Critical Business Model Issues in Deploying NFC Technology for Mobile Services:
Case Mobile Ticketing

Antero Juntunen, Aalto University, Finland
Virpi Kristiina Tuunainen, Aalto University, Finland
Sakari Luukkainen, Aalto University, Finland

ABSTRACT

New mobile ticketing services include travel card functionality in mobile phones, providing users with numerous benefits. However, several open issues still pose limitations for these services, including the diffusion of the enabling technology called Near Field Communication (NFC), concerns about security and privacy, as well as uncertainties in the related value networks and business models. In this study, the authors analyze the NFC mobile ticketing business model holistically from a techno-economic viewpoint and identify the critical business model issues that affect the commercial deployment of such services. Using single case methodology, the authors evaluate the NFC mobile ticketing business model with the help of the Service, Technology, Organization, Finance (STOF) model. Their results offer insights both to the researchers and to the practitioners by providing an analysis with theoretical grounding on the possibilities as well as difficulties in the deployment of NFC technology for mobile services.

Keywords: Business Model, Mobile Phones, Mobile Services, Mobile Ticketing, Near Field Communication (NFC), Service Technology Organization Finance (STOF)

INTRODUCTION

Near Field Communication (NFC) is a wireless, short-range communication technology primarily intended for mobile phones. It is based on Radio Frequency Identification (RFID) technology and is compatible with ISO/IEC 14443-compliant contactless smart cards and smart card readers. These smart cards include travel cards used in public transportations around the world as well as contactless credit cards.

NFC technology holds much potential for mobile services. Possible NFC applications include using the mobile phone to emulate physical smart cards (e.g., credit/debit cards, loyalty cards, or library cards), allowing users to exchange their contact information or electronic money with each other, or reading information from NFC tags contained in items such as smart posters, DVDs, or CDs. One of
the most promising early applications of NFC technology is considered to be mobile ticketing. Mobile ticketing with NFC technology involves allowing mobile phones to be used in place of the public transportation travel cards common in many parts of the world. This kind of service is attractive to users as it offers them numerous benefits that can be extended with other value-added services. Mobile ticketing could function as a service that demonstrates the advantages of NFC for the public at large, bringing early-phase visibility and building critical mass for the technology. In fact, mobile ticketing can be seen as a strategic core service of a larger service offering centering especially on location-aware services and mobile advertising.

Although numerous mobile ticketing pilots utilizing NFC technology have been organized around the world (see, e.g., “London’s NFC mobile phone pilot,” 2008; “BART riders like paying,” 2008), the technology has yet to reach wider public awareness and is only now starting to be included in larger-scale roll-outs. This is largely due to the current market uncertainty resulting from technological and standardization issues, as well as complications in the value network that is required to realize these services. However, recent announcements by handset manufacturers and other actors in the NFC ecosystem lend credence to the notion that the technology is approaching wider adoption. For example, important actors such as Nokia (Balaban, 2010b), Google (Fildes, 2010) and RIM (Worth, 2011), have recently announced new handset models with NFC capability.

Most academic literature concerning NFC has dealt with technical issues, while the research examining the business side has focused mainly on specific topics, lacking a well-rounded view of the current issues concerning NFC services. For example, Madlmayr, Langer, and Scharinger (2008) examine the value network necessary for providing NFC applications remotely to mobile devices, whereas Benyo, Vilmos, Fordos, Sodor, and Kovacs (2009) consider certain technical aspects of application provisioning as well. In addition, Ondrus and Pigneur (2007) evaluated the potential of NFC for mobile payments with the help of industry experts. However, to our best knowledge, no earlier study has focused on the specific business issues involved in the case of NFC mobile ticketing. Hence, we formulate our research question as follows: What are the critical business model issues relevant in deploying a mobile ticketing service using NFC technology? To this end, we take a holistic view into analyzing the business model of the NFC mobile ticketing service. We believe that identifying the advantages and benefits as well as the problems and challenges of the service at an early phase of service development will increase our understanding of the prerequisites for successful mobile services.

The remainder of the paper is structured as follows: First, we review the earlier research on mobile payment and business models, and then we present the theoretical framework for our study. After this, we describe the methodology used to collect the empirical data, provide background information on the relevant technologies examined in the paper, and present the business model analysis of mobile ticketing. The paper is concluded with the discussion and summary sections.

EARLIER RESEARCH

Mobile Payments and Ticketing

Prior studies (see e.g., Mallat, 2007) suggest that there is general consumer interest in mobile commerce, such as purchases on web sites, routine bank services, and electronic receipts and tickets. Mobile ticketing in public transportation is one of the few examples of mobile payment services that have been deemed successful – at least to some extent (Mallat, Rossi, Tuunainen, & Öörni, 2009). Mobile ticketing services range from simple SMS-based systems to more advanced applications that include the purchase, storage, and inspection of digital public transport tickets and the support of dynamic timetable information (Maron, Magnus, & Read, 2009).

The most important drivers for the adoption of mobile payments have been identified to be related to ubiquity (Clarke, 2001; Frolic
Constraint Satisfaction for Planning and Scheduling
www.igi-global.com/chapter/constraint-satisfaction-planning-scheduling/24467?camid=4v1a