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E-payments: Problems and Prospects

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Abstract

The success of electronic commerce depends upon effective electronic payment systems. The Internet and on-line businesses are growing exponentially.. Due to this explosive growth, electronic commerce on the Internet uses various electronic payment mechanisms that can cater for much diversity of applications. This paper discusses the evolution and the growth of electronic technologies, which can provide more advanced technical supports for electronic payment systems. The focus of this paper is to identify and explain the different methods of e-payment the authors analyses the challenges of electronic payments from different perspective and provide preliminary security countermeasures for each of the issues. Finally a number of solutions have been proposed based on the problem and discussed on the prospect of electronic payment system

Keywords: **E-payments, B2B, Security Issues, Protocols, EDI.**

INTRODUCTION

Aristotle (384.322 B.C.): Everything must be assessed in money; for this enables men always to exchange their services, and so makes society possible.An electronic payment is defined as a payment services that utilize information and communications technologies including integrated circuit (IC) card, cryptography, and telecommunications networks. 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.

A plethora of new electronic technologies are emerging, opening up new transaction opportunities. 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.

Bo Meng and Qianxing Xiong (2002) classified electronic payment system into 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.

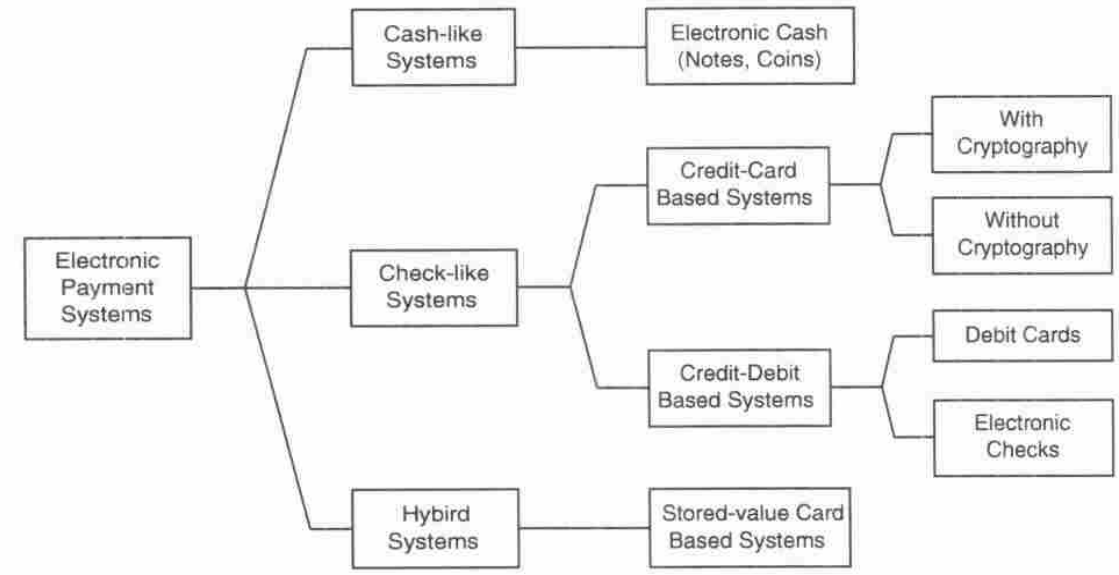


Fig. 1. Classification of electronic payment systems based on the exchange model.

SURVEY OF LITERATURE

Donal O.Mahony, Michael Peirce, Hitesh Tewari(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. This network of networks has grown dramatically from its inception

in the late 1970s to today's truly global medium. It is not known how many people make regular use of the Internet. By July 2000, the number of machines hooked up to the network had grown to over 93 million. In the early stages of the Internet evolution, it was common to make the assumption that each of these machines was used by around 10 people. This would mean that some 930 million people have Internet access worldwide. Most commentators would agree that this figure is much too high, and have used a variety of other estimating techniques to arrive at a better answer. The 2001 Nua Internet Survey takes an average of such estimates and concludes that just over 400 million people were online by January 2001. Much of this growth has been driven by the availability of World Wide Web (WWW) technology that allows information located on machines around the world to be accessed as a single multimedia-linked document with simple point-and-click interactions. This so-called business-to-consumer (B2C) e-commerce grew spectacularly. Around 1999, the industry focus began to shift to the trade that companies do with each other (B2B).By building on-line electronic marketplaces; it became possible to bring together businesses such as car manufacturers and their component suppliers, or fruit wholesalers with primary producers. When the first edition of Electronic Payment Systems was released in 1997, a huge variety of different payment methods had been developed by both academic researchers and commercial interests. Some of these were launched on the market and failed to reach a critical mass. Early market leaders such as First Virtual Inc., Cyber Cash Inc., and Digicash launched payment systems that achieved some quite extensive deployment but failed to generate an economic return. At the same time, many new companies started up, offering new methods of payment for the B2C sector. The advent of B2B payments with their different requirements will give a greater impetus to payment methods that can cope with bank-mediated large-value transfers. A totally new market has also developed for people to make payments with the assistance of their mobile phone or handheld wireless device. Mobile commerce (m-commerce) has the potential to become a very large industry and many payment technology providers have appeared to fill this gap.

David B. Humphrey, Lawrence B. Pulley, and Jukka M. Vesala (November 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.

Odlyzko (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.

European Parliament and Council Directive (2000/46/EC): A legal definition of electronic money is provided in Article 1 of the on the taking up, pursuit of and prudential supervision of the business of electronic money institutions (E-money Directive). 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."
Nordea Bank Finland (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.

Erdener Kaynak and Talha D. Harcar (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. As the internet becomes more and more popular, the usage of online banking is expected to increase considerably. 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 (Unsal *et al.*, 2002). 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. As compared to a couple of years ago, the only paper record now is the customer's receipt at the point-of-sale. 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.

Zheng Huang, KeFei Chen (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; Electronic payment is discussed as a means to replace traditional cash in the physical world, and as a means of payment in the virtual world. 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.

Hsiao-Cheng Yu, Kuo-Hua Hsi, Pei-Jen Kuo (2002) 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**.**

Michelle Baddeley (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 (Economides, 2001). 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 (Rivest, 1998). 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.

Albert Levi Çetin Kaya Koç (2002) 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 epayment systems involve transfer of funds and monetary instruments. Thus, FIs are irreplaceable players in epayment 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. Combinations of these methods are also possible. For example, a system might use SSL between the consumer and merchant, and SET between the merchant and FIs.

Chou, Yuntsai , Lee, Chiwei, Chung, Jianru (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 (Digicash), dropped the product (Cybercash), 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.

Tae-Hwan Shon and Paula M.C.Swatman (2004), argued that 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.

XMLPay: XMLPay is a standard proposed/developed by Ariba and Verisign. 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.

OFX/ IFX: OFX, which stands for Open Financial Exchange has been developed by ICT-vendors (Check Free, Intuit and Microsoft) and is essentially a common data format to be used for communication between banks and home banking applications for customers. It has its roots in the USA and Canada. IFX, Interactive Financial Exchange, is a message specification for exchanging financial data and instructions that can be viewed as OFX for the Internet-environment. The IFX specification does not describe any specific product implementation; this is left to the individual institutions. The IFX initiative is the product of a joint effort between teams that include representatives of Integrion Financial Network's GOLD, developed by IBM and Integrion, and representatives of OFX. IFX is now being further developed by the IFX Forum, which is a consortium of industry leading financial institutions, service providers and software vendors.

ECML: The Electronic Commerce Modeling Language ECML is a specification that describes the format for data fields that need to be filled at checkout in an online transaction. The fields defined include shipping information, billing information, recipient information, payment card information and reference fields. Version 2.0 describes these fields in XML syntax.

W3C standard on micro payments: The W3C standard on micro payments has originated from IBM's standardization efforts. It covers the payment function for payment of digital goods. It is implemented in the products of Netactuals (Cartio) and Newgenpay. The Micro payment initiative specifies how to provide in a Web page all the information necessary to initialize a micro payment and transfer this information to the wallet for processing. The W3C Ecommerce/Micro payment Activity is now closed.

E-Wallet project of CEN/ISSS: CEN/ISSS Electronic Commerce Workshop initiated the e-Wallet project in mid-2001 assuming a need for standardization in the field. CEN/ISSS

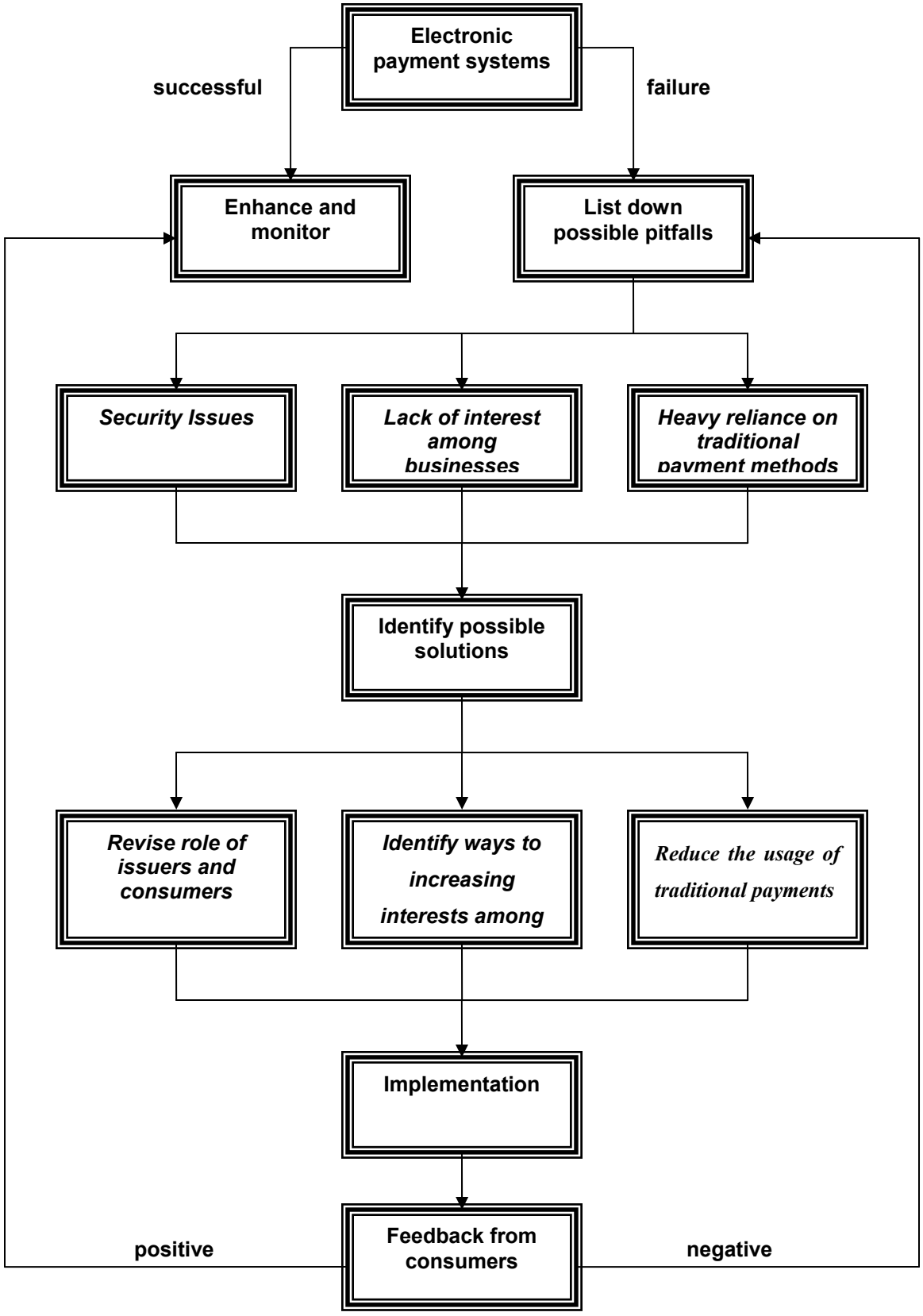
has chosen a flexible working definition considering an e-Wallet as "a collection of confidential data of a personal nature or relating to a role carried our by an individual, managed so as to facilitate completion of electronic transactions".

IOTP: 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. It can encapsulate and support payment systems such as SET, Mondex, secure channel card payment, Geldkarte etc.

The objectives of the research are:

- To identify and explain the role and importance of e-payment system.
- 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.


Electronic payment systems
successful
failure
Enhance and monitor
List down possible pitfalls
Security Issues
Lack of interest among businesses
Heavy reliance on traditional payment methods
Identify possible solutions
Revise role of issuers and consumers
Identify ways to increasing interests among
Reduce the usage of traditional payments
Implementation
Feedback from consumers
positive
negative

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 (Gunasekaran et al., 2002). 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.

PRIVACY & ANONYMITY

With the increasing usage of the Internet, the fears of privacy abuse become a top concern of most of the Internet users. In fact anonymity features of electronic payment systems play a vital role in protecting privacy in an electronic world, and as the safeguard for a privacy-protecting Internet. Nonetheless, the anonymity of an Internet user is mainly compromised through the payment method that is employed widely on the Internet – credit card, since most of the information is being collected on the Internet when users enter their credit card purchasing details. As consumers prefer to keep the details of their transaction private, conversely merchants and issuers in favor to ensure they capture and possess enough an appropriate and sufficient record of their transactions. Then privacy may become a thorny issue here. For instance, the Financial Crimes Enforcement Network (FinCEN), the Secret Service, and other Treasury law enforcement bureaus have participated in an wide-ranging look at the issues of the emerging e-money technologies, by examining the potential impact of e-cash systems on the Treasury’s law enforcement responsibilities. Last but not least, privacy must be

regarded as a political right that consumers enjoy and ought to be respected. At the same time, precautions need to be put in place to ensure that electronic money systems are not used as a means to thwart existing laws.

THE TECHNICAL PROBLEMS

Every new technology, when exposes and comes to the public, it faces to so many difficulties. It takes time that people getting familiar with it. The other point is that since the technology like e-payment is new, there should be so many thing invented and prepared as a base for expanding of e-payment. The other important problem is not having good infrastructure to extend and expand the e-payment sequentially e-commerce. Most of equipments of e-payment are expensive and not easy and simple to anybody to apply them. The other problem is to expand and grow the other part that are engage in or are part of e-commerce, like telecommunication and their services. In the case of e-commerce and e-payment every end user (home or office user) must have at least one phone line and the connection to the Internet. As to be integrated system in all over the world, the infrastructure should be well developed in all country to have a real integration in this field.

THE CULTURAL PROBLEMS

Most people still like to do their businesses in traditional form as before. These people like to touch the documents and money in hand and doing the process physically and manually. They believe in every dealing and business, physically rather than virtually. There are many people even in the 21st century, who are not agree and accept the all new technologies. They are always not certain and assured to the technologies. They do everything like old people. The job is very hard to pursue and to make these people eager to do in this way and accept the technologies. One reason is because of so many malfunctions, fraud, and unavailability of devices in the time of need. Every defection makes the public opinion divert from the advantages of new technologies.

SUGGESTIONS

1) Revise the role of issuers and consumers to hinder security threats

- Issuers' role

Issuers of electronic payments will need to take great care to ensure that the danger of counterfeiting is minimized and they must be very vigilant in monitoring their systems and operations so that fraud can be detected quickly when it occurs. Issuers should emphasize on a well-written and prominently displayed assurance of security encryption. Enhancement on every sophisticated security systems should be done at least every month, to prevent hackers from stealing both money and personal information. Higher priority must be given to the enhancement of encryption mechanism in order to maintain security and privacy. They should constantly upgrade hardware and software whenever a new feature of enhancing security becomes available. Besides, issuers should create the possibility of having face-to-face interactions to ensure institutional and customers trust is maintained. Highly confidential information such as customers' personal identity number or other code should not be revealed to anyone other than the owner itself. It is definitely necessary to allow details of transactions to be identified throughout the process.

Issuers must collect personal information directly from the concerned consumers. This personal information must be used for intended purpose only and must not be held for longer than required. Consumers must be made aware of the information being collected and the purpose for which the information is being collected. Issuers are advised not to use any information unless it is accurate, up to date, complete, relevant and not misleading. Therefore, they must ensure that consumers update their information at least two months once. It is the issuers' responsibility to assure the consumers that no one else can divert the payment in order to steal funds or use them for nefarious purposes. Safety can be assured by sending critical information such as a credit card number through a separate medium such as telephone. Besides, issuers can make use of all the fraud prevention mechanism available in the market, such as public key crypto-systems and digital signatures. During payment, at least one digital signatures must be created to verify the process. Digital signatures can be used both to assure integrity of the data and the identity of the originator. On the other hand, privacy can be assured by avoiding from revealing any of the identification of a consumer in the payment mechanism.

- Customers' role

The willingness to use the electronic payments is directly proportional to the frequency of usage. Customers should get themselves exposed to electronic payment systems in order to gain experience and increase trust on the existing security. For example, consumers can use the free CD-ROM of guidelines distributed by the electronic payment issuers to enhance the process of payments. In case of any confidential information which is yet to be revealed, customers should clarify the request with the issuers beforehand or consult those who have experienced the system beforehand. If consumers feel insecure over certain electronic payments, they may wish to send confidential details separately by telephone. Besides, attending seminar/workshops/talk on the healthy usage of electronic payments is very much encouraged, especially for those machine/computer illiterates.

Customers must also be able to:

- comply with the terms and conditions
- notify the issuer of the loss/theft of the Electronic Payment Instrument (EPI) immediately
- keep track on the balance, especially after each transactions
- protect identity/code number from public's view
- update personal information at least every two months once

As a precaution, consumers must always remember not keep their code/pin number somewhere that is not easily accessible by the public. It is also very much advisable to carry along an electronic payment card, which has lesser credit limit. For example, consumer can open two separate accounts in the same bank with different amount banked in into each account. As for daily usage, the consumer can bring along the card that has lesser amount of money. This way, in any case of physical emergency, the other account can be saved.

2) Identify ways to increasing interests among businesses

Most electronic payments cost only around one-third to one-half as much as a paper-based non cash payment and it is clearly understood that the cost of a payment system

could be considerably reduced if it is shifted to electronics. Therefore, bank should provide payment services according to their differential costs of services, so users may choose the payment instrument with the lowest net price/non price cost. If the banks can move their account holders from using paper cheques to using electronic debit cards, their costs will be reduced, revenue will be enhanced and consequently profitability will be increased. In addition, for consumer-to-business point-of-sale and bill payments, electronic payments will reduce the need for business working capital associated with the delay in processing paper-based non-cash payments. The choice of which payment instrument to use for a particular type of transaction is governed by the average value of the transaction to be made as well as institutional differences among countries. Research studies have also proved that people have different preferences for using various types of payment instruments. For example, ATM, debit card use and PC banking are more prevalent among those who use direct deposit than among others. Consumers with similar education, income, and age share similar preferences for payment methods. Therefore, the bank's role here is to facilitate and encourage overall payment system efficiency by continuing to offer currency as just one payment technology amongst several. Alternative payment technologies can be provided freely and users are allowed to choose amongst those competing technologies. Besides this, customer needs are likely to be best met through effective competition and products that are available automatically or easily.

Some industries, such as financial services have characteristics that lend themselves to electronic payments, such as sophisticated systems, while others such as construction are hindered by the nature of their business to require signatures. Companies in the focus groups expressed that some of their smaller customers are not sophisticated enough for electronic payments and would most likely not comply with any requests for electronic payments. Larger companies are more likely to be using electronic payments and Electronic Data Interchange (EDI). The focus groups provided insight into which industries and company sizes might be more prepared and interested in electronic payments products. However, obviously the focus group does not wish to be excluded from the Net by the widespread use of electronic payment mechanism that is only available to large organizations or by participating in a consortium. There exists many opportunities for them to integrate any payment mechanism on the Net with their existing payment mechanisms or at least with their back end systems. Besides that, they can choose any payment mechanism that they think is acceptable in the real world, which is very much dependent on the nature of their business.

In the case of new electronic payments arrangements, it is likely that the statute law, common law, contractual arrangements and industry codes of practice will have some role to play. It could be possible to use current legal bases to create the legal underpinning that is required without much hassle. However, the distinctive characteristics of the new technologies may require some new rules.. It should be subjected to some market protection mechanisms including minimum capital requirements and limitations on the investments, which can be made with the real money exchanged for electronic money. Businesses should look deeply into the characteristics of transactions that could affect the requirements of an online system. Assumptions can be made that the government intervention is very much appreciated in implementing an electronic interface that will allow households and businesses to make payments either to the government or other organization. They can be very handy in

ensuring that any payment mechanism on the Net will be integrated with the issuers' existing payment mechanisms or at least their back end systems. On the other hand, indications that a number of new payment technologies are likely to emerge raise some questions about the need for standardization. A proper standardization will help to increase participation of more businesses to invest in electronic payments.

3) Reduce the usage of traditional payment methods

The traditional payments, where the clumsy and expensive way to handle coins and notes is being replaced by efficient electronic payments initiated by various types of plastic cards. This is a tantalizing prospect for the twenty-first century. Both the costs and the prices of paper-based payments are higher than their electronic counterparts. Traditional payment is not the preferred method of payment, particularly for higher value transactions since use of currency involves handling, storage and security costs that may not arise to the same extent with other methods. Clearly, some substitution will take place, but the nature and extent of this substitution will depend on a number of factors. People will tend to prefer to use payment technologies, which are cheaper, more convenient and less risky than available alternatives. Many will probably prefer methods which can be used for multiple purposes, rather than having to utilize a variety of methods to meet different needs. The level of acceptance of particular payments by retailers, merchants and other suppliers will obviously have an important influence on the take-up of new approaches.

The system of money is abstract, impersonal and symbolic. But electronic money is virtual compare to cash and cheques and the payments instrument or channel is no longer physical. Electronic money is likely to have extra benefits that cash cannot deliver. Retailers are generally attracted to electronic payments because it offers them another service enhancement and it reduces their costs of cash holding and handling. For example, debit cardholder presents the card at the point of sale (PoS) to pay for the goods and services consumed and to receive cash, which as with the debit card payment, is immediately deducted from the cardholder's account. Persuading customers that plastic card payments are more convenient, easier and more secure than cash or cheques requires consistent marketing about the advantages of paying by plastic and getting the cardholders to consolidate their various accounts on to the one card may require considerable attention to relationship marketing.

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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