eCommerce – Chapter 06

ePayment
- Payments over the Internet
- Payments between B2B companies are made using *Electronic Funds Transfers* (EFTs)

ePayment Systems and Requirements

Payment Cards

Electronic card that contains information that can be used for payment purposes.
Alternatives:
- Closed Loop Systems: Do not use an intermediary
- Open Loop Systems: Includes one or several intermediary banks. (*Visa, Mastercard*)

Advantages:
- Provide fraud protection
- Worldwide acceptance
- Good for online transactions

Disadvantages:
- Transaction fees and monthly processing fees

eCash / Digital Cash

Refers to several systems which enable a buyer to pay electronically by transmitting a unique number (called digital certificate) similar to banknote number. Is anonymous.

Approaches:
- Online cash storage: An online bank is involved
- Offline cash storage: Virtual equivalent of money you keep in your wallet

Advantages:
- Transactions are more efficient and less costly
- Distance not affect the costs
- Fixed costs of hardware to handle eCash is nearly Zero
- Does not require that one party have any special authorization

Disadvantages:
- Concept of an Internet tax poses problems
- Money laundering (not traceable)
- Susceptible to forgery

Smart Card

Electronic card containing an embedded microchip that enables predefined operations and the addition, deletion or manipulation of information on the card.

Alternatives:
- Contact Card

- Contactless (proximity) Card
- Store-value card

Advantages:
- Better protected from misuse than conventional credit cards.

Disadvantages
- Not widely used
- Requires dedicated hardware reader.

eWallets / Digital Wallets
- Store credit card, eCash, owner identification and address.
- Makes shopping easier and more efficient.

eCheck: Electronic version or representation of a paper check.

Criteria for a Successful ePayment System

- Independence
- Interoperability and Portability
- Security
- Anonymity
- Regulations
- Divisibility
- Easy-of-use
- Transaction fees
- International support

Payment Cards

1. **Credit Cards:** Provide holder with a credit to make purchases up to a limit.
2. **Charge Cards:** Balance on a charge card is supposed to be paid in full upon receipt of the monthly statement.
3. **Debit Cards:** The money for a purchased item comes directly out of the holder's checking account.

Stages of Credit Card Transaction Processing

1. **Authorization:** Approves or declines a card transaction
2. **Authentication:** Establishing the validity of the account information.
3. **Clearing:** Exchanges transaction information with an acquirer.
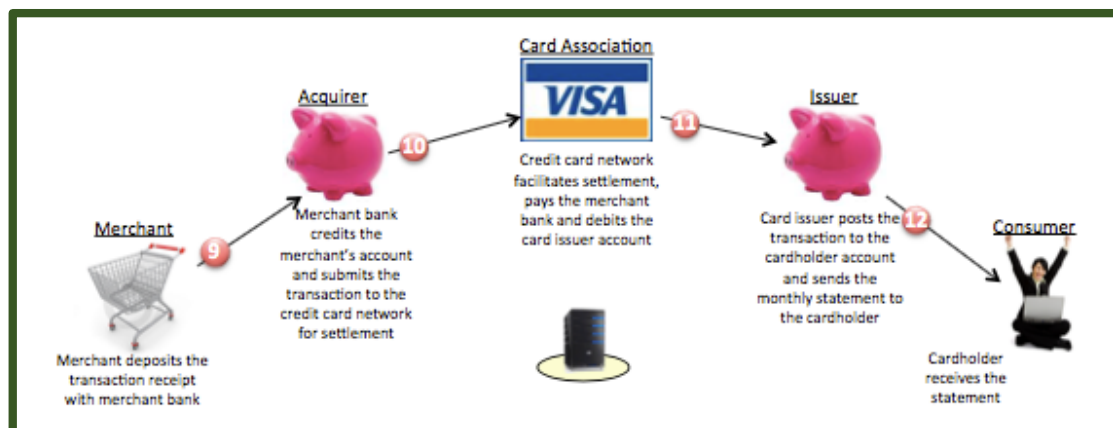4. **Settlement:** Exchanges funds with an acquirer to complete a cleared transaction.

Actors and Stakeholders

- Cardholder
- Issuer: Bank
- Acquirer: Processing bank
- Merchant
- Credit Card Association

Authorization
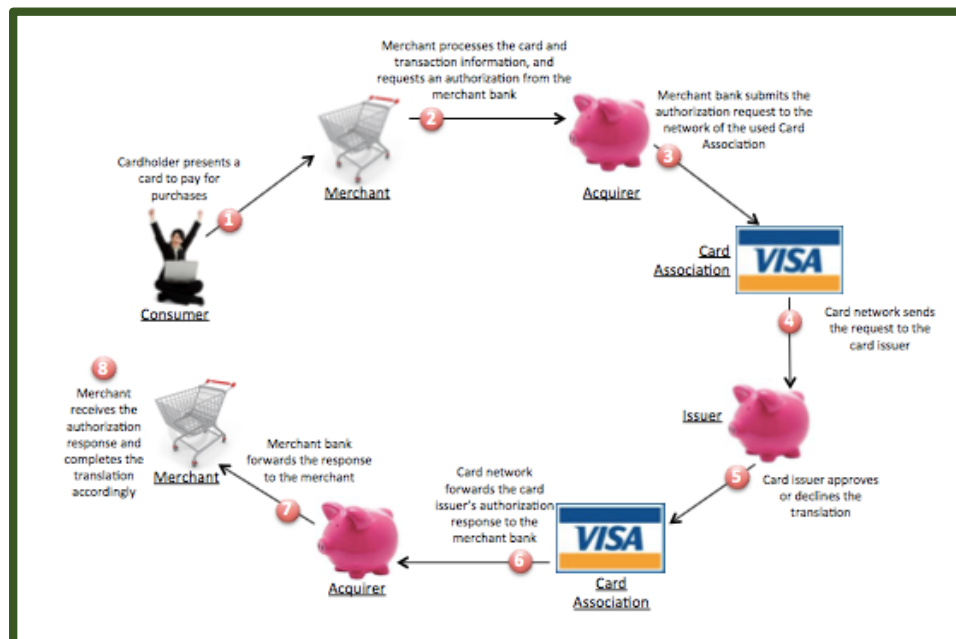
Clearing & Settlement

Additional Actors for Online Transactions

1. **Payment Gateway**
   Service provider that authorizes payments for eBusinesses.
   Equivalent of a traditional physical point of sale terminal located in most retail outlets.
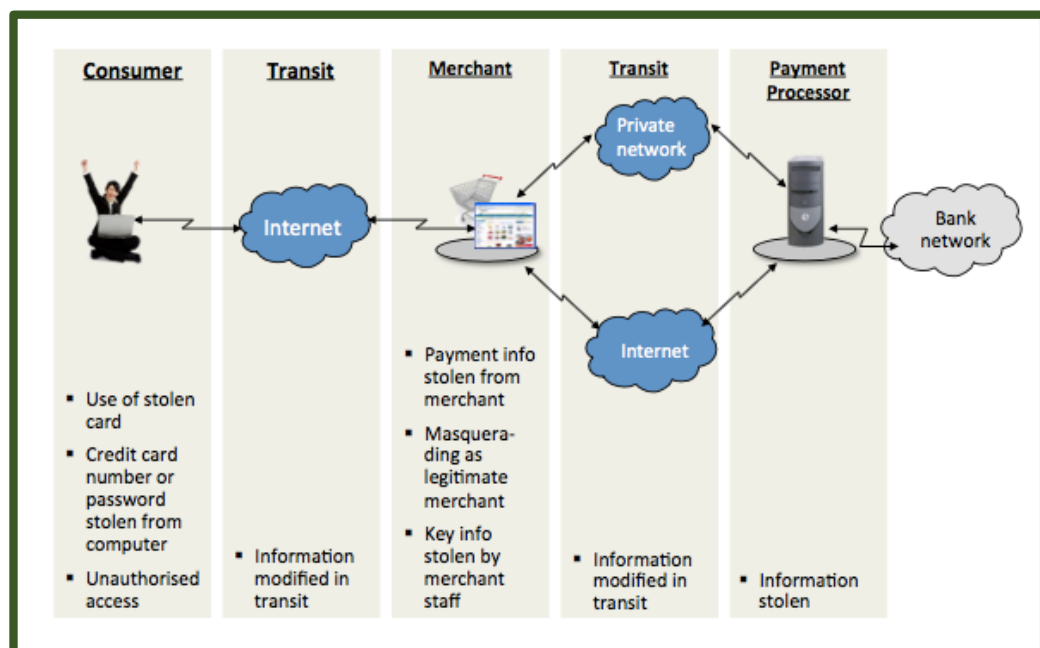2. **Payment Processor**
   Company appointed by a merchant to handle credit card transactions for merchant banks.

Options for the Payment Card Value Chain:
1. Web site relays credit card data
2. Customer is redirected to payment gateway

Payment Card Risks

Mechanisms for Preventing Payment Card Fraud

1. **Address Verification**
   Compares the address entered on a Web page with the address information file with the cardholder's issuing bank.
2. **Manuel Review**
3. **Fraud Screens and Automated Decision Models**
   Tools are based on automated rules that determine whether a transaction should be accepted, rejected or suspended.
4. **Card Verification Number**
   Compare the verification number printed on the signature strip on the back of the card with the information on file with the cardholder's issuing bank.
5. **Card Association Payer Authentication Services**
   Card Associations have developed a new set of payer identification services. (e.g. *TAN*)
6. **Negative Lists**
   Is a file that includes a customer's information and the status of this customer.

Requirements and Challenges

1. No Double-Spending and Non-Forgeability
2. Immediate Verifiability
3. Anonymity
4. Divisibility and Combination
5. eCash – Basic Idea for Realization