learning processes (Doz, 1996), opportunistic behavior (Parkhe, 1993), governance (Lee and Cavusgil, 2006; Oxley, 1997; Teng and Das, 2008) and trust (Cullen et al., 2000). Typically these studies are focused on how individual organization or the alliance can boost performance, but less on a collective good that creates value not only for involved partners but also for others, i.e. complementors or consumers.

In this paper, the objective of collaboration between banks and telecom operators is to develop and implement a joint TSM for mobile payment. Such TSM is only viable if it can be accessed by