THE COMPARISON OF VARIOUS E-PAYMENT TRANSACTION
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ABSTRACT
This paper will discuss about various online payment transactions such as E-Cash, Electronic Wallets, Smart Card, Old transaction Credit Card (MOTO). And then we will compare those types of e-payment transaction process, make our e-payment concept design. In this we don’t explain about the details e-payment security system and protocols. We just explain about the method / concept of various e-payment transaction.. And at last section we will discuss about the result of our comparison.

Keywords : E-payment, E-cash, E-wallets, Smart card, Credit card.

1 INTRODUCTION
Payment is generally understood as a transfer of funds from the payer to the payee. Net savvy small businesses and consumers are turning to a unique on-line service for simplifying their busy lives - e-payment programs. What was once thought to be a risky, unsecured endeavor, e-payment has become a way of life for the web-at-heart.

Electronic payment is a payment carried out electronically. In e-payment funds are held, processed and received in the form of digital information and their transfer is initiated via electronic payment instrument. Conventional payments are enabled through cash, check or credit card whereas electronic payments are carried out by means of software, payment cards and electronic cashes. The major components of e-payment system are money transfer applications, network infrastructures, and rules & procedures governing the use of the system.

Customers and merchants are the major actors of e-payment systems. Electronic payment is not a new phenomenon. The use of electronic networks for trade began in the early 1970s in the financial sector. Some of the first applications involved Electronic Funds Transfer (EFT) - the movement of money between financial institutions via telecommunications networks.

Even Automated Teller Machines (ATMs), beginning in the 1980s, are a form of electronic payment; every time the customer uses the ATM, it involves a transaction made over a computer network[Barnes, Sand Hunt, B. E-commerce & E-Business, Butter Worth, Heinemann, Great Britain. 2001].

E-payments greatly increase payment efficiency by reducing transaction costs and enabling trade in goods and services of very low value. They may also increase the convenience of making payments by enabling them to be made swiftly and remotely from various devices connected to global networks.

There are several types of electronic payment, such as e-wallet, e-cash, smart card, and old transaction credit card (MOTO), etc. Each of type has a different transaction process. The online payment processing is purchasing of goods and services over the Internet typically using a credit card. The financial transaction is processed electronically in “real time.” The standard process to implement real-time payment processing is: (1) to obtain an online merchant account for a particular credit card from a bank; (2) to select a payment gateway that will process the credit card information; and (3) to integrate your website with the payment gateway. Throughout this document, the terms “payment processor” and “payment gateway” will be used interchangeably, though payment processors often imply a direct relationship with a bank or financial institution.

The old unsecured e-payment transaction process brings the old traditional credit card payment is being left behind. because the old traditional credit card payment caused many cyber crimes such as online fraud, phishing, etc) the credit cards developers invented the two new way of e-payment transaction which is well known as e-wallet and e-cash. the appearance of e-wallet and e-cash transaction process still does not make the e-payment developer company to stop keep on developing the new ways of e-payment transactions. Smart cards is one of the newest e-payment tools which is mostly used by Europe people now.
2 LITERATURE REVIEW

In this Chapter we will discuss the definition and the model design of those e-payment types which has described in the introduction part. First we will start with the e-cash payment type.

2.1 E-Cash

E-Cash is an abbreviation of “electronic payment” which has become common today. E-cash actually is a symbol electronic representation of values (Bits and Bytes) used mostly for exchanging goods and services. E-Cash published by a certain legal institution, Company, and organization. It usually has a limited acceptance (according how big is the publisher market). Here some of the e-cash company publisher:

1. DigiCash → founded by a team of software industry veterans and members of elite technology units of the Israeli Army.
3. Paypal → a part of e-bay company, integrated with e-bay.

2.1.1 E-Cash Concept

Figure 1. E-Cash Concept

Form the figure above we can conclude:

1. Consumer buys e-cash from Bank
2. Bank sends e-cash bits to consumer (after charging that amount plus fee)
3. Consumer sends e-cash to merchant
4. Merchant checks with Bank that e-cash is valid (check for forgery or fraud)
5. Bank verifies that e-cash is valid
6. Parties complete transaction: e.g., merchant present e-cash to issuing back for deposit once goods or services are delivered

2.2 E-Wallet

Stores credit card, electronic cash, owner identification and address
– Makes shopping easier and more efficient
  o Eliminates need to repeatedly enter identifying information into forms to purchase
  o Works in many different stores to speed checkout
– Amazon.com one of the first online merchants to eliminate repeat form-filling for purchases
2.2.1 E-Wallet Program Example

1. Agile Wallet
2. eWallet
3. Microsoft Walle

2.3 Smart Cards

is defined as any pocket-sized card with embedded integrated circuits which can process information. Smart cards are also used to store personal identity, medical, and insurance information. Many smart cards are used in combination with a password or PIN. So far not successful in U.S., but popular in Europe, Australia, and Japan. Mondex is one of the most popular publisher of Smart Cards. Mondex smart card specification:

1. Holds and dispenses electronic cash (Smart-card based, stored-value card).
2. Developed by MasterCard International.

3. Required specific card reader, called Mondex terminal, for merchant or customer to use card over the internet
4. Secret chip to chip transfer protocol.

2.3.1 Mondex Smart Card Processing

2.4 Credit Card Old Payment System (MOTO)

System of payment named after the small plastic card issued to users of the system. Used majority of internet purchase and it has a spending limit. MOTO means “Mail Order / Telephone Order”. Often matching of delivery address and credit card billing address.
3 RESULT

Here are the results of our research about the security of each type of e-payment transaction.

Table 1. Technology mapping owned by Department of Informatics

<table>
<thead>
<tr>
<th>Types of Transactions</th>
<th>Transaction Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-cash</td>
<td>Customers using a tokens as a virtual money while conducting the transaction which is encrypted using a certain method</td>
</tr>
<tr>
<td>E-wallet</td>
<td>E-wallet software automatically fill out the customer’s purchase form during online purchasing process (Works only for a certain e-payment merchant).</td>
</tr>
<tr>
<td>Smart card</td>
<td>Using a complex method when conducting a transaction process through validating customer’s and merchant chip and has it’s own security system (more secure).</td>
</tr>
<tr>
<td>Credit card (MOTO)</td>
<td>Payee have to fill in the purchase form manually during online purchasing process (name, credit card numbers, PIN).</td>
</tr>
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4 CONCLUSION

From the table above we can conclude that the most convenient and secure ways to shopping online is using the E-Cash or the Smart Cards. For the E-Cash the tokens (which acts like the virtual money) is encrypted during the data transmission. The smart cards “Mondex” using a sophisticated security system which is made for it’s own protocol (i.e VTP (Value Transfer Protocol), MULTOS Operating System). And for the E-wallets it’s still being used for storing the personal information including the e-cash either online or offline. Transaction MOTO via credit card has caused a lot of crimes (online fraud, phising). So I think it’s wise to choose the appropriate e-payment transaction process.

REFERENCE