Chapter 12

Electronic Payment Systems

Learning Objectives

1. Understand the shifts that are occurring with regard to noncash and online payments.
2. Discuss the players and processes involved in using credit cards online.
3. Discuss the different categories and potential uses of smart cards.
4. Discuss various online alternatives to credit card payments and identify under what circumstances they are best used.

Learning Objectives

5. Describe the processes and parties involved in e-checking.

6. Describe payment methods in B2B EC, including payments for global trade.

7. Discuss electronic bill and invoice presentment and payment.

8. Understand the sales tax implications of e-payments.

The Payment Revolution

- Some crucial factors come into play in determining whether a particular method of e-payment achieves critical mass:
  - Independence
  - Interoperability and portability
  - Security
  - Anonymity
  - Divisibility
  - Ease of use
  - Transaction fees
  - Regulations

The Payment Revolution

- **Using Payment Cards Online**
  - **payment card**

    Electronic card that contains information that can be used for payment purposes
  - Payment cards come in three types:
    - Credit cards
    - Charge cards
    - Debit cards

The Payment Revolution

- **Processing Cards Online**
  - **authorization**

    Determines whether a buyer's card is active and whether the customer has sufficient funds

  - **settlement**

    Transferring money from the buyer's to the merchant's account

The Payment Revolution

- Three basic configurations for processing online payments. Merchants may:
  - Own the payment software
  - Use a point of sale system (POS) operated by an acquirer
    - **payment service provider (PSP)**

      A third-party service connecting a merchant's EC systems to the appropriate acquirers. PSPs must be registered with the various card associations they support
  - Use a POS operated by a payment service provider

The Payment Revolution

- The key participants in processing card payments online include:
  - Acquiring bank
  - Credit card association
  - Customer
  - Issuing bank
  - Merchant
  - Payment processing service
  - Processor

The Payment Revolution

- **Fraudulent Card Transactions**
  - In the online world, merchants are held liable for fraudulent transactions
  - Merchants can incur additional fees and penalties imposed by the card associations
  - Costs associated with combating fraudulent transactions are also the merchant's responsibility

The Payment Revolution

- The key tools used in combating fraud:
  - **Address Verification System (AVS)**

    Detects fraud by comparing the address entered on a Web page with the address information on file with the cardholder's issuing bank
  - Manual review
  - Fraud screens and automated decision models

The Payment Revolution

- The key tools used in combating fraud:
  - **card verification number (CVN)**

    Detects fraud by comparing 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

  - Card association payer authentication services
  - Negative files

The Payment Revolution

- **virtual credit card**

  An e-payment system in which a credit card issuer gives a special transaction number that can be used online in place of regular credit card numbers

- **smart card**

  An electronic card containing an embedded microchip that enables predefined operations or the addition, deletion, or manipulation of information on the card

Smart Cards

- **contact card**

  A smart card containing a small gold plate on the face that when inserted in a smart card reader makes contact and passes data to and from the embedded microchip

- **contactless (proximity) card**

  A smart card with an embedded antenna, by means of which data and applications are passed to and from a card reader unit or other device without contact between the card and the card reader

Smart Cards

EXHIBIT 12.2 Smart Card

smart

VISA®

4000 1234 5678 9010

4000

CUSTOMER SINCE 2000   GOOD THRU 06/03   V

A. SAMPLE

VISA®

Embedded Chip

Smart Cards

- **smart card reader**

  Activates and reads the contents of the chip on a smart card, usually passing the information on to a host system

- **smart card operating system**

  Special system that handles file management, security, input/output (I/O), and command execution and provides an application programming interface (API) for a smart card

Smart Cards

- **Applications of Smart Cards**
    - Retail Purchases
    - Transit Fares
    - E-Identification
    - Health Care
- **Securing Smart Cards**
    - Smart cards are more secure than conventional payment cards

Stored-Value Cards

- **stored-value card**

  A card that has monetary value loaded onto it and that is usually rechargeable

  - Anyone can obtain a stored-value card without regard to prior financial standing or having an existing bank account as collateral

  - The stored-value card market is growing rapidly

E-Micropayments

- **e-micropayments**

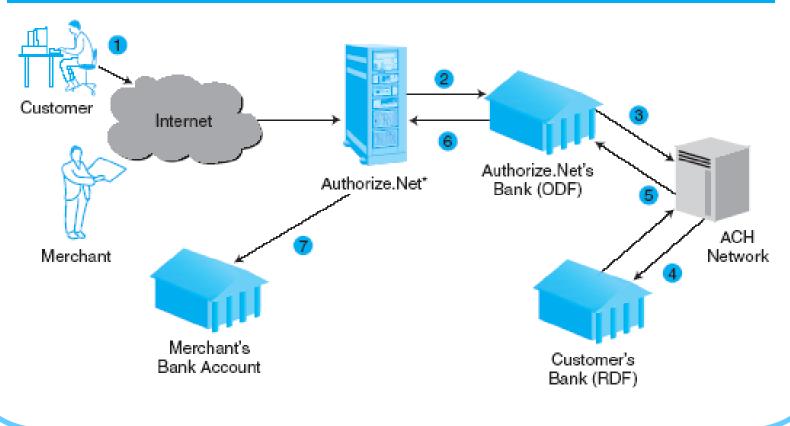 Small online payments, typically under $10

E-Micropayments

- Five basic micropayment models that do not depend solely or directly on credit or debit cards:
  - Aggregation
  - Direct payment
  - Stored value
  - Subscriptions
  - Ála Carte

E-Checking

- **e-check**

  A legally valid electronic version or representation of a paper check

E-Checking

EXHIBIT 12.3   Processing E-Checks with Authorize.Net

E-Checking

- **Automated Clearing House (ACH) Network**

  A nationwide batch-oriented electronic funds transfer system that provides for the interbank clearing of electronic payments for participating financial institutions
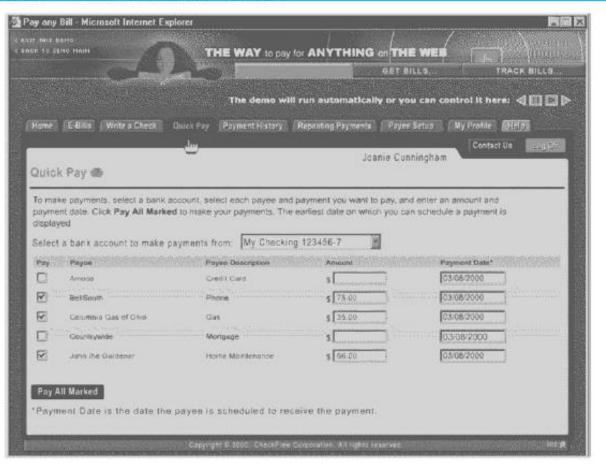
E-Checking

- **Benefits of E-Checks**
  - Reduces the merchant's administrative costs
  - Improves the efficiency of the deposit process for merchants and financial institutions
  - Speedier during the checkout process for consumers
  - Provides consumers with more information about their purchases on their account statements
  - Reduces the float period and the number of checks that bounce because of insufficient funds (NSFs)

Electronic Bill Presentment and Payment

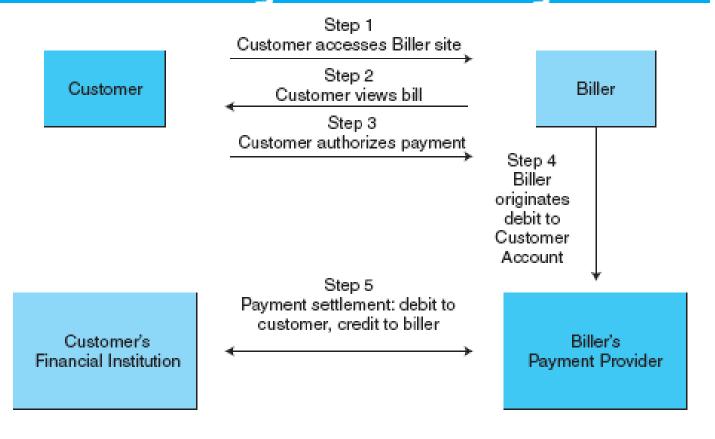- **electronic bill presentment and payment (EBPP)**

  Presenting and enabling payment of a bill online. Usually refers to a B2C transaction
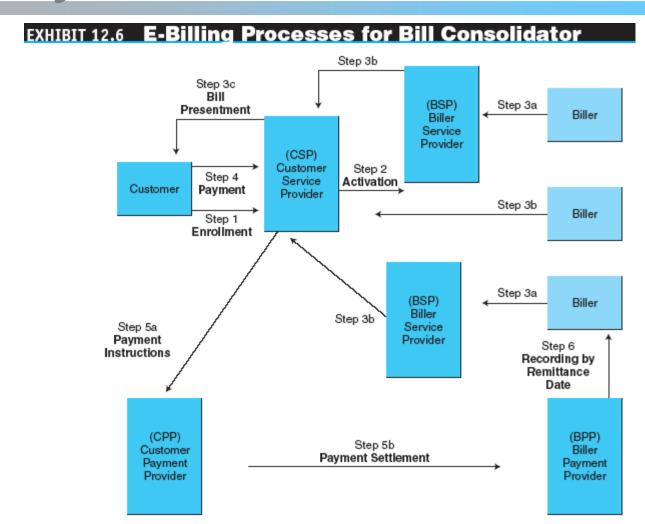
Electronic Bill Presentment and Payment

EXHIBIT 12.4 E-Bill Presentment

Electronic Bill Presentment and Payment

- **Types of E-Billing**
  - Online banking
  - Biller direct
  - Bill consolidator

Electronic Bill Presentment and Payment

EXHIBIT 12.5 E-Billing Process for Single Biller

Customer

Biller

Step 1
Customer accesses Biller site

Step 2
Customer views bill

Step 3
Customer authorizes payment

Step 4
Biller originates debit to Customer Account

Step 5
Payment settlement: debit to customer, credit to biller

Customer's Financial Institution

Biller's Payment Provider

Electronic Bill Presentment and Payment

EXHIBIT 12.6 E-Billing Processes for Bill Consolidator

Electronic Bill Presentment and Payment

- **Advantages of E-Billing**
  - The reduction in expenses related to billing and processing payments
  - Advertising: electronic inserts can be customized to the individual customer

Electronic Bill Presentment and Payment

- Reduces the customer's expenses by eliminating the cost of checks, postage, and envelopes

- Simplifies and centralizes payment processing and facilitates better record keeping

- Customers can review and pay bills at virtually any time

B2B Electronic Payments

- **Current B2B Payment Practices**
  - B2B payments are part of a much larger financial supply chain that includes:
    - Procurement
    - Contract administration
    - Fulfillment
    - Financing
    - Insurance
    - Credit ratings
    - Shipment validation
    - Order matching
    - Payment authorization
    - Remittance matching
    - General ledger accounting

B2B Electronic Payments

- More organizations have indicated a willingness to migrate from checks to electronic payments in the future because of:
  - Current payment practices
  - Electronic payments
  - Role of EDI
  - Integration of electronic payment and accounting systems
  - Barriers to electronic payment
  - Prospects for electronic payments

B2B Electronic Payments

- **enterprise invoice presentment and payment (EIPP)**

  Presenting and paying B2B invoices online

B2B Electronic Payments

- **EIPP Models**
  - Seller direct
  - Buyer direct
  - Consolidator

B2B Electronic Payments

- **EIPP Options**
  - ACH network
  - Purchasing cards (p-cards)
  - Fedwire or wire transfer
  - Letters of credit for global payments

B2B Electronic Payments

- **purchasing cards (p-cards)**

    Special-purpose payment cards issued to a company's employees to be used solely for purchasing nonstrategic materials and services up to a preset dollar limit

- **letter of credit (LC)**

    A written agreement by a bank to pay the seller, on account of the buyer, a sum of money upon presentation of certain documents

The Sales Tax Issue

- A 1992 ruling by the U.S. Supreme Court held that a state cannot force out-of-state businesses to collect sales taxes unless the business has a physical presence—a store, factory, or distribution center—in the state

- Researchers at the University of Tennessee estimate that in the United States, state and local governments have lost $15.5 billion in sales taxes because of online sales

The Sales Tax Issue

- Because of the complexities, many online businesses (B2C and B2B) rely on specialized third-party software and services to calculate the taxes associated with a sale

The Sales Tax Issue

- Representative companies that offer software and services to handle the detailed computations and keep abreast of tax law changes include:
  - Salestax.com
  - Sales Tax Clearinghouse
  - Cybersource

Managerial Issues

1. What B2C payment methods should we use?
2. What B2B payment methods should we use?
3. Should we use an in-house payment mechanism or outsource it?
4. How secure are e-payments?