



E-Payment: Issues and Challenges

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Abstract: In the offline trade and traditional commerce, business people and consumers use cash, cheques and credit cards to make purchases. In today's business world, new instruments and forms are coming to play in the payment world such as electronic cash, electronic cheques, electronic billing, electronic wallet and use of credit cards to pay for Internet purchases. The objective of this paper is to conduct general literature review of existing e-payment system from global perspective, mainly in developing countries like India, and investigate the challenges to e-payment.

Keywords: commerce; e-payment; e-cheques; third party payment; smart cards

I. INTRODUCTION

Payment is generally understood as a transfer of funds from the payer to the payee. Electronic payment is a payment carried out electronically. The European Central Bank defines e-payment as "a payment that is initiated, processed and received electronically"^[1]. In e-payment funds are held, processed and received in the form of digital information and their transfer is initiated via electronic payment instrument. Conventional payments are enabled through cash, check or credit card whereas electronic payments are carried out by means of software, payment cards and electronic cashes. The major components of e-payment system are money transfer applications, network infrastructures, and rules & procedures governing the use of the system. Customers and merchants are the major actors of e-payment systems. Most of the time, banks and trusted third party or intermediaries may also participate in e-payment systems. E-payments greatly increase payment efficiency by reducing transaction costs and enabling trade in goods and services of very low value. They may also increase the convenience of making payments by enabling them to be made swiftly and remotely from various devices connected to global networks.

In India, tremendous growth rates being experienced since past ten years in the e-payments industry. It is a vast, untapped market. However-payments have many issues and challenges that hinder the developing countries, like India to achieve the required growth rate.

II. REVIEW OF MAJOR E-PAYMENT SYSTEM

The following types of electronic payments are most common today. That said, it is important to realize that new payment types are continual being discovered and there are additional methods that exist or are being developed continuously.

A. Cards

Credit cards, debit cards and prepaid cards currently represent the most common form of electronic payments. For all 3 types of cards the consumer or the business most often uses a plastic card, commonly with a magnetic stripe. The cardholder gives his or her card or card number to a merchant who swipes the card through a terminal or enters the data to a PC. The terminal transmits data to his or her bank, the acquirer. The acquirer transmits the data through a card association to the card issuer who makes a decision on the transaction and relays it back to the merchant, who gives goods or services to the cardholder. Funds flow later for settlement with credit cards and are debited immediately for debit or pre-paid cards.

Along with magnetic stripe cards, smart cards are and will increasingly be used for payments. Smart cards are at present overwhelmingly plastic credit cards with an embedded computer chip. Until recently, many smart cards operated using proprietary rather than common standards. A standard set of specifications, EMV, has been developed and is being used increasingly so that the chips on smart cards are interoperable. Korea and Japan are among the most advanced countries in Asia for smart card payments, with Malaysia catching up fast due to government mandates for banks to issue smart cards.

Over time, the chip for payment can be expected to move onto other devices. A "smart card" might then become the computer chip in a phone, PDA or other device that can perform the same function as chip in a plastic card, eliminating the need for the actual plastic card. Smart cards could thus evolve into "smart phones", "smart PDAs" or other "smart" devices.

B. E-Cash

Electronic cash is a form of electronic payment system which is based on encryption it means it is a secure payment system. Security of e-cash is measure by digital signatures.

E-cash is based on encryption method so it use a pair of keys for locking and unlocking funds. The locking key is used for encoding of a message in to a cipher text while decoding or unlocking message take place via private key. For example a bank provides its customer a public key to decode their funds which are coded by the bank's private key.

C. *Electronic Cheques*

The e-cheques are another form of electronic payment system which allows its customers to pay Ease of Use on credit or some other way other than cash.

- a. The e-cheque transaction work in following ways- In first step a user or consumer sends a cheque to the seller or the person for whom the payment is made. The cheque can be send by e-mail.
- b. When the e-cheques are deposited, it is send to the account server for its verification. When the account server verifies the cheques, it is ready to deposit on the bank.
- c. The working of e-cheque is same as the traditional bank cheque system, so it provides its users a friendly environment. The e-cheque contains all the information. The e-cheques also include the digital signatures of payer which is verified by the accounting server for correct information.

D. *Internet*

Online payments involve the customer transferring money or making a purchase online via the internet. Consumers and businesses can transfer money to third parties like PayPal which allows client to transfer money into an online account and make payments from that account without exposing your real credit card or bank account information.

Current estimates are that over 80% of payments for online purchases are made using a credit card or debit card. At present, most online transactions involve payment with a credit card. While other forms of payment such as direct debits to accounts or pre-paid accounts and cards are increasing, they currently represent a less developed transaction methodology.

E. *Mobile Payments*

Mobile phones are currently used for a limited number of electronic transactions. However, the percentage seems likely to increase as mobile phone manufacturers enable the chip and software in the phone for easier electronic commerce.

Consumers can use their mobile phone to pay for transactions in several ways. Consumers may send an SMS message, transmit a PIN number, and use WAP to make online payments, or perform other segments of their transaction with the phone. As phones develop further, consumers are likely to be able to use infrared, Bluetooth and other means more frequently to transmit full account data in order to make payments securely and easily from their phone.

Financial Service Kiosks Companies and service providers in several countries, like Singapore and the US, have set up kiosks to enable financial and non-financial transactions. These kiosks are fixed stations with phone connections where the customer usually uses a keyboard and television-like screen to transaction or to access information.

Located at convenient public locations such as bus or subway stations, convenience stores or shopping malls, these kiosks enable electronic payments by individuals who may not have regular access to the internet or mobile phones.

F. *Biometric Payments*

Electronic payments using biometrics are still largely in their infancy. Research and trials is going on in United States, Australia and a limited number of other countries. Most biometric payments involve using fingerprints as the identification and access tool, though companies like Visa International are piloting voice recognition technology and retina scans are also under consideration. Essentially, a biometric identifier such as a fingerprint or voice could replace the plastic card and more securely identifies the person undertaking the transaction. The electronic payment is still charged to a credit card or other account, with the biometric identifier replacing the card, check or other transaction mechanism.

III. E-PAYMENT IN INDIA

E-payment has become a rage worldwide due to ease of payment, convenience, and security it offers. One can be located anywhere in the world and send money to any part of the world by using e-payment systems like Paypal and eGold and also receive money from any part of the world within 24 hours.

In spite of the popularity of e-payment systems, the concept didn't quite catch on in India. So even though Indian banks offer many e-payment facilities like Electronic Funds Transfer (EFT), ATM/Debit card, Internet banking, and Real Time Gross Settlement System (RTGS), still Indians stand in queue to pay their utility bills and taxes, withdraw cash, inquire bank balance, and use cash while shopping. Why does this still happen when India claims to be the leader in the IT field?

IV. CHALLENGES

A. *Security*

Major Security Challenges of e-payment system are

- a. Disclosure/Alteration of private information: Security also becomes a major issue in case of making payments. It is very important that the payment reaches the intended payee. The rapid growth of online commerce has led to ever-increasing sophistication in Internet fraud, such as phishing to fraudulently acquire sensitive information such as usernames, passwords and credit card details; pharming attacks that redirect a Web site's traffic to bogus site; Trojans; key logging to retrieve online password entries; and proxy attacks. Hearing these kinds of stories makes people worry about the security of private information
- b. Counterfeiting: Counterfeiting is the creation of new data or duplication of existing data, which are technically valid but not legally admissible. Cloning of e-money for double spending and creation of fake accounts are example of counterfeiting. One popular form counterfeiting attacks is duplication of electronic data from a payment cards (e.g. ATM card) which is

used, create duplicate cards and withdraw money from the accounts.

B. *Poor penetration of PCs and Internet*

Though the number of PC and Internet users in the country is growing, they form a miniscule part of the entire Indian population. Besides, these users are limited to educated urban youth. But there are many who don't have access to these facilities and don't know the basic PC and Internet operations.

V. ISSUES IN E-PAYMENT SYSTEM

A. *Problems Related to Infrastructure*

- a. Poor infrastructure: Poor communication infrastructure is one the reasons that hinder the growth of e-payment system. For the effective deployment of e-payment, it is necessary to have a reliable and cost effective infrastructure that can be accessible to the majority of the population. The most common communication infrastructure for e-payment is computer network such as Internet. Most e-payment systems use Internet to communicate with their customers. The other communication infrastructure available for e-payment users is the mobile network used for mobile phone.
- b. Frequent connectivity failure in telephone lines,
- c. Unavailability of dedicated data service networks and closed financial networks
- d. Frequent power interruption
- e. No financial networks that links different banks, Automated clearing houses or ACH
- f. Most of the Banks are not ready for e-payment
- g. No legal and regulatory framework for e-commerce and e-payment due to inexistence of large pool of e-commerce and e- payment users group

B. *Socio-Cultural Issues*

Resistance to changes in technology among customers and staff due to:

- a. Lack of awareness on the benefits of new technologies
- b. Fear of risk
- c. Lack of trained personnel in key organizations
- d. Tendency to be content with the existing structures
- e. People are resistant to new payment mechanisms

C. *On the Political Level*

- a. Inadequate funding or allocation of resources.
- b. Legislative or regulatory constraints.
- c. Political opposition.

VI. SUGGESTIONS

Possible solutions are: SSL (Secure Socket Layer), SET (Secure Electronic Transaction) , 3D Secure , Smart Card Security. Also with the advancement in technology along with Encryption and Validation technologies has made most transactions very secure which is more than enough to address the security issues. The few things that can be implemented to overcome the e-payment issues are:

- A. The selection of the mode of electronic payment system is chosen by consumers, in which customers must satisfy. The e-payment system provide various types of electronic payment system it may electronic cash, e-cheques, credit cards etc.
- B. The online marketing always suffer from problem like fraud, hacking etc. ,how these are managed by Electronic Payment System so that some flaw, mistakes, others risks are dropped. For this purpose the electronic payment have to provide authentication, privacy, anonymity features to secure the customer fund.
- C. The way of electronic payment system processing must be easy and interested that every consumer, business parties want to use it.
- D. Government, banks, and the IT industry all together should take steps forward to make e-payment a success otherwise, it is difficult in the near future for e-payment systems to become popular in India.

VII. CONCLUSION

In the paper an attempt has been made to study mainly the issues and challenges of e-payment in developing countries like India. Many e-payment systems have emerged since the 1980s. However, major security, infrastructure, legal, regulatory and socio-cultural challenges have characterized the systems. It has examined some of the problems inherent with e-payment industry and looked at emerging solutions. Some regions and counties have also made some commendable efforts to address the problems.

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