Chapter XIV
M–Commerce Payment Systems

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ABSTRACT

With mobile operators having a large customer base and e-payments getting popular, there is a shift of focus on the huge potential that the mobile commerce (m-commerce) market offers. Mobile payment (m-payment) service is the core for the success of m-commerce. M-payments allow customers to buy digital goods from anywhere and anytime using Internet and mobile environments. Ubiquity, reachability, localization, personalization, and dissemination of information are the characteristics that favor m-payments and encourage the consumers and merchants to use them. This chapter examines various aspects of m-payments like architectures, limitations, security, and trust issues. It also discusses and compares the existing payment procedures of several different companies providing m-payment services. While exploring the advantages of shifting to m-payments, the problems that have to be dealt with when adopting new solutions are discussed. Finally, the chapter concludes by identifying a common set of requirements criteria for successful global m-payments.

INTRODUCTION

M-commerce allows customers to buy goods from anywhere and anytime using the Internet and mobile environments. The content for which the payment is made may be digital goods (e.g., downloading software, e-books, and tickets) or services (e.g., auctions, games, booking tickets, trading, healthcare, and auto parking).

Mobile-phone-based services are becoming an important target for business. M-payment is about using the mobile phone for making payments. This provides a good experience combining convenience with flexibility to the customer while making payments. The customer does shopping online and uses the mobile phone to pay for a product or service or make transactions. There is no need to carry a personal wallet. A customer is required to give a unique code for recognition by

the bank when making payments. The payment is made only after validation is done. Shopping is finished, after delivery of the goods depending on the type of goods and mode of delivery. Requirements of mobility by consumers and businesses show a need for rise in the m-payment services. M-payments are an important aspect of M-Commerce that allow and enable secure payments and settling credit and debit claims.

In 2002 and 2003, due to the hype and later crash of new technologies, companies resisted investments in new technologies; since then the number of mobile device users has grown dramatically. According to Lombardi (2006) as of December 2005, there were more than 2 billion mobile connections globally. According to the Mercator Advisory Group (2006), almost 208 million Americans in the year 2005 were cell phone subscribers, as shown in Figure 1.

In China, according to China's Ministry of Information, the number of mobile phone users has passed 400 million in February 2006 and by 2009 it is expected to pass 600 million (Nystedt, 2006). In the European Union (EU) more than 80% of the population has mobile phones (Damsgaard & Marchegiani, 2004). With consumers spending in excess of £700 million during 2005 in the UK, and German consumers spending an average of €4.50 each month on mobile downloads, it is a lucrative market. According to Telecom Regulatory Authority of India (TRAI), there are 90 million cell phone subscribers in India. Mobile

phone penetration has almost saturated a few Asian countries as shown in Figure 2 (Mercator Advisory Group Report 2, 2006).

Thus m-commerce has the potential for explosive growth and that m-payments could be the next "killer application" for business (Aswin, 2003). Though the m-payment market did not live up to the expectations because of multiple service providers and a variety of payment solutions and technologies, it has gained a reasonable level of acceptance. Obviously any customer would adapt to a new payment technology if thorough solutions to his prime concerns of cost, convenience, and security are provided. Mostly the transactional costs that the customer will have to pay should be negligible when compared to the cost of the transaction. Finally, the m-payment vision is to transform the mobile phone into a personal mobile wallet holding credit cards, debit account information, and mobile cash for transactions (Ding & Unnithan, 2004).

A few m-payment applications suggested in the literature are (Gross, Fleisch, Lampe, & Miller, 2004):

• Automated point-of-sales payments (vending machines, parking meters, and ticket machines).

Figure 1. Cellular subscriber growth in USA (Mercator Advisory Group Report 1, 2006)

Year	Approx. Customers (millions)	Approx. annual Revenues in $(billions)
1995	45	20
1999	75	42
2001	125	64
2005	230	100

Figure 2. Mobile phone penetration and subscribers in Asia (Mercator Advisory Group Report 2, 2006)

Country	Mobile subscribers (millions)	Mobile penetration
China	400	31%
Japan	90.7	71%
South Korea	37.5	77%
Taiwan	22.7	99%
Malaysia	19.5	81%
Hongkong	6.8	99%
Singapore	4.3	97%

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