

## PAYMENT METHODS AND SECURITY OF MOBILE COMMERCE

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### **ABSTRACT**

*Mobile E-commerce is the new E-commerce in this era of digitization. Mobile E-commerce applications are still in the growing phase due to the limitations in the development of new and secure payment methods. This paper explains the safe methods of payments in mobile E-commerce from the society's point of view and the security challenges lying in front of us to fight with.*

*Internet e-commerce and mobile e-commerce are the branches of the same tree. Data integrity, Data confidentiality, non-repudiation of transactions, and the authentication and authorization; these are the basic features it needs. The basic needs of mobile e-commerce cannot be met by the existing cable network security technology, due to the special nature of wireless transmission. A number of researches and implementation of new security technology has become the need of the hour because of stimulated market demands.*

*Business-to-business and business-to-customer experiences have been simplified and smoothed by new technologies such as mobile payments, e-wallets, and contactless cards. As the online payment processing market grows, growth is led in multiple directions because of user demands of additional payment options and features.*

*It is a huge challenge in front of developers and suppliers to provide payment methods beyond traditional banking methods. It is still a huge task for a growing country like India to form a cashless society which can make transactions without any fear and limitations. This demands new technological interventions and throws a challenge to developers, providers, and users to create a safe and smooth cashless payment environment.*

**KEYWORDS:** *Mobile E-Commerce, Data Integrity, Non-Repudiation, E-Wallets*

### **INTRODUCTION**

No longer a theoretical concept but a development entity, Mobile E-Commerce will grow into a substantial dynamism of the forthcoming profitable progress. Because of the many new things of similar nature emerging at the same time, people consider this as a process. The wireless communication techniques and the Internet together act as the backbone of Mobile E-Commerce. After the user has availed the services provided by Mobile E-Commerce, how to ensure they pay through a secure and safe medium and it becomes a win-win situation for the payment organizing agencies also, this is the major concern to be looked upon. It is an imperative problem to the market to come up with the new feasible and secure payment methods for Mobile E-Commerce in the times of everyday changing technology.

## **Modes of Transaction and Secure Payment Technologies for Mobile E-Commerce**

### **Mobile E-Commerce: Modes of Transaction**

According to the characteristics of the transactions, mobile e-commerce can be divided into two modes of B2C and P2P. These models differentiate the Internet Commerce and Mobile E-Commerce, but these are not the universal models; the payment system divides them in a more general manner. According to mobile e-commerce payments can be classified into many categories like: According to the amount paid micro-payment, little-payment, macro-pay, etc., According to the locations of transaction object classification; remote payment, face-to-face payments, family payments, etc., in accordance with the payment of the time classification; pre-payment, on-line real-time payment, off-line credit payment, in accordance with the object of payment of the purchase classification; small pieces of commodities, stocks and shares, lottery tickets, instant messaging, customer service, online connection time, in accordance with billing units of the payment classification; Pay-Per-Time, Pay-Per-View, Pay-Per-Page, Pay-Per-Click, Pay-Per-Quality, Pay-Per Bullet, Pay-Per-Product, Pay - Per-Service.

### **Mobile E-Commerce: Secure Payment Technologies**

Payment based on electronic accounts: An early payment method, this is based on electronic accounts. In this mode, the bank provides a username and password, the customer performs some transactions online such as transferring money from one account to another, checking balance, viewing monthly statements etc., and bank verifies the password and confirms the transactions performed by the particular user.

Pre-payments: In this payment mode, mobile users used to use call fees stored as a method of payment for trading. Regular payment cards could be used to store call fees. In this approach, mobile users have to have full confidence in mobile operators. This method needs mobile operators as support transactions agents for mobile users and needs complete and open mobile users pre-payment management system.

Micro-Payment: It is a new direction in development for the electronic payment system. Related to macro-payments this is a new payment method which meets the condition of security, simplicity, and efficiency and every transaction volume of transactions is very low. At present some research institutions and companies propose various forms of micro-payment mechanisms to meet the different needs of safety and efficiency.

Credit card payment: Credit cards are reliable and valid payment methods which use the combination of ICT and passwords to make payment. They are mainly of two types:

- Account direct transfer: This approach requires customers to transfer credit card numbers directly to merchants; credit card numbers contain information with encryption by the agreement of WTLS. This is a method only applied to credit cards. Businessmen must have a good knowledge of it before using it.
- Dedicated account manner: After merchants verify the customer's bank cards identity, and establish a virtual account corresponding bank cards, including independent account numbers and passwords for it, customers pay through a virtual account, account number, and password encryption by WTLS agreement. Though the building process is more complicated yet this approach provides more security.

### Mobile E-Commerce: Security Needs

Mobile e-commerce security issues include the following: the reliability of transactions, data confidentiality, non-repudiation of transactions and data integrity. Reliability means guaranteed transactions object is true. Confidentiality refers to the content of the message was not unrelated to see. The integrity of the data refers to data will not be malicious if a change is in the process of transmission and also that the data received by the recipient is sent by the sender at the same time as the sender claims and is accurate to the knowledge of sender & receiver both. The mobile transaction is significantly different from the general e-commerce transactions by trading terminal uniqueness and also has a clear distinction to e-commerce of a network as its security and authentication technology implementation and technical details differ. At present, the large numbers of popular mobile devices provide a necessary prerequisite for mobile e-commerce but many problems are seriously hindering the development of e-commerce. Consider mobile e-commerce security it is imperative for mobile environmental features to look for the solution based on mobile security technology.

### Security payment system of mobile e-commerce

The principle of choosing mobile e-commerce secure transactions pattern:

Mobile e-commerce business must take into account the development of the key technology issues is the choice of trading patterns the classification of the current trading patterns and the ways varied but the fog dispersed, we will arrive at the following corresponding selection criteria:

- The overall trading pattern view should be very clear and concise. Clear and concise transactions view can not only format customers the mobile e-commerce business learning curve and is conducive to the realization of technology.
- Transactions are transparent in terms of users and businesses, and this transparency does not mean that businesses and consumers need to do nothing, but to pay for any model of a business, consumers, and businesses for the operation of the implementation of the mandate is the same. These transactions reflected in the common identity and the process of identity on the trading rules.
- Effective support to the widespread use of various types of payments these supports of models is implemented by the adoption of a complete solution.
- Can meet the key security and credit demand of customer and the merchant in the mobile e-commerce.
- The modular, scalable system architecture.

### Component of the Security Payment System of Mobile E-Commerce

Security authentication: The key to security infrastructure is the establishment of CA(Certification Authority) authentication system of the mobile e-commerce standards, as well as an implementation of security technology based on WTLS, WPKI. At current CA building options for many species such as self-building of CA. CA entirely by third parties (for example, CFCA, CTCA or UCA), integration with mobile portal PSPS PKI and third parties CA systems. On the basis of analyzing the application of CA certification system and the domestic application status, now we will put forward the thought of setting up the CMCC certification system based on third-party CA. By third-party CA, We can provide various

services such as certificate application, certificate query, signature verification, certificate validation, certificate abolition etc. but we should also carry on necessary enlargement on this foundation. The contents needing to be enlarged include building up the PKI Portal system on its own or co-building with third-party CA, enlarging WAP gateways and business application interfaces and, with the help of mobile terminal devices manufacturers and smart card manufacturers, completing the transition from mobile terminal devices to multifunctional terminals supporting certification, signature and encryption.

## **Security Payment**

### **The Choice of Trade Modes**

Currently, the development modes of E-commerce include various types at home and abroad. Researches show the development emphasis of our mobile E-commerce should be put the following aspects: directional payment mode based on e-account (having been applied in a small scope), prepayment mode facing prepaid mobile users, micro-payment mode and credit card payment mode.

### **Security Payment Schemes**

Setting up mobile E-commerce payment system involves e-commerce operators, application providers, internet payment providers (IPP) and security certificate authority etc. and depends on security technique means and forerunner trade mode to complete the payment in the mobile e-commerce trading process. According to trade payment ways, there are two security payment schemes: mobile value-added payment scheme based on SMS and real-time payment scheme based on WAP.

### **Mobile Value-Added Payment Scheme**

Because the functions of current handheld devices (SIM card) are simple, Realizing trade authorization through short news service (SMS) is a solution with high practical value.

### **Real-Time Payment Scheme Based on WAP**

Along with the technological advancement and the application development, mobile terminal devices gradually possess dependability function (for example WIM, WML, SCrypt Sign Text), which are called personal trusted device (PTD). Thus we can realize much secure and credit-restrained application and service with the help of mobile terminal devices. On the basis of WAP, we apply techniques such as WTLS, WIM (Wireless Identity Module) and WPKI (the Key Infrastructure of the Wireless Public) etc. to carry out real-time security payment.

## **CONCLUSION**

We should believe that with the development of mobile network toward the 5G technology and the optimization of mobile soft environments (the upgrade of WAP protocol and the perfect of description language etc.), the problem of mobile e-commerce security payment will have a better solution. The mobile e-commerce just rose currently which can really realize the dream of delivering information anywhere and anytime, allowing customers not to depend on region limits and making the information flow with the person's flow. The wireless ratio has more rolling effects than wire ratio. The application of mobile e-commerce will have a better development in the future. We should study mobile e-commerce from the following aspects:

- Under the 5G environment actively studying the mobile e-commerce security technique based on MEXE and Bluetooth technique.
- The carrying network solution of GPRS and WAP is the network foundation of mobile e-commerce in the future and is also the technical direction for mobile correspondence operator's business providers and cellular phone manufacturers to actively participate and push the quick development of mobile e-commerce.
- Cooperating with mobile terminal manufacturers and establishing mobile terminal standards and norms to provide mobile e-commerce terminals.

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