E-commerce

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Kenneth C. Laudon
Carol Guercio Traver

CHAPTER 6

E-commerce Payment Systems

Created by, David Zolzer, Northwestern State University—Louisiana

Learning Objectives

- Describe the features of traditional payment systems
- Discuss the current limitations of online credit card payment systems
- Understand the features and functionality of digital wallets

Learning Objectives

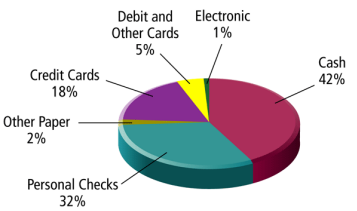
- Describe the features and functionality of the major types of digital payment systems in the B2C arena
- Describe the features and functionality of the major types of digital payment systems in the B2B arena
- Describe the features and functionality of electronic billing presentment and payment systems

Types of Payment Systems

- Cash is legal tender defined by a national authority to represent value
- Float is the period of time between a purchase and the actual payment for the purchase
- Checking transfers are funds transferred directly via a signed draft or check from a consumer' s checking account to a merchant or other individual

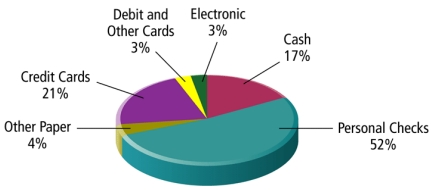
Most Common Payment Systems, Based on Number or Transactions

Page 284, Figure 6.1



Most Common Payment Systems, Based on Dollar Amount

Page 285, Figure 6.2



Types of Payment Systems

- Credit card represent an account that extends credit to consumers, permits consumers to purchase items while deferring payment, and allows consumers to make payments to multiple vendors at one time
- Credit card associations are nonprofit organizations that set standards for issuing banks
- Issuing banks actually issue credit cards and process transactions
- Processing centers or clearing houses handle verification of accounts and balances

Types of Payment Systems

- Stored value payments systems are accounts created by depositing funds into an account and from which funds are paid out or withdrawn as needed
- Debit cards immediately debit a checking or other demand deposit account
- Accumulating balance payment systems are accounts that accumulate expenditures and to which consumers make periodic payments

Dimensions of Payment Systems

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TABLE 6.1 DIMENSIONS OF PAYMENT SYSTEMS

DIMENSION	CASH	PERSONAL CHECK	CREDIT CARD	STORED VALUE (DEBIT CARD)	ACCUMULATING BALANCE
Instantly convertible without intermediation	yes	no	no	no	no
Low transaction cost for small transactions	yes	no	no	no	yes
Low transaction cost for large transactions	no	yes	yes	yes	yes
Low fixed costs for merchant	yes	yes	no	no	no
Refundable (able to be repudiated)	no	yes	yes	no (usually)	yes
Financial risk for consumer	yes	no	up to $50	limited	no
Financial risk for merchant	no	yes	yes	no	yes
Anonymous for consumer	yes	no	no	no	no
Anonymous for merchant	yes	no	no	no	no
Immediately respendable	yes	no	no	no	no
Security against unauthorized use	no	some	some	some	some
Tamper-resistant	yes	no	yes	yes	yes
Requires authentication	no	yes	yes	yes	yes
Special hardware required	no	no	yes—by merchant	yes—by merchant	yes—by merchant
Buyer keeps float	no	yes	yes	no	yes
Account required	no	yes	yes	yes	yes
Has immediate monetary value	yes	no	no	yes	no

SOURCE: Adapted from Mackie-Mason and White, 1996.

Current E-commerce Payment Systems

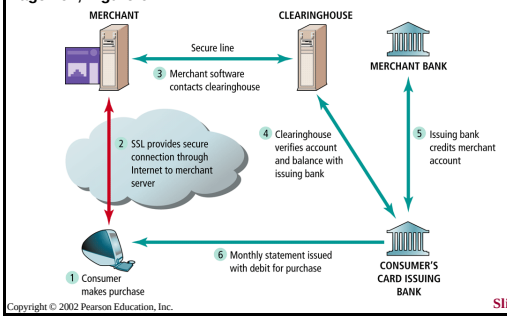
- Digital Cash generate a private form of currency that can be spent at e-commerce sites
- Online store value systems rely on prepayments, debit cards, or checking accounts to create value in an account that can be used for e-commerce shopping

Current E-commerce Payment Systems

- Digital accumulating balance payment systems accumulate small charges and bill the consumer periodically. These systems are especially suited for processing micropayments for digital accounts
- Digital credit accounts extend the online functionality of existing credit card payment systems
- Digital checking systems create digital checks for e-commerce remittances and extend the functionality of existing bank checking systems

How an Online Credit Card Transaction Works

Page 292, Figure 6.4



Limitations of Online Credit Card Payment Systems

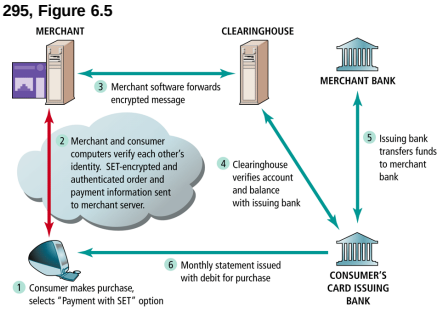
- Security
  - Neither the merchant not the consumer can be fully authenticated
- Merchant Risk
  - Consumers can repudiate charges
- Cost
  - Roughly 3.5% of purchase plus transaction fee
- Social Equity
  - Young adults do not have credit cards
  - Almost 100 million adult Americans cannot afford cards or are considered poor risks

SET: Secure Electronic Transaction Protocol

- An open standard for the e-commerce industry developed and offered by MasterCard and Visa as a way to facilitate and encourage improved security for credit card transactions
- Uses a digital certificate to verify a sender' s identity

How SET Transaction Work

Page 295, Figure 6.5



B2C Digital Payment Systems

- Digital Wallets
- Digital Cash
  - Online Stored Value Systems
  - Smart Card Stored Value Systems
- Digital Accumulating Balance Payment Systems
- Digital Credit Card Payment Systems
- Digital Checking Payment Systems

Digital Wallets

- Authenticates the consumer through the use of digital certificates or other encryption methods, stores and transfers value, and secures the payment process from the consumer to the merchant

Promised Functionality of Digital Wallets

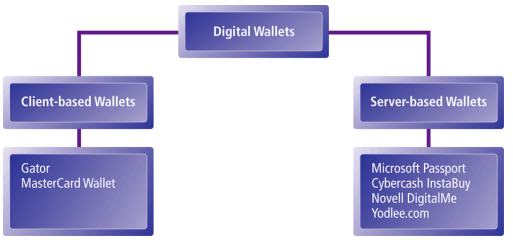
Page 297, Table 6.2

TABLE 6.2 PROMISED FUNCTIONALITY OF DIGITAL WALLETS

FUNCTION	DESCRIPTION
Authentication	Confirms identities via digital certificates, SET, or other forms of encryption.
Processing of payments	Pays bills via alliances with credit card associations and banks.
Privacy/password management	Helps customers control their digital environments, PINs, card numbers, and passwords in a secure product.
Receipt management	Reviews all transactions at a single source.
Bill presentment	Presents and pays bills at a single location.
Loyalty programs	Participates in and manages loyalty points at a single location.
Coupon delivery/discounts	Coordinates merchant promotions through a single wallet.
Spending allowances	Establishes e-allowances.
Micropayments	Makes payments under $5 anywhere on the Web based on credit cards.
Integration with other software	Links to taxation software, personal budgets, personal devices, and wireless software

Types of Digital Wallets

Page 298, Figure 6.6

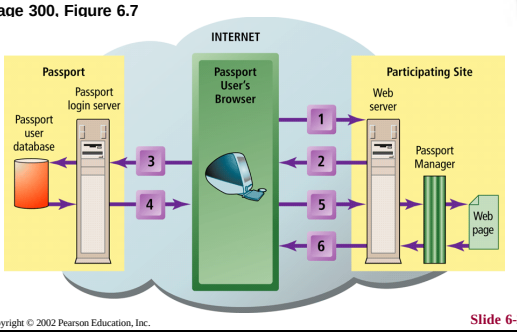


Digital Wallets

- Client-based digital wallets are software applications that consumers install on their computer, and that offer consumer convenience by automatically filling out forms at online stores
- Server-based digital wallets are software-based authentication and payment services and products sold to financial institutions that market the systems to merchants either directly or as a part of their financial service package
- Electronic Commerce Modeling Language is a standard of digital wallets

How Microsoft' s Passport Wallet Works

Page 300, Figure 6.7



Digital Cash

- Also called e-cash
- Digital forms of value storage or value exchange that have limited convertibility into other forms of value and require intermediaries to convert

Examples of Digital Cash

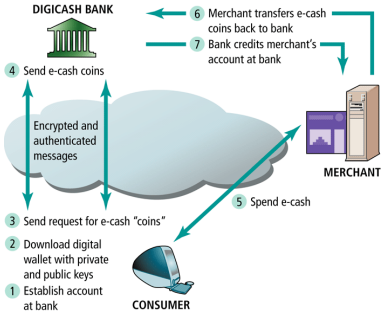
Page 302, Table 6.3

TABLE 6.3 EXAMPLES OF DIGITAL CASH

NAME OF SYSTEM	YEAR FOUNDED/DESCRIPTION
First Virtual	1994. First secure stored value system based on credit cards, pre-use deposits, and PIN numbers. Ceased operations in 1998.
DigiCash (now e-Cash)	1996. Encryption-based prepaid stored value system requiring digital wallet on hard drive to store e-coins. Ceased operations in 1998, returned as e-cash.
Millicent	1996. Digital Equipment Corporation's entry into micropayment e-cash. Now a Compaq platform product with multiple options.
Peer-to-Peer Payment Systems	
PayPal	1999. Free P2P micropayment system.
Yahoo PayDirect	1999. Free Yahoo P2P payment service.
MoneyZap	1999. Western Union fee-based money transfer system.

Digicash: How First Generation Digital Cash Worked

Page 303, Figure 6.8



Digital Cash

- Online stored value payment systems permit consumers to make instant, online payments to merchants and other individuals based on value stored in an online account
- Smart cards as store value systems are based on credit-card-sized plastic cards that have embedded chips that store personal information

Online Stored Value Systems

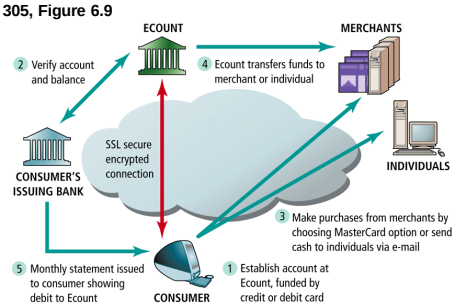
Page 305, Table 6.4

TABLE 6.4 ONLINE STORED VALUE SYSTEMS

NAME OF SYSTEM	YEAR FOUNDED/DESCRIPTION
Ecount	1998. Prepaid debit account.
Monetta Prepaid	2000. Prepaid virtual card that allows consumers to make online payments without using a credit card or bank account. Digital wallet.
Monetta Debit	2000. Account that allows users to pay from existing checking, savings, or line of credit accounts. Digital wallet.
eCharge	1997. Prepaid account with digital wallet.
Millicent	1998. Prepaid cards purchased at convenience stores (Japan only).
Smart Cards	
Mondex	1994. Smart card, stored value system in which value is stored on a chip on the card.
American Express Blue	1999. Combined credit and smart card.

How Ecount.com Works: A Stored Value System

Page 305, Figure 6.9



Digital Accumulating Balance Payment Systems

- Allow users to make micropayments and purchases on the Web, accumulating a debit balance for which they are billed at the end of the month

Digital Accumulating Balance Payment Systems

Page 309, Table 6.5

TABLE 6.5 DIGITAL ACCUMULATING BALANCE PAYMENT SYSTEMS

SYSTEM	YEAR FOUNDED/DESCRIPTION
qPass	1997. Integrated micropayment platform aimed at digital content providers. Digital wallet used.
iPIN	1997. Integrated payment platform with accumulated balance capability and flexible authentication procedures.
Millicent	1998. Compaq's platform optimized for buying and selling digital content. Users can fund accounts through ISP, telephone, or utility payments.

Digital Credit Card Payment Systems

- Seek to extend the functionality of existing credit cards for use as online shopping payment tools

Digital Credit Card Payment Systems

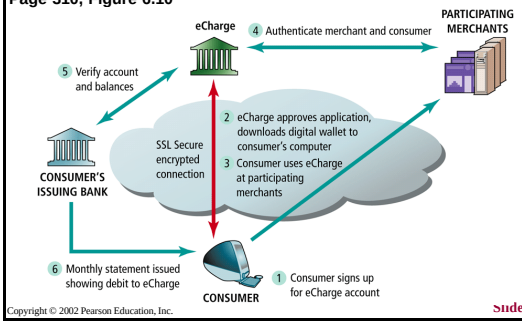
Page 309, Table 6.6

TABLE 6.6 DIGITAL CREDIT CARD PAYMENT SYSTEMS

SYSTEM	YEAR FOUNDED/DESCRIPTION
eCharge Credit	1997. eCharge allows consumers to charge online payments to a credit card account. Digital wallet download required.
BillPoint Online Payments	1995/98. eBay, WellsFargo, and Visa's entry into P2P payment systems. BillPoint allows eBay sellers to accept credit card payments from buyers without having to have a merchant account. Does not require a digital wallet.

How a Digital Credit Card Payment System Works

Page 310, Figure 6.10



Digital Checking Payment Systems

- Seek to extend the functionality of existing checking accounts for use as online shopping payment tools

Digital Checking Payment Systems

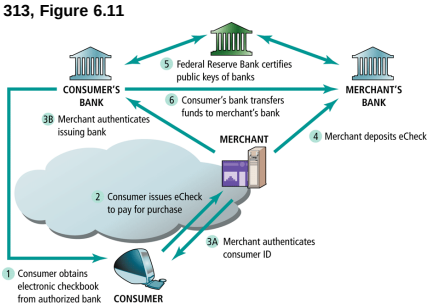
Page 312, Table 6.7

TABLE 6.7 DIGITAL CHECKING PAYMENT SYSTEMS

SYSTEM	YEAR FOUNDED/DESCRIPTION
eCheck	1998. Consortium of 15 banks, government agencies, and technology companies (Echeck.org.). Secure electronic checking system. Digital wallet required.
Achex Inc.	1999. Simple check-extension system. No digital wallet.
BillPoint Electronic Checks	2000. eBay, Wells Fargo entered into online digital checking for use at eBay only. No digital wallet.

How Digital Checking Works: Echeck

Page 313, Figure 6.11



B2B Payment Systems

- More complex than B2C systems
- Must link into exist ERP and EDI systems
- Two main types
  - Systems that replace traditional banks
  - Existing banking systems extending to the B2B marketplace

Key Features of B2B Payment Systems

Page 316, Table 6.8

TABLE 6.8 KEY FEATURES OF B2B PAYMENT SYSTEMS

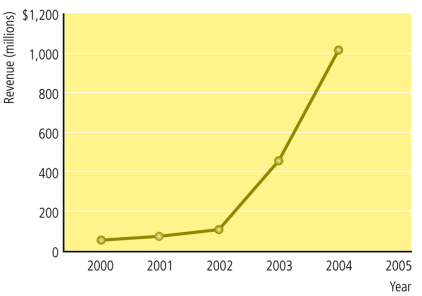
FEATURE	DESCRIPTION
Credit verification and guarantee	Provides an assessment of creditworthiness and payment guarantee
Escrow service	Helps assure that both parties will perform their obligations
Nonrepudiation	Ensures that purchases are not reversible; allows unknown parties to trade with one another more confidently
Funds collection for seller	Handles funds transfer, transmittal, and storage
Financing	Provides "float" or variable payment delay to buyers in return for a fee
Integration with other business documents	Integrates purchase orders, invoices, shipping documents, and payments
Fraud detection	Helps seller trade more securely
Accounting	Provides account summary and invoice details
Dispute handling	Provides a method for adjudicating disputes
Integration to back-end corporate systems	Links payment systems with shipping, accounting, and other corporate systems
Online bill presentment	Has the ability to generate and present electronic bills
Multiple payment options	Ensures that buyers may pay with credit card, debit card, ACH check, electronic funds transfer, or other means

Electronic Billing Presentation and Payment

- New forms of online payment systems for monthly bills
- Allow consumers to view bills electronically and pay them through electronic funds transfers from bank or credit card accounts

Growth of EBPP Market

Page 318, Figure 6.12



Types of EBPP Systems

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