Chapter LIII
Secure Payment in Mobile Business:
A Case Study

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ABSTRACT

Mobile commerce offers consumers the convenience and flexibility of mobile services anytime and at any place. Secured and private mobile business processes using a mobile gadget for payments are essential for the success of mobile commerce. Mobile payment is the process of two parties exchanging financial value using a mobile device in return for goods and services. This chapter is an analysis of the secure mobile payment services for real automated point of sale (PoS), which are frequently used in terminals such as vending machines.

INTRODUCTION

The term m-commerce (mobile commerce) is all about wireless e-commerce. Grosche& Knospe,(2002) as described, M-commerce is understood as use of mobile devices in order to do business on the Internet, either in the Business to Business (B2B) or Business to Consumer market (B2C).

The development of new mobile technologies and its increasing use day after day has created important commercial opportunities in the mobile commerce space. Mobile commerce that is now taking place in the market requires the introduction of mobile payment as a mechanism for completion of a transaction. The development of high speed mobile data networks that support the mobile

devices have further created a new channel for commercial applications, where sophiscated mobile devices enable virtual exchange of payment information (S.Karnouskos, 2003). This chapter discusses the mechanism used in completing mobile transactions. Main contribution of this paper: a classification of mobile payment methods and a case study on the secure automatic mobile payment on vending machine.

BACKGROUND TO CASE STUDY

Mobile Payment (M-payment) is a critical component in m-commerce applications. According to the Wireless World Forum, M-payment on mobile devices will provide excellent business in coming years (Jerry Gao, 2005). Payment systems can be used by wireless based merchants, content provider, information and service providers to process and support payment transactions. Thus, the study of mobile payments is crucial to the success of mobile commerce. The discussion in this chapter, with respect of security in mobile payments, revolves around a case study. This case study illustrates two important factors which are essentials for a successful secure transaction and mobile payment systems involved currently. These factors are described in greater detail here.

Secure Transaction Essentials

Four properties are always considered essential for a secure transaction. These properties are authentication, confidentiality, integrity, and non-repudiation (Seema Nambiar, 2004). *Authentication* is concerned about verifying the identities of parties in a communication and confirming that they are who they claim to be. *Confidentiality* is about ensuring that only the sender and intended recipient of a message can read its content. *Integrity* is concerned about ensuring the content of the messages and transactions not being altered, whether accidentally or maliciously. *Non repudiation* is about providing mechanisms to guarantee that a party involved in a transaction cannot falsely claim later that she did not participate in that transaction (Seema Nambiar, 2004).

Major M-Payment Systems

Major M-payment Systems can be classified as:

- Account based Payment Systems
- Mobile Wallets
- Mobile Point of sale/service Payment Systems

Account Based Payment Systems

In account based payment systems, each customer is associated with a trusted third party (Chen, 2003). Transactions were either a post paid payment option or prepaid payment option. Here we can discuss about three types of account based payment systems.

- Mobile phone based payment systems - where customer can purchase goods or services through mobile phones. Example: Buying ringtones or subscribing for daily weather details.
- Smart card payment systems – where commuters, who could use a card to pay their fare at subway turnstile instead of standing in line to buy a token. People would hold the card--or phone or other device containing a card--within about 10 centimeters of a terminal, which would use wireless transmissions to send payment information.
- Credit card m-payment systems - where customers can make payments on mobile devices using their credit cards. A perfect example would be customers purchase goods from Ebay and pay via credit card.

Mobile Wallets

Mobile wallet is the most popular type of wireless transactions, which allows user to store the information while shopping with the mobile device. Secure Electronic Transactions (SET) technologies are already being used to provide secure transactions for merchants. MasterCard's using this technology for secure transactions.

Mobile Point of Sale/Service Payment Systems

Mobile PoS payment system that enables customers to purchase products on vending machines or at retail stores with their mobile phones. This payment

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