A STUDY ON ISSUES AND CHALLENGES OF ELECTRONIC PAYMENT SYSTEMS

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Abstract: An e-payment system is a way of making transactions or paying for goods and services through an electronic medium, without the use of checks or cash. It's also called an electronic payment system or online payment system. Electronic payments include debit card, credit card, smart card, e-wallet, e-cash, electronic cheques etc. E-payment systems have received different acceptance level throughout the world; some methods of electronic payments are highly adopted while others are relatively low. This study aimed to identify the issues and challenges of electronic payment systems and offer some solutions to improve the e-payment system quality.

Keywords: Cyber Cash, Digital Signatures, e-Cash, Electronic Payments, Encryption, First Virtual Holdings,

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Introduction: Electronic payments are financial transactions made without the use of paper documents such as cheques. In another words**,** Electronic payment system is a mode of payments over an electronic network such as the internet. In other words we can say that e-payment is a method in which a person can make Online Payments for his purchase of goods and services without physical transfer of cash and cheques, irrespective of time and location. Electronic payment system is the basis of on-line payments and on-line payment system development is a higher form of electronic payments. It makes electronic payments at any time through the internet directly to manage the e-business environment.

In real world we have two distinct types of payment systems:
Internet –Based payment system
There are four models of Internet-Based payment system:

- **E-Cash**
- **Credit Card**
- **Debit Card**
- **Smart Card**

Electronic Transaction-Based payment system

- Secure Electronic Transaction
- Cyber Cash
- Net Bill
- First Virtual Holdings

Objectives

- To create awareness about various methods of online payment systems.
- To create awareness about various frauds of electronic payments.
- To motivate people to use online payments systems.
- To make online payments safe and secure.

E-Cash
E-Cash is purely software based; anonymous, untraceable, online token payment system, available on UNIX, Windows as well as Macintosh platform. When the tokens purchased by customers, the e-Cash software stores the digital money on the customer's personal computer which is under signed by the bank. The users can easily spend digital money at any shop accepting e-Cash without giving credit card details to the shopkeeper.

Credit Card
A form of the e-payment system which requires the use of the card issued by a financial institute to the cardholder for making payments online or through an electronic device, without the use of cash. A credit card is a plastic card issued to the users to lent money for purchase of goods and services. The customer type the card number, expiry date and billing address on the order form and the vendor can verify the details and be confident of payment.

The credit card payment on the online network can be categorized into three types:

- Payment using plain credit card details
- Payment using encrypted credit card details

- Payment using third party verification.

Debit Card

A Debit card is a banking card enhanced with Automated Teller Machine and point of sale features so that it can be used at merchant locations. A Debit card is linked to an individual's bank account, allowing funds to be withdrawn at ATM and point of sale without writing a cheque. A Debit card holder pay directly through bank for his purchases. It replaces physical cash and cheque. In debit card system customers deposit in advance into the bank and withdraw at the time of purchase. There are two types of debit card which are used in real world:

- Online debit card
- Offline debit card

Smart Card

A smart card was first produced in 1977 by Motorola. It is a thin, credit card sized piece of plastic which contains a half-inch-square area that serves as the card's input-output system. A smart card contains a programmable chip, a combination of RAM and ROM storage and can be refilled by connecting to the bank. It is known as smart card because the ability of chip to store the information in its memory makes the card smart.

Secure Electronic Transaction (SET)

Secure electronic transaction is a system of online payments for ensuring the security of financial transactions on the internet. The SET specification is an open, technical standard for commerce, developed by VISA and master card. It facilitates secure payment card transactions over the internet. Digital certificate create a trust change throughout the transactions, verifying cardholders and merchant validity.

Cyber Cash

Cyber cash is a web based service that automatically processes and verifies customer's credit card information then debiting the customer's account and crediting the merchant's account electronically. Cyber cash servers act as a gateway between the merchant on the internet and bank's secure financial network.

Net Bill

Net bill is a micro payment system. Net bill payment system uses internet for purchasing goods and services and makes secure and economical payments for them. The net bill server maintains account for both consumers and merchants, which allows customers to pay merchants for goods to be delivered. The goods are delivered in digital form.

First Virtual Holdings

First virtual is one of the first internet payment system that offered a third party verification method to make payment over the internet. The first virtual payment system is unique in the sense that it does not use encryption.

Issues and Challenges Regarding Electronic Payment System

- **Lack of Usability**
  Electronic payment system requires large amount of information from end users or make transactions more difficult by using complex elaborated websites interfaces. For example credit card payments through a website are not easiest way to pay as this system requires large amount of personal data and contact details in web form.

- **Lack of Security**
  Online payment systems for the internet are an easy target for stealing money and personal information. Customers have to provide credit card and payment account details and other personal information online.

- **Issues with e-Cash**
  The main problem of e-cash is that it is not universally accepted because it is necessary that the commercial establishment accept it as payment method. Another problem is that when we make payment by using e-cash, the client and the salesman have accounts in the same bank which issue e-c/ash. The payment is not valid in other banks.

- **Lack of Trust**
  Electronic payments have a long history of fraud, misuse and low reliability as well as it is new system without established positive reputation. Potential customers often mention this risk as the key reason why they do not trust a payment services and therefore do not make internet purchases.

- **Users Perception Regarding Acceptance of Electronic Payment Systems**
  User's acceptance is a pivotal factor determining the success or failure of any information system project. According to Dillion and Morris (1996) user's acceptance is "the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support".

- **Lack of Awareness**
  Making online payment is not an easy task. Even educated people also face problems in making online payments. Therefore, they always prefer traditional way of shopping instead of online shopping. Sometimes there is a technical problem in server customers tried to do online payments but they fails to do. As a result they avoid it.

- **Online Payments are not Feasible in Rural Areas**
  The population of rural areas is not very literate and they are also not able to operate computers. As they are unaware about technological innovations, they are not interested in online payments. So the online payment systems are not feasible for villagers.

- **Highly Expensive and Time Consuming**:
  Electronic payment system is highly expensive because it includes set up cost, machine cost, management cost etc and this mode of payment will take more time than the physical mode of payment.

Overcomes of Problems in Electronic Payment Systems

- **Encryption**
  Online shopping is very sensitive to notion that e-commerce is insecure, particularly when it comes to online payments. Most online payment systems use an encryption system to add security to the transmission of personal and payment details.

- **Digital Signatures**
  The parties involved in online payments, transactions should use digital signatures in order to ensure authentication of transactions.

Check whether the Country is a "High Risk" Country

- **Firewalls**
  A firewall is an integrated collection of security measures designed to prevent unauthorized electronic access to a networked computer system to protect private network and individual machines from the dangers of the greater internet, a firewall can be employs to filter incoming or outgoing traffic based on a predefined set of rules called firewalls policies. There are 3 policy actions of firewalls:
  - **Accepted:** Permitted through the firewall.
  - **Dropped:** Not allowed through with no indication of failure.
  - **Rejected:** Not allowed through accompanied by an attempt to inform the sources that the packet was reject. There are two fundamental approaches to create firewall policies to effect minimize vulnerability to the outside world while maintaining the desire functionality for the machines in the trusted or individual computer. These are:
    - Blacklist Approach
    - White list Approach

- **Compare the Credit Card Issuing Bank's Country with the Billing Address Country**
  Make sure the issuing country and billing address country are the same. This is especially important, because minor banks may not have rigorous identification procedures.

- **Call the credit card issuing bank to verify the validity of credit card**
  If online merchants have any suspicions about an order and need to confirm the details of the order, they can call the issuing bank and ask to confirm the general account details. This is to make sure that the card is not stolen.

- **Request more identification in case of doubts**
  While consumers value their privacy and require quick web site ordering facilities, it is important to gather sufficient customer identity details during the ordering process. The customers' name, credit card number and expiry date is not enough.

Conclusion

Electronic payment refers to the mode of payment which does not include physical cash or cheques. It includes debit card, credit card, smart card, e-wallet etc. E-commerce has its main link in its development on –line in the use of payment methods, some of which we have analysed in this work .The risk to the online payments are theft of payments data, personal data and fraudulent rejection on the part of customers. Therefore, and until the use of electronic signatures is wide spread, we must use the technology available for the moment to guarantee a reasonable minimum level of security on the network. With respect to the payments methods they have been analyzed in this work, it is impossible to say that any one of them is perfect, although each one of them has advantages as opposed to others. If the client wants to maintain privacy, then they choose those payment methods which guarantee a higher level of privacy such as E-cash or Net Bill Checks. If the priority is security, they should use, Smart Cards. Both consumers and service providers can benefit from e-payment systems leading to increase national competitiveness in the long run. The successful implementations of electronic payment systems depends on how the security and privacy dimensions perceived by consumers as well as sellers are popularly managed , in turn would improve the market confidence in the system.

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