



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 9, Issue, 4(E), pp. 25887-25890, April, 2018

**International Journal of
Recent Scientific
Research**

DOI: 10.24327/IJRSR

Research Article

E-CASH: BENEFITS OF ELECTRONIC PAYMENT SYSTEM

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DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0904.1949>

ARTICLE INFO

Article History:

Received 05th January, 2018

Received in revised form 21st

February, 2018

Accepted 06th March, 2018

Published online 28th April, 2018

Key Words:

Electronic payment systems, Electronic Cash, Components, net banking, plastic cards.

ABSTRACT

Due to advances in communication technologies, on-line businesses are growing exponentially. The introduction of E-cash has brought big changes to the way businesses are being conducted. Electronic payment systems are becoming important to serve consumers faster and at very low cost. In electronic payment systems on-line consumers pay for products and services. It is an anonymous secure electronic cash to be used on the Internet to support online trading between buyers and sellers. Electronic Cash is important concept in electronic payment systems through internet because it combines computerized convenience with security mechanisms. Electronic Cash can be used for making and receiving payments between consumer and merchant or for any money transaction. This paper gives an overview of electronic cash system, components involved in electronic cash system, electronic cash implementation and benefits of using electronic cash system.

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INTRODUCTION

In Digital era, Electronic payment systems are being used in banking, retail, health care, online markets and in government, anywhere money needs to change hands. Electronic Cash is an important idea to perform cash payments using computers connected over internet. Electronic payment system is a mode of payment 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.[1] The oldest known trading system is barter system where goods were being exchanged for the desired goods. The issue with this system was the lacking of standardization on the quantity and goods to be exchange. As the time progresses, the next in line is payment via checks. Soon after the checks, automatic teller machine (ATM) cards were introduced to improve payment system and become the first to allow transaction via electronic. After the success of ATM cards, credit cards were introduced as a new payment scheme. On each transaction, the issuers will make the payment on behalf of the consumers, the consumer then pay back the amount to the card issuers within the given period or risk being charge with interest [2]. Electronic Commerce (e-commerce) is

electronic business. Like any other business, deals with the exchange of money for soft or hard goods and services [6].

LITERATURE REVIEW

Vassiliou (2004) defines electronic payment as a form of financial exchange that takes place between the buyer and seller facilitated by means of electronic communication. According to (Cobb, 2004), the value of electronic payment goes way beyond the immediate convenience and safety of cards to a greater sphere contributing to overall economic development. According to (Fiallos & Wu, 2005), the arrival of the internet has taken electronic payments and transactions to an exponential growth level. Consumers could purchase goods online and send credit card numbers across secure network payments schemes that have been developed. According to (Cobb, 2005), efficient, safe and convenient electronic payments carry with them a significant range of macro-economic benefits. The emergence of credit, debit and prepaid card systems gives an important option for bringing cash into the formal economy. "Prepaid cards are interesting, because the funds are actually on deposits at a regulated financial institutions, but the process of establishing and managing the accounts is much more cost effective and less risky than traditional debit accounts for smaller levels of deposit". The use of Information Communication Technology (ICT) products

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to simplify and speed up financial transactions has become a part of everyday life in the developed world [3].

Major Components in Electronic Cash Payment Systems

1. Customers: Customers use the digital cash payment systems to make purchases.
2. Dealers: Dealers have to bear the costs of payment transactions.
3. Providers for digital payment systems: Providers are mediator between dealers and financial institutions. They provide services and training.
4. Development vendors for digital payment systems:
 - I. Financial institutions: Banking systems or organizations who use electronic payment systems.
 - II. Trust Centers: They control digital signature keys, and help to secure customer confidence in certain payment systems. They are responsible for the integrity of transmitted data and authenticity of contractors [4].

E-Cash Implementation

It involves at least three parties, issuer not necessarily financial institutions, consumer as the end-user who use the E-cash and merchant who accept E-cash in exchange with products or services provided.

1. Consumer needs to open an account with a bank. Merchant who wants to participate in E-cash transaction need to have accounts with various banks in order to support consumer's transaction who might use any bank account. The banks on the other hand will handle both consumers' and merchants' accounts.
2. When consumer decides to purchase, he or she will transfers the E-cash from his/her bank account to his/her electronic purse. The E-cash can then be transferred to the merchant in exchange with the merchant's products or services. Transactions via Internet are normally encrypted.
3. Upon receiving E-cash payment from consumer, merchant will get confirmation from the bank. The bank will then authenticate the E-cash transaction. At the same time the bank will debit consumer's account based on the agreed amount. The merchant will then delivers the products or services and instructs the bank to deposit the agreed amount to the merchant's bank account [2].

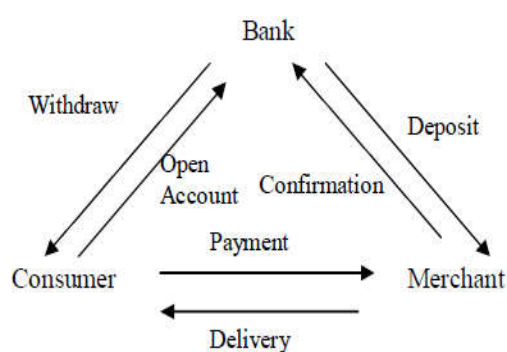


Fig 1 E-cash Process [2]

Types of E-Payments

Net banking

Internet banking is the latest wave in information technology. It is another electronic delivery channel. Internet banking means any user with a personal computer and a browser can get connected to his bank's website to perform any of the virtual banking functions (electronic delivery of services). This facility is provided by banks that enable the user to execute bank related transaction through internet. The greatest advantage of internet banking is that people sitting at home can execute business.

Electronic Cheques

An electronic cheque is an electronic copy (scanned image) of a real cheque, which is then transferred by email. In addition to the cheques 'real' signature, the transfer must be digitally signed using the sender's private key to authenticate the transfer.

E-cash

E cash is used over the Internet, email, or personal computers to other workstations in the form of secured payments of "cash" that is virtually untraceable to the user. It is backed by real currency from real banks. The way e cash works is similar to that of electronic fund transfers done between banks. The user first must have an e cash software program and an e cash bank account from which e-cash can be withdrawn or deposited. The user withdraws the e-cash from the account onto her computer and spends it in the Internet without being traced or having personal information available to other parties.

E-wallet

E-wallet is an online prepaid account where anyone can stock money, to be used when required. Using E-wallet consumers can buy a range of products from airline tickets to grocery without swiping a debit or credit card. The user withdraws a wallet coin from the bank. In regular e-cash, the user transforms the wallet coin into an e-coin and gives it to a dealer. He cannot spend the same wallet coin twice [7].

Plastic cards

Debit Card

A debit card is a better way of carrying cash or a cheque book. It is an electronic card that one can use as a convenient payment mechanism. The card is generally issued by the bank and is connected through the ATM. Debit cards allow the holder to spend only what is in his account and purchases should be kept track of just as if one is writing a cheque.

Types of debit cards

- Direct debit cards
- Deferred debit cards

Credit Card

A Credit card is a piece of plastic, 3-1/8 inches by 2-1/8 inches in size, which carries information that allow you to make purchase [8]. The main point is that the banker who issues card grants a line of credit – a sanctioned limit, up to which the customer can use the card. It is also known as a debt instrument. Its operation is through electronic fund transfer

(EFT) installations and interbank network. The objective is to provide convenience and security to eliminate cumbersome cash transactions and protects the holder from the danger of theft of cash.

Smart Card

Smart card was first introduced in Europe also known as stored value card. A smart card is about the size of a credit card, made of a plastic with an embedded microprocessor chip that holds important financial and personal information [8]. It can be used to store personal identification, medical history and insurance information because it has its own micro processing chip, a smart card can store more bits of information than a magnetic stripe card, and it requires a special card reading device. [3]

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. For the purpose of security in electronic payments system this system uses the digital signatures [9].

Characteristics of E-Cash

Electronic cash is based on cryptographic systems called “digital signatures. E-cash must be storable and retrievable. E-cash should possess the ability to make change. It also reduced transaction process time and its related cost. Specifically, e-cash must have the following four properties: monetary value, Interoperability, irretrievability, and security. [5]

Security

Net security involves the authorization of access to data in a network, which is controlled by the network administrator. Users choose a user name and password that allows them access to information and programs within their authority. SSL (Secure Sockets Layer) is the standard security technology for establishing an encrypted link between a web server and a browser. All the data transferred among consumers, merchants and banks need to be secured to avoid any unauthorized individual intercepting or changing the content of the messages. [2]

Ease

E-cash transfer can be performed at anytime, anywhere 24/7.

Secrecy

Secrecy is so important for the consumer who uses e-cash for any transaction. This feature is required in order to protect consumer’s privacy from being monitored for the purpose of financial surveillance. Consumers should be aware that the more anonymity offered the less security achieved by the E-cash.

Transferability

This feature allows consumers to transfer E-cash from one person to another without a need to refer to the bank. Similar to traditional cash system where coins or paper notes can be transferred easily, E-cash should be able to do the same. The below diagram illustrates the transferability process of E-cash.

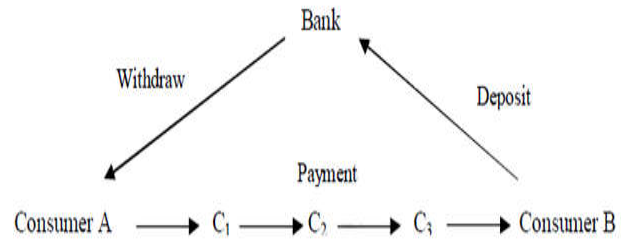


Fig 2 Transferability Process [2]

Transportability

E-cash should be portable; similar to the traditional money where it does not depends on physical location. E-cash should be transferable via network to portable storage devices.

Time savings

Money transfer between virtual accounts is fast while other is time consumable. [1]

No risk

This feature reduced risk of loss and theft. No one cannot forget his virtual wallet somewhere and it cannot be taken away by robbers.

User-friendly

Usually every service is designed to reach the widest possible audience. Also there is always the opportunity to submit a query to customer support team, which replies anytime.[1]

Divisibility

This feature means that E-cash should possess the ability to make change where it can also allow small possible transactions. It is also able to divide E-cash value to small values.[2]

CONCLUSION

Electronic cash presents some interesting characteristics that should make it an attractive alternative for payment over the internet. A security service is based on cryptographic techniques. Electronic Cash system is found to be more efficient. Presently in India, govt. has waived off all the transaction cost on online transactions after demonetization to promote cash less transactions. Electronic payment refers to the mode of payment which doesn’t include physical cash or cheques. It includes debit card, credit card, smart card and E-wallet etc. e-commerce has its main link in its development on-line in the use of payment methods. The effectiveness of electronic payment system depends largely on the availability of an efficient ICT infrastructure where reliable network connectivity, durable hardware and high expertise in ICT are available we must use the technology available for the movement to guarantee reasonable level of security. In future the implementation of electronic payment system depends on how the security and privacy dimensions are observed by consumers as well as sellers.

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How to cite this article:

Annukadian et al.2018, E-Cash: Benefits of Electronic Payment System. *Int J Recent Sci Res.* 9(4), pp. 25887-25890.
DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0904.1949>
