

## A Survey on E-Payment System in Business Application

Dr. R. Padmavathy<sup>1</sup>

<sup>1</sup>Lecturer in Commerce,

Montessori Mahila Kalasala

<sup>1</sup>padmavathi.raavi@gmail.com

### Abstract

The use of online business and internet are increasing rapidly due to the development of e-commerce applications. The e-payments are done through electronic commerce. The online business is exploding rapidly for the processing of transactions. The Internet uses electronic commerce through various electronic payment mechanisms. This paper discusses about the evolution, growth of electronic technologies that provide more advanced technical supports for electronic payment systems. The focus of this paper is to identify the different methods of e-payment implementing protocols and discuss the challenges of electronic payments from different perspective and then provide preliminary security measures to overcome the problems faced in online transactions in E-Business applications. Finally a number of solutions have been proposed based on the desired problem and discussed on the prospect of electronic payment system.

**Keywords:** e-commerce, e-payments, evolution, preliminary security measures, protocols, prospect.

### Introduction

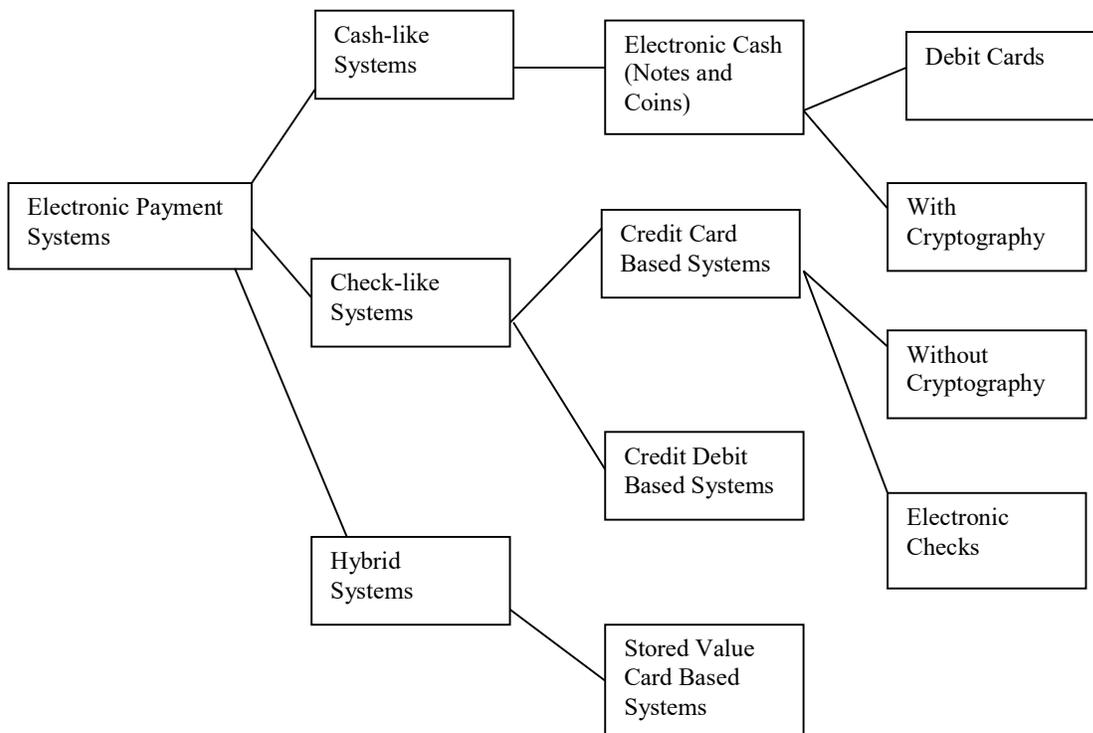
The service used to utilize information and communication technologies including integrated circuit (IC) card, cryptography and telecommunications network is termed as e-payment. The need for electronic payment technologies is to respond to fundamental changes in socio-economic trends. The payment system is the infrastructure which comprised of institutions, instruments, rules, procedures, standards, and technical, established to affect the transfer of monetary value between all the parties. An efficient payment system reduces the cost of exchanging goods and services, and is indispensable to the functioning of the inter-bank, money, and capital markets. However, a weak payment system may severely drag on the stability and developmental capacity of an economy; its failures can result in inefficient use of financial resources, inequitable risk-sharing among agents, actual losses for participants, and loss of confidence in the financial system and in the very use of money.

The tasks to design payment system infrastructures become ever more complex as competition and innovation push constantly to the limit the search for better combinations of efficiency, reliability, safety, and system stability in the provision of payment services to larger numbers of individual users and institutions. Microchip-based payment devices, such as chip cards and other new technologies, such as transponders, are being tested in many parts of the globe. The potential of digital wireless transactions remains untapped, yet it is very likely to emerge as telecommunications and computer technologies converge in devices. New technologies supporting the electronic storage, transfer, and use of money could have significant implications for consumers, merchants, governments and financial institutions.

The electronic payment system consists of

- Users - who can in turn be subdivided into retailers and consumers depending on the transaction model adopted?
- Issuers - banks and other financial institutions that are providing the actual mechanisms or the means to integrate the mechanism into other financial systems.
- Regulators - who are concerned with issues ranging from assuring the integrity of the mechanism and its operators, to the potential impact on the wider economy.

In 2002, electronic payment system is transformed to cash-like payment system and cheque-like Payment System. Both types of payment systems are direct payment systems, i.e., a payment requires an interaction between buyer and seller. There are also indirect payment systems where either buyer or seller initiates the payment without having the other party (seller or buyer, respectively) involved online. The computing which is based on internet that allows end users to share information and resources like networks, servers, storage, applications and services. The infrastructure is in such a way that it grasps security problems occurred during data processing in cloud computing. The cloud service includes the amount of resources exposed over a network which depend on the type of service that a vendor provides to their customers. The security services differ and to handle them with responsibility is the major task.



**Survey Of Literature**

In 2001, the idea of paying for goods and services electronically is not a new one. All around us we see evidence of transactions taking place where at least part of the process is carried on electronically. Since the late 1970s and early 1980s, a variety of schemes have been proposed to allow payment to be effected across a computer network. The arrival of

the Internet has removed this obstacle to progress. The idea of paying for goods and services electronically is not a new one. All around us we see evidence of transactions taking place where at least part of the process is carried on electronically. Since the late 1970s and early 1980s, a variety of schemes have been proposed to allow payment to be effected across a computer network. The arrival of the Internet has removed this obstacle to progress. This network of networks has grown dramatically from its inception. In 1996, E-payments can be widely defined as payments that are initiated, processed and received electronically. The scope is on e-payment services that support e-commerce transactions (business to consumer, B2C) or electronic payments between consumers (person to person, P2P) and that constitute new concepts, beyond the basic traditional payment instruments provided by the banking industry. Recent developments in the e-payments market will especially be set into a pan-European context, in order to monitor the development of e-payment services within the euro area and across Europe.

In 2003, E payment is a subset of an e-commerce transaction to include electronic payment for buying and selling goods or services offered through the Internet. Generally, we think of electronic payments as referring to online transactions on the internet, there are actually many forms of electronic payments. As technology is developing, the range of devices and processes to transact electronically continues to increase. A payment is the payer's transfer of a monetary claim on a party acceptable to the payee, a monetary claim that is accepted by the payee will be referred to as the means of payment, payment instruments are tools and procedures to initiate the transfer of the means of payment. For e-payments, the monetary claims (electronic means of payment) are held, processed and received in the form of digital information, and their transfer is initiated via electronic payment instruments. According to this definition, "electronic money shall mean monetary value as represented by a claim on the issuer which is: (i) stored on an electronic device; (ii) issued on receipt of funds of an amount not less in value than the monetary value issued; (iii) accepted as means of payment by undertakings other than the issuer." In April 2005, explained that E-payment is an electronic payment method in which a buyer selects purchases and pays them within a single Internet session. The payment can be transferred to the seller immediately or on a later date. The e-payment reference number notifies the seller, i.e. the service provider, of an executed payment. The service provider also has query and refund functions at its disposal. With the query function, the service provider can check that an e-payment was made successfully. With the refund function, the service provider can refund a purchase paid by e-payment, or a part of it.

In 2005, commercial banks of all types and sizes have intensified the use of online (internet/web-based) banking in their operations. First offered in the mid-1990s, online banking is becoming the latest breakthrough development in the ever-growing world of financial services marketing. Online banking offers customers a faster and more convenient way to do business in the convenience of their home or office. Recent survey results indicate that online banking has gone from less than a million people using it in 1998, to nearly 26 million as expected by the end of 2005 – some 26-fold increase. The advent of the internet and the popularity of personal computers have presented both an opportunity and a challenge for contemporary commercial banking industry. For years, financial institutions have used powerful computer networks to computerize millions of daily transactions. At the moment, commercial bank customers are connected to the internet through personal computers. These banks visualize similar economic advantages by becoming accustomed to those same internal electronic processes to home and office use.

In 2002, ever since the Internet got popular in the mid-nineties, the explosion of on-line commerce has been prophesized. Electronic payment will grow rapidly because of the

potential operational efficiencies. This is because of that electronic cash might be easier and cheaper to use than conventional cash and electronic payment cannot be counterfeited assuming that the scheme is thoroughly thought out. Additionally, electronic payment could be used over telecommunications and data networks for e-commerce without losing the privacy of the customer. The worldwide proliferation of the Internet led to the birth of electronic commerce, a business environment that allows the electronic transfer of transactional information. Electronic commerce flourished because of the openness, speed, anonymity, digitization, and global accessibility characteristics of the Internet, which facilitated real-time business activities, including advertising, querying, sourcing, negotiation, auction, ordering, and paying for merchandise. One of the most important components of an electronic commerce (e-commerce) application is a digitally secure means of electronic payment (e-payment). E-payment may be treated as a protocol among the payer, the payee and their respective Financial Institutions (FIs). We will follow e-commerce terminology and refer to the payer as “consumer” and the payee as “merchant”. All e-payment systems involve transfer of funds and monetary instruments. Thus, FIs are irreplaceable players in e-payment systems. There are several e-payment methods proposed, but only a few are being used successfully. Cyber Cash [1], which is based on payment-card transactions, is one. Electronic money systems [2] are not as successful as credit-card methods. Secure Electronic Transaction (SET) [3] is another payment-card based protocol. Although it is not specifically designed for electronic payment, Secure Socket Layer (SSL) [4] based e-payment methods are at present the most widely used.

In 2004, Electronic commerce is growing at an increasing pace and financial instruments are adapting to the increased volume of spending taking place over the Internet. Until now, most buyers have used credit arrangements or checking accounts as the principal means of paying for Internet purchases. There is however, a 'price umbrella' underneath credit-card transactions that makes them an excessively costly financial instrument for low-value purchases. Given the transactions costs involved with card transactions, the opportunity gap that remains in terms of e-money products lies in developing a popular alternative to conventional cash as a convenient way to make small payments ('micropayments' 1). For many Internet transactions, electronic cash (ecash) could provide a potentially superior substitute for conventional monetary instruments. Most existing electronic small payments schemes are in essence account-based systems mediated by middle people, in practice in much the same way as a bank or credit institution acts as a financial intermediary.

In 2004, Electronic cash (or digital cash) was invented early on in the development of e-commerce. However, the reality of e-cash business has proved less than exciting. Within the first few years, the issuers of e-cash either went bankrupt, dropped the product, or moved into another business (First Virtual). Observing the failure of the above e-cash mechanisms and the extensive adoption of the credit card on the Internet (95 percent of online payments are made by credit cards in the US). The authors probe the question of what payment schemes are adequate for the e-business environment and considered the impact in technological considerations, economic and social factors in the popularity of online payments. It is important to understand where Internet payment systems fit into the continuum of EPS (Electronic Payment System); and how this subgroup of the wider EPS group differs from its fellows. The major difference between IPS and other EPS is that IPS uses the Internet as a medium to transfer financial information, whereas the other EPS use private or government communications channels. It is also important to note that very often, card-based payment systems (such as credit, debit or charge cards), are also defined as retail-based electronic payment systems. These card-based payment systems are mainly used with other types of EPS to maximize the benefits of electronic banking and some corporations such as MasterCard, Visa, DEC, IBM or Microsoft.

Most current models of IPS proposals and schemes can be categorized as:

- Third-party based systems (electronic cheque based systems and electronic clearing-house based systems);
- Card based systems (credit card-based systems and smart card based systems); secure \ Web server based systems;
- Electronic token based systems; financial EDI based systems; or micro payment-used systems.

It defines XML syntax for payment transaction requests, responses and receipts in a payment processing network. The intended users are Internet merchants and merchant aggregators who need to deal with multiple electronic payment mechanisms (credit/debit card, purchase card, electronic cheque and automated clearing house payment). The supported operations include funds authorization and capture, sales and repeat sales, and voiding of transactions. The Internet Open Trading Protocol (IOTP) is defined as an interoperable framework for Internet commerce. It is optimized for the case where the buyer and the merchant do not have a prior acquaintance. IOTP is payment system independent. The objectives of the research are:

- To study and examine the characteristics of the most current types of e-payment and protocols.
- To analysis the problems and the obstacles for developing infrastructure and integrating the whole systems among all countries.
- To provide suggestion for improving the e-payment systems.

This paper analysis the problems faced by the customers and offers suggestions for improving the payment systems. The chart depicts the e payment systems.

Three main issues have been identified: 1) Security issues; 2) Low interest among businesses; 3) Heavy reliance on traditional payment methods.

### **The Security Framework Of Electronic Payments System**

Security is the main concern of any new technology. Since the present century is the century of information and data, every technology which is working with, they are in exposure of data theft, stealing, and fraud. It is more dangerous when the data is about the money and the financial information. For so many companies and even individuals, the secrecy of information about the financial and their accounts and so many things like this, is highly important. If they lose a small amount of data, they may lose their all things. The growth of the Internet as a medium of transaction has made possible an economic transformation in which commerce is becoming electronic. The critical factor of success for every commercial entity to implement and operate an e-business mechanism where money flow, material flow and information flow in business. The majority of trust theories are built upon the basis that there is a history of exchanges between partners (experiences), but the fluid and dispersed nature of e-commerce market makes the issue of trust hard due to the frailness to scale the reliability of participants. Strong and long-lasting business relationships have always been depended on trust. The transition to digital economy, forces enterprises not only to develop customer intimacy but also to ensure that security requirements are part of the customer relationship strategy. Transactions in electronic commerce can occur without any prior human contact or established interpersonal relationships. This lack of interpersonal trust creates a circumstance for a security threat. Generally, security is a set of procedures, mechanisms and computer programs to authenticate the source of information and guarantee the integrity and privacy of the information (data) to abstain this circumstance to lead to a hardship (economic) of data or network resources. Three basic building blocks of security mechanisms are used:

- Encryption: provides confidentiality, authentication and integrity.
- Digital signatures: provide authentication, integrity protection and non-repudiation.
- Checksums/hash algorithms: provide integrity and can authentication.

The focus of every processing e-commerce transaction is to minimize the transaction risk. In parallel, a trust framework in e-commerce must address scalability and cost. A business process is understood as a set of logically related tasks performed to achieve a well defined business outcome. Electronic commerce (e-commerce) is a subset of electronic business (e-business). A well accepted definition of e-commerce is that it "is the sharing of business information, maintaining business relationships and conducting business transactions by the means of telecommunication networks".

### **Fraud Risk**

"The global networks, credit, debit and charge cards can never avoid the risk of crime entirely", according to Michael Levi (2000). The individual crime victims, merchant service providers and retailers always encountered the conflict of interest. After sloping by around half between 1991 and 1995, plastic fraud losses have risen steadily and are estimate of plastic fraud doubling in the next two years and with recorded fraud statistics rising. The pattern of fraud is changing. Electronic payments frauds are rapidly emerging in the organization. It becomes a major problem for business today. As organizations struggle to remain competitive in a global marketplace, the business is more complex, systems are left open to employee manipulation and without a finely tuned internal control system, and the opportunity for significant loss is always present. Electronic payments fraud and computer crime are not limited to the USA. KPMG Canada found that Canada's largest companies reported an average loss of \$1.3 million to fraud in 1997 (KPMG Fraud Survey Report, 1998). The same survey reported that 47 percent of people believe fraud will increase in 1998, and only 11 percent of survey participants believe the Internet is a secure way to doing e-business transactions. From the finding, there are several internal forces which can make electronic money fraud more likely in the organization, such as poor internal controls, poor personnel policies and practices, and poor examples of honesty at the top levels of an organization.

### **Money Laundering**

Money laundering is defined as the act of disguising the origin or ownership of illegally gained funds to make them appear legitimate. The huge sum of money is obtained through illegal activities and has been linked to nearly all kinds of crime for profit including organized and white collar crimes. This money must be laundered in order to avoid seizing by the law enforcements and handed to the government. There was a growing concern on money laundering as it is often associated with drug trafficking, bank savings abuses, real estate fraud, and tax evasion. Money laundering was first declared as a crime under the Money Laundering Control Act of 1986 of the U.S Code. The process of transferring funds through electronic messages between banks is known as wire transfers. It acts as the primer step in money laundering where the profits from organized crimes, for instance drugs, gambling, racketeering, and prostitution must be somehow slipped into the banking systems before it can be safely spent. It is the duty of the bank staff to report any detection of potential money laundering via direct telephone notification to the bank regulators and financial enforcers. The high number of transaction and the flow of wire transfer through fully automated systems have made it hard for it to be detected by law enforcements and confuse audit traits.

### The Future of E-Payment

E-commerce is undergoing huge growth in terms of the volume of goods and services that are being traded on-line. New areas such as B2B and the related business to- government (B2G) e-commerce are developing as well as the potential for large numbers of people engaging in m-commerce from wireless handsets are increasing. Even the most optimistic estimations of e-commerce still place the goods value at less than 1% of the total value of goods and service traded in the conventional economy, so as larger numbers of people come on-line, there is plenty of scope for growth. In order to bring an on-line transaction to completion, payment must be fully integrated into the on-line dialogue Banks will find a demand from their large business clients to effect high-value bank mediated transfers of funds easily and efficiently. Similar demand will be experienced in Europe and Asia and, to a lesser extent, the developing world. It may be that developments such as Worldwide Automated Clearing House (WATCH) may eventually lead to a situation in which individuals and organizations transacting on the Internet can easily move funds to and from any country in the world. It may be that these new payment systems providers can be more agile in responding to customer needs and may supplant banks for certain classes of payments. This is particularly appropriate in countries whose banking infrastructure is less developed than advanced countries. A large number of companies have developed universal payment portal offering a whole host of ostensibly free information and services to consumers; The use of real micro payments, though, is clearly more flexible and allows a much clearer link between the content delivered and the amount paid. M-commerce is undoubtedly the most active area in electronic payments. As telecommunications manufacturers and network operators seek to define the shape of the mobile Internet, startup companies are busy coming up with new ways to make payments on-line. One very large area of uncertainty is the degree to which the mobile Internet will resemble the fixed-line Internet.. With the advent of modern technologies in telecommunications, infrastructure and protocols, future payments will be made through e-payments by Business to Business, Business to Customer, Customer to Government.

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