

## Mobile Commerce and Related Mobile Security Issues

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**Abstract** - This article will discuss how m-commerce conducts transactions of the mobile device through Internet and how these technologies are developed throughout the years. The article will also judge the security and privacy levels when dealing with mobile commerce, and what kind of issues are encountered when using mobile commerce systems. The article will also evaluate the solutions on how m-commerce issues are avoided and how they are tackled by the technology evolution.

**Key words** – M-commerce, security and privacy issues, mobile devices, network.

### 1. Introduction

The term e-commerce signifies business processes on the Internet, such as the buying and selling of goods and services. There is a distinction between B2B (business-to-business) and B2C (business-to-consumers) markets. In the first case, the business process is carried out between businesses and in the other case it is carried out between business and end consumers.[7]

The Internet and all kind of telecommunications have been gradually more common in many daily life aspects since the 1990s. In 2005, there were about 964 million Internet users and 2,168 million mobile phone users globally (Internet Telecommunication Union (2007) [1], [2], [3]).

The expansion of the Internet and related technologies moved us to a range of new opportunities for business, providing businesses with new ways to conduct trade and exchange and communicate information through the progress and expansion of the e-commerce market (OECD, 2001)[1], [3], [7]. Therefore, a new type of communication service using Internet before our eyes by mobile device, and that lead to the emerging of new opportunities and to carry out different digital contents or services, called **mobile commerce** (m-commerce) (SERI, 2003). Belonging only to a specific individual, a mobile device let users to access service more compactly as well as to have more modified services than those of the wired Internet.

However, many features such as cell phone ring tone download, music streaming or download, photo and video file transfer and download, mobile game download, e-mail service, search service, video streaming, and GPS service, were introduced not long before mobile phones were created according to the frequency of uses. The most frequently used services are mostly related to make download or location-based service easier. The article will also cover some of the benefits of m-commerce and how we can improve it [8], [6], [12].

### 2. Benefits of mobile commerce.

a) Mobile commerce involves all kind of electronic transactions by the use of mobile phone.

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- b) By the use of mobile commerce enterprises can improve and widen their market reach, cut down on cost and give customers better service
- c) Users can benefit from m-commerce by the convenience the m-commerce provide to them and organizing personal data
- d) Examples of m-commerce are mobile parking meter payments and buying ringtones and games online. Those kind of services are recognized as Micropayments: any transaction cost lower than \$10
- e) High value purchases such as land, houses and cars will be more convenient in the future [11].

### 3. Issues that concern M-commerce in terms of security and privacy.

The most important element when we are dealing with m-commerce is security issues and how we can make it safe for customers to feel comfortable when using mobile phones, so in order to attract as many customers we need to insure the quality of the security level provided [3], [15].

However, it's absolutely crucial to insure the safety of all kind of m-commerce transaction special those that involve money transactions, therefore there are three main arias that this article will cover and elaborate [2].

#### A. Security issues related to the network technologies.

This article will first look at, the challenges that face the security network technologies issues [8],[5].

GSM stand for Global System Mobile commerce, GSM's are the most used and the most common in the world especially in Europe, they are also considered to be the most important element of mobile commerce now a days [3]. GSM's where first produced in the 1990s starting with a small market and very limited because it was not very handy back then, and also because it was very slow and above all that the device would not run without a computer which made it very inconvenient for customers to use it everywhere [10], [15], [16], [20].

As technology developed GSM and cell phones became more and more popular and more services were provided, such as SMS, wireless application protocols, HSCSD, and GPRS [3],[ 15].

GSM is responsible for the security of the mobile station when linked to a network, examples [10], [15], [20]:

- i. IMSI confidentiality.
- ii. IMSI data confidentiality on physical connections.
- iii. Connectionless user data confidentiality.
- iv. Signalling information element confidentiality.

The Wireless Local Area Network, which is known as (WLAN), operates in the unlicensed 2.4GHz, and most mobile phones have this function and it is also becoming very popular [20]. However during the default mode WLAN is not secured which makes the device easy to corrupt, so a certain level of security was needed and that is why the IEEE invented WEP (Wired Equivalent Privacy) in order to solve the following problems:

- i. Authentication to protect the association to an AP.
- ii. Integrity protection to MAC frames.
- iii. Confidentiality to MAC frames [2], [13], [19].

#### B. Layer Security Transport

In this part the article will look at end-to-end security issues that concern mobile devices. Layer security transport gives more security to the wire Logic, by this technology SMS and Packet data service was improved [2], [15], [20].

### 4. Solutions on how to solve the main issues of mobile commerce.

- i. Security transaction over the web browser: when a customer is using mobile transaction though a web browser the customer is protected by *inactivity lock out*, this technology loges out the user automatically when the connection is lost [9], [14], [17].
- ii. *USSD*: this technology will make sure that all kind of transaction been made does not fall on the wrong hands and it is very powerful [9] [14], [17].

### 5. Discussion

Mobile commerce information security and privacy issues are a very important fact, which needed to be considered by mobile, m-commerce and other electronic commerce developers (Miyazaki and Fernandez, 2001; Earp and Anton, 2004) [2].

Consumers are very aware of those issues; therefore it will directly have an influence the services provided by business such as money transactions and other services (Malhotra et al, 2004; Brown and Muchira, 2004; Sah and Han, 2003) [2].

Technology has significantly evaluated from 'E-decade' to 'M-decade' (Wagner, 2005) [2].

There are about three billion subscribers using mobile phones worldwide. On the other hand, there are only one billion users to the Internet, this enormous wide spread of mobile phones technologies and the significant number of mobile devices which is increasing rapidly, will provide more opportunities for mobile commerce [19].

Mobile commerce was first found in 1997 in Finland, it was enhanced in a vending machine to serve Coca-Cola by using SMS [18].

## 6. Conclusion

In conclusion, the article has looked at some of the most sensitive areas of the new mobile commerce such as, bank transaction systems because it engages with large amounts of money every day. Therefore the system used for transactions has to be absolutely secure and to be free of corruption as mentioned earlier in the article; business will lose customers if the mobile security system is not secure enough [6]. On the other hand the article also discussed the variety of ways of how our mobile commerce works and how it is been improved through the years. It also showed the kind of protocols that have been developed in order to make our mobile commerce safe and secure.

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