

10 Mobile Payment

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10.1 Introduction

Mobile payment is defined as “paying for goods or services with a mobile device such as a phone, personal digital assistant (PDA), or other such device [1].” Mobile payment is the next innovative step in the business world; it can be used in a variety of business situations. The user selects to make a mobile payment, by connecting to a server via the mobile device to execute authorization and authentication, and is presented with confirmation if the transaction is completed.

Mobile payment is regarded as the next big innovation that will enhance existing e-commerce and m-commerce efforts to unleash the potentials of mobile business. Mobile payment has been dramatically developing in recent years, and although it is still considered to be fairly new, it brings great promise and hope to the mobile industry.

In this chapter, we discuss the characteristics of mobile payment, the mobile payment agents, and the security for mobile payment.

10.2 Characteristics

10.2.1 Various Methods

For mobile payment, the mobile devices include mobile phone, tablet PC, PDA, and any mobile payment terminal or device.

Mobile telecommunications continue to be unbelievably successful, with estimations of around one billion mobile subscribers at the end of 2002. The success of NTT DoCoMo’s i-mode service in Japan, which currently has 34 million data subscribers, exemplifies the desire for persuasive mobile data services. In Europe, the uptake of short messaging (SMS) has demonstrated the huge demand for non-voice services. According to the GSM Association, there were over 30 billion SMS messages sent in 2001.

In 2004, it was estimated that 60 million mobile payment users generated sales of US \$50 billion, according to Celent, a financial services research and consulting firm. A joint survey by Visa International and Boston Consulting predicted that combined e-commerce and m-commerce volumes grew from US \$38 billion in 2002 to US \$128 billion in 2004.

As more refined devices are developed, new applications are rising to benefit from the new color screens, keyboards, and longer battery life. These new applications include enhanced messaging (EMS) and multimedia messaging (MMS), which enable the downloading of images, streaming video, and data files. Also, the proposed Federal Communication Commission's directive mandating the addition of global positioning (GPS) in mobile phones will enable location-based m-commerce.

Meanwhile, there is further enthusiasm surrounding proximity payments, a method of sending data between devices within a certain range with no physical contact. There are a number of wireless technologies and standards that will enable consumers to send transaction data from a mobile device to a point of sale terminal without manually swiping a card through a reader. These include:

- Bluetooth
- 802.11
- Infrared
- RFID and contactless chip

Mobile payments are extensive and can vary, and are determined by regional differences and individual market dynamics. For example:

- In Japan, the success of mobile Internet services can be attributed to a high population density in cities, long transportation times, consumer comfort with small electronic devices, and the lack of a fixed-line Internet infrastructure.
- In Europe, prepaid phone services are popular.
- In individual markets in Asia Pacific, Europe, and the USA, there is a drive to implement proximity payments in places such as road tolling, fast food drive-through, and service stations.

Despite these regional differences, there is a shared requirement for payment to be secure and easy to use.

10.2.2 Standardization

Public concerns relating to security, privacy, and facile use of the system are restricting the growth of mobile payment. Research from Forrester Research indicates that over half of surveyed consumers consider credit card security to be the major inhibitor to the growth of m-commerce. The challenge for the mobile and the payment industry is to convince the majority of consumers to embrace mobile payments by addressing these concerns.

For example, Forrester also indicated that fewer than 15% of consumers feel completely comfortable sending their payment card details over mobile networks and over 65% claim to be "averse" to sending confidential information. If the industry tackles this concern to ensure that both the actual security and perceived security are strong, then the potential of mobile payments will be more readily accepted. There are also a number of other technical issues to be overcome. These include providing standards that are mutually developed, agreed upon, and supported by mobile operators, merchants, payment associations, and financial institutions.