Internet Payment System Overview

BIS 3687: E-Banking and Payment System
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What is a Web?

• An Internet-based navigational system.
• An information distribution and management system.
• A dynamic format for mass and management systems.

Eager and Pike (1995)
IPS vs. EPS

- **Internet Payment Systems (IPS):** Any conventional or new payment system which enables financial transactions to be made securely from one organization or individual to another over the Internet.
- **Electronic Payment Systems (EPS):** Any transfer of funds initiated through an electronic communication channel (Kalakota and Whinston, 1996).
- The major difference between IPS and EPS is that IPS use the Internet as a medium to transfer financial information, whereas the other EPS use private or government communications channels.

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<th>Type of electronic payment systems</th>
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<td><strong>Wholesale</strong></td>
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**Key**
- Financial EDI: Financial Electronic Data Interchange
- EFT: Electronic Fund Transfer
- ATM: Automatic Telling Machine
- EFTPoS: Electronic Fund Transfer at Point of Sale
- IPS: Internet Payment Systems.
1. Security is the key

• Security is a crucial prerequisite to successful IPS development.
• The strong security financial transactions should satisfy additional criteria, including;
  – Confidentiality
  – Authentication
  – Data integrity
  – Non-repudiation of the transaction.

2. Privacy is the key

• There are various ways in which the privacy of Internet users can be protected
• But there is a conflict between consumers’ right to privacy and regulators’ desire to prevent illegal financial transactions.
• “Almost anonymous transaction”, which means anonymity is maintained unless the customer gives permission, or a government warrant is issued.
Why has the development of IPS?

- *The provision of Internet-based payments is the last major barrier to the web’s ability to provide a true market medium for e-commerce.*
- Companies will benefit from virtual markets because the concept of online shopping can make their business communication easier and cheaper.
- Consumer will benefit because on-line shopping is convenient and saves time.

IPS Schemes and Categories

1. Third-party based systems (electronic cheque based systems and electronic clearing-house based systems)
2. Card based systems (credit card-based systems and smart card based systems)
3. Secure Web server based systems
4. Electronic token based systems
5. Financial EDI based systems
6. Micropayment-based systems
1. Third-party based systems

- The using third parties to establish trust between the two negotiating parties, by providing authorization for both parties.
- It truly provides a way of verifying the identities of the parties concerned, so that everyone can trust everyone else (Visa International, 1996).
  - Electronic Cheques
  - Virtual Holding/ VirtualPIN + Member of Virtual system
  - CyberCash/ Consumer Software + Merchant Software

2. Card based systems

1. Credit Card based IPS simply require the provision of the purchaser’s credit card details to the service provider for goods and services purchased over the Internet.
  - This new specification is called secure electronic transaction (SET) and ensures the information by adopting digital signatures and public-key encryption technology.
2. Card based systems (Cont.)

2. Smart cards (sometimes referred to as stored-value cards) is quite similar to that of store-value phone-cards.
   – Another advantage of smart cards is that they can integrate into the existing network of ATMs so that cash can still remain the predominant form of payment transaction (Crede, 1996).

3. Secure Web server based systems

   • The basic concept of a “secure Web server” is that both consumers and merchants use the same Web server, which is supported by a security protocol for the transfer of duns.
   • The most well known security protocols are Secure Hyper Text Transfer Protocol (https) and Secure Socket's Layer (SSL) which were developed by Netscape (Loshin, 1996)
4. Electronic token based systems

- According to DigiCash (1994), E-cash is designed for secure payments from any personal computer to any other workstation, over email or the Internet.
- E-cash is anonymous, hard to forge and prevents criminal usage.
- DigiCash ensures the security of financial transactions and the privacy of customers by applying public key encryption, digital signature techniques and blind signature techniques which make use of cryptography (Crede, 1996).

5. Financial EDI based systems

- Electronic Data Interchange (EDI) is the computer-to-computer exchange of business documents between organizations in standardized format (Swatman, 1993).
- A number of organizations are trying to apply financial EDI systems over the Internet by simply using e-mail.
- Security of messages is achieved by adopting two standards;
  - Privacy Enhanced Mail (PEM)
  - Multipurpose Internet Mail Extension (MIME)
6. Micro-payment-based systems

- Micro-payment are small-value transactions and comprise the majority of payments on the Internet at present (Glassman et al., 1995).
- Since many information goods (such as files and images) are relatively cheaper than physical goods.
- There are a number of IPS specially designed to meet the requirements of micro-payment, such as MicroMint, Payword, Millicent and Micro Payment Transfer Protocol (MPTP).

References