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E-COMMERCE PAYMENT SYSTEMS

What is payment system?

A **payment system** is any **system** used to settle financial transactions through the transfer of monetary value. This includes the institutions, instruments, people, rules, procedures, standards, and technologies that make its exchange possible.

Types of Payment Systems

1. Cash
2. Checking Transfer
3. Credit Card
4. Stored Value
5. Accumulating Balance

Cash

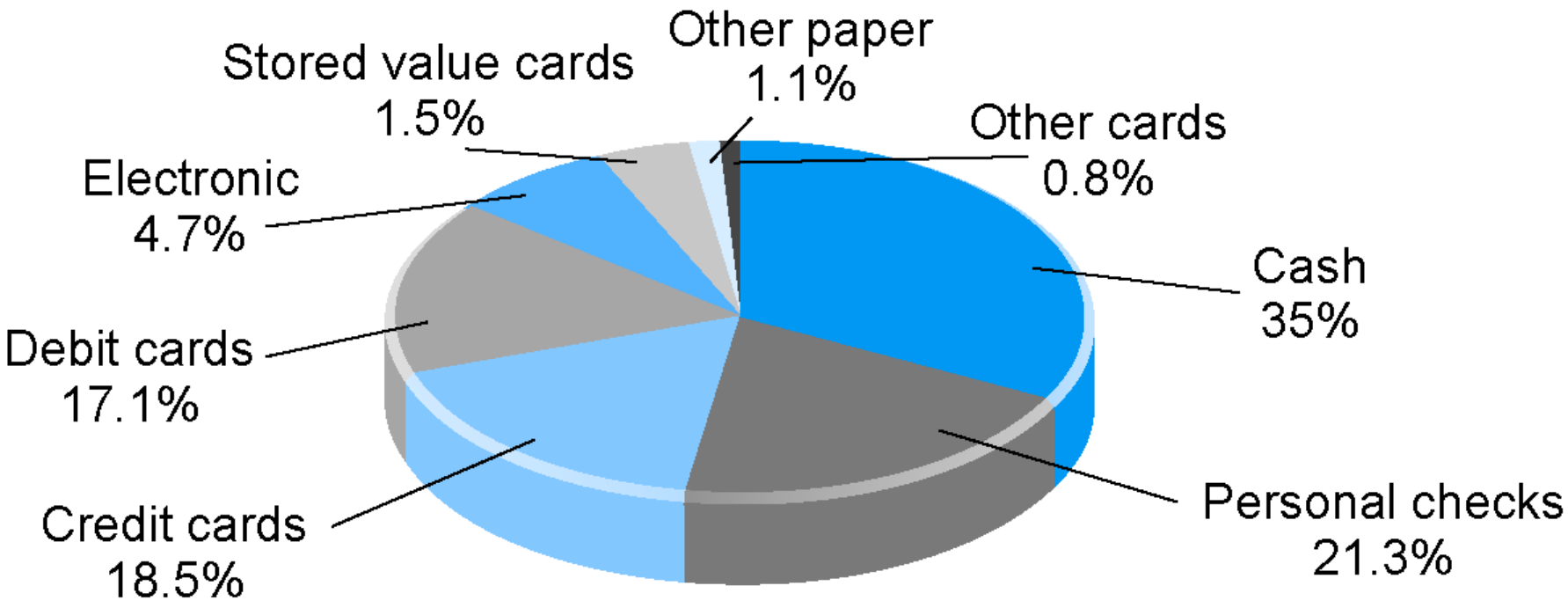
- Legal tender defined by a national authority to represent value
- Most common form of payment in terms of number of transactions
- Instantly convertible into other forms of value without intermediation of any kind
- Portable, requires no authentication, and provides instant purchasing power
- “Free” (no transaction fee), anonymous, low cognitive demands
- Limitations: easily stolen, limited to smaller transaction, does not provide any float

Checking Transfer

- Funds transferred directly via a signed draft or check from a consumer's checking account to a merchant or other individual
- Most common form of payment in terms of amount spent
- Can be used for both small and large transactions
- Some float
- Not anonymous, require third-party intervention (banks)
- Introduce security risks for merchants (forgeries, stopped payments), so authentication typically required

Most Common Payment Systems, Based on Number Of Transactions

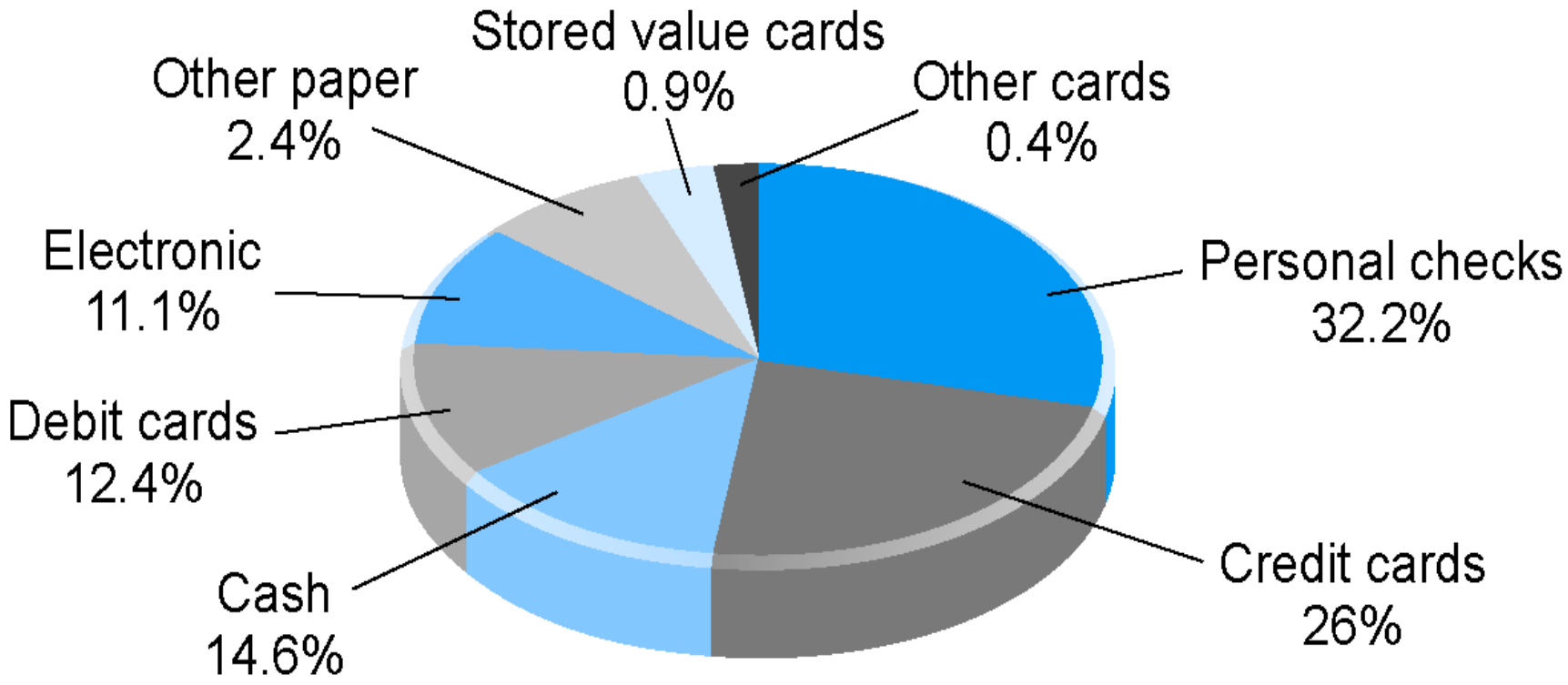
Figure 6.1, Page 309



SOURCE: Based on data from U.S. Census Bureau, 2005.

Most Common Payment Systems, Based on Dollar Amount

Figure 6.2, Page 310



SOURCE: Based on data from U.S. Census Bureau, 2005.

Credit Card

- Represents an account that extends credit to consumers, permitting consumers to purchase items while deferring payment, and allows consumers to make payments to multiple vendors at one time
- Credit card associations: Nonprofit associations (Visa, MasterCard) that set standards for issuing banks
- Issuing banks: Issue cards and process transactions
- Processing centers (clearinghouses): Handle verification of accounts and balances

Stored Value

- Accounts created by depositing funds into an account and from which funds are paid out or withdrawn as needed
  - Examples: Debit cards, gift certificates, prepaid cards, smart cards
  - Debit cards: Immediately debit a checking or other demand-deposit account
  - Peer-to-peer payment systems such as PayPal a variation

Accumulating Balance

- Accounts that accumulate expenditures and to which consumers make period payments
  - Examples: utility, phone, American Express accounts

Dimensions of Payment Systems

Table 6.1, Page 312

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
Refutable (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

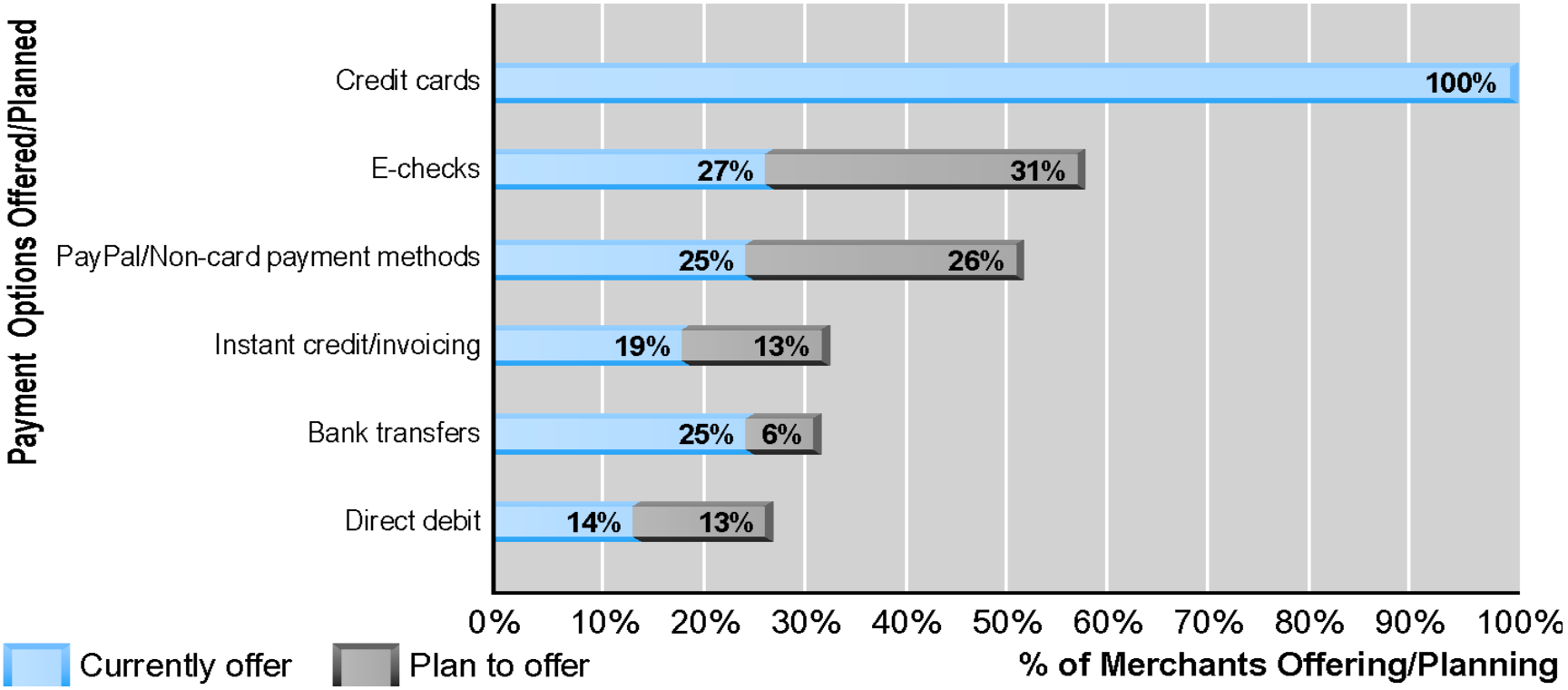
SOURCE: Adapted from MacKie-Mason and White, 1996.

Current Online Payment Systems

- Credit cards are dominant form of online payment, accounting for around 80% of online payments in 2005
- New forms of electronic payment include:
  - Digital cash
  - Online stored value systems
  - Digital accumulating balance payment systems
  - Digital credit accounts
  - Digital checking

Various Payment Methods Offered or Planned to be Offered by Online Merchants

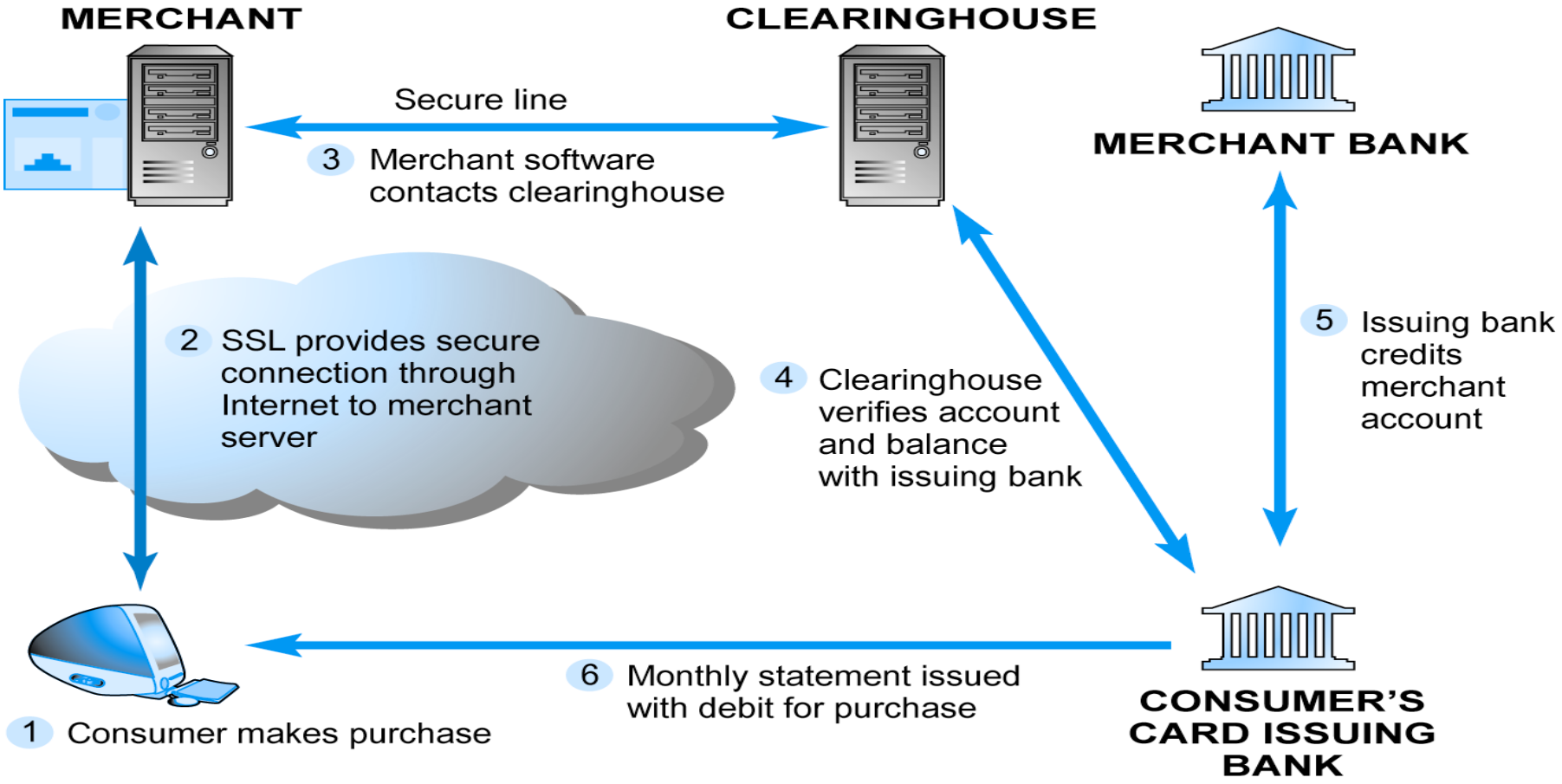
Figure 6.3, Page 314



SOURCE: Based on data from Cybersource Corporation, 2005.

How an Online Credit Transaction Works

Figure 6.4, Page 316



Limitations of Online Credit Card Payment Systems

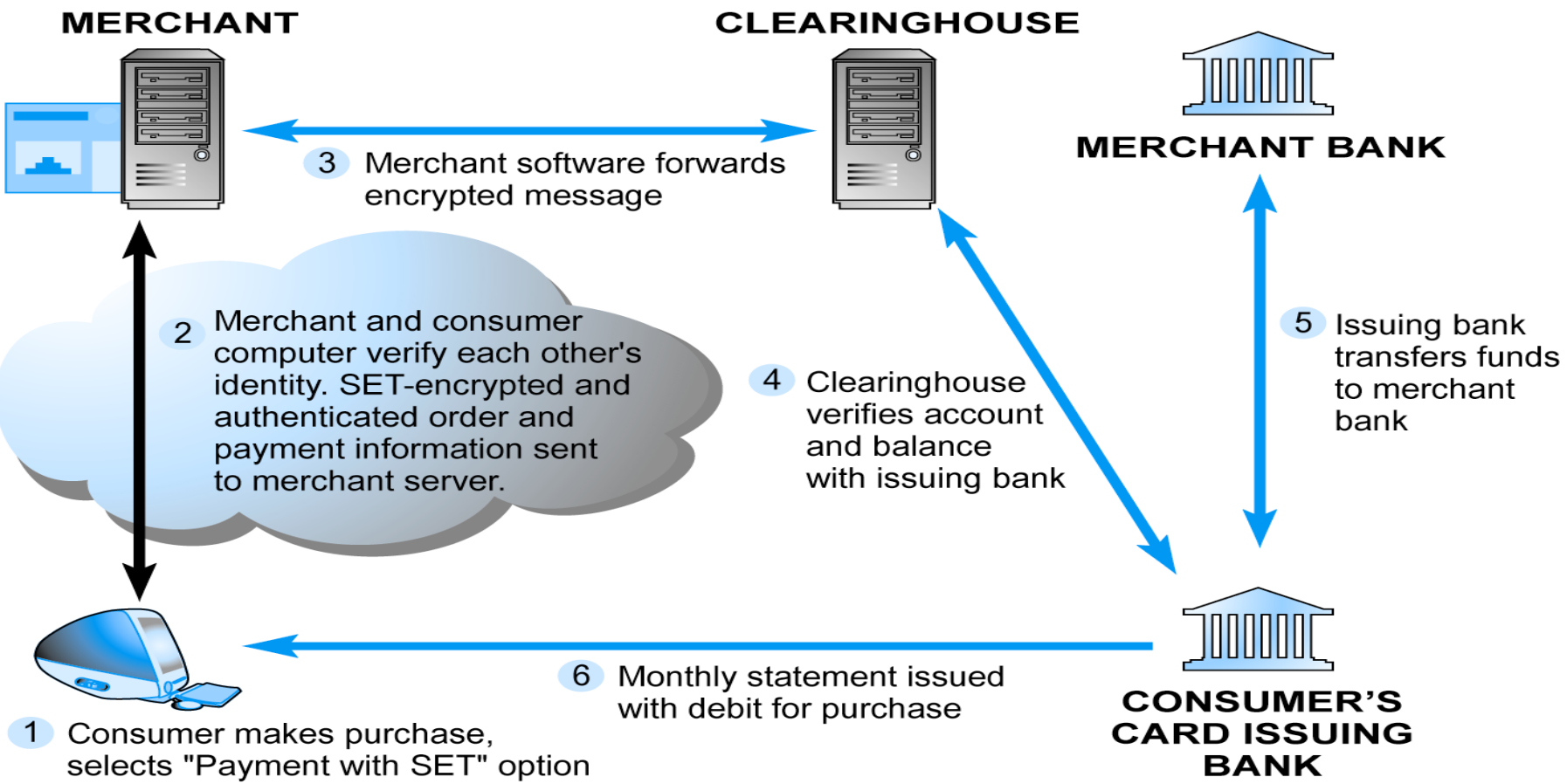
- Security: neither merchant nor consumer can be fully authenticated
- Cost: for merchants, around 3.5% of purchase price plus transaction fee of 20 – 30 cents per transaction
- Social equity: many people do not have access to credit cards (young adults, plus almost 100 million other adult Americans who cannot afford cards or are considered poor risk)

The SET (Secure Electronic Transaction) Protocol

- Authenticates cardholder and merchant identity through use of digital certificates
- An open standard developed by MasterCard and Visa
- Transaction process similar to standard online credit card transaction, with more identity verification
- Thus far, has not caught on much, due to costs involved in integrating SET into existing systems, and lack of interest among consumers

How SET Transactions Work

Figure 6.5, Page 320



Digital Wallets

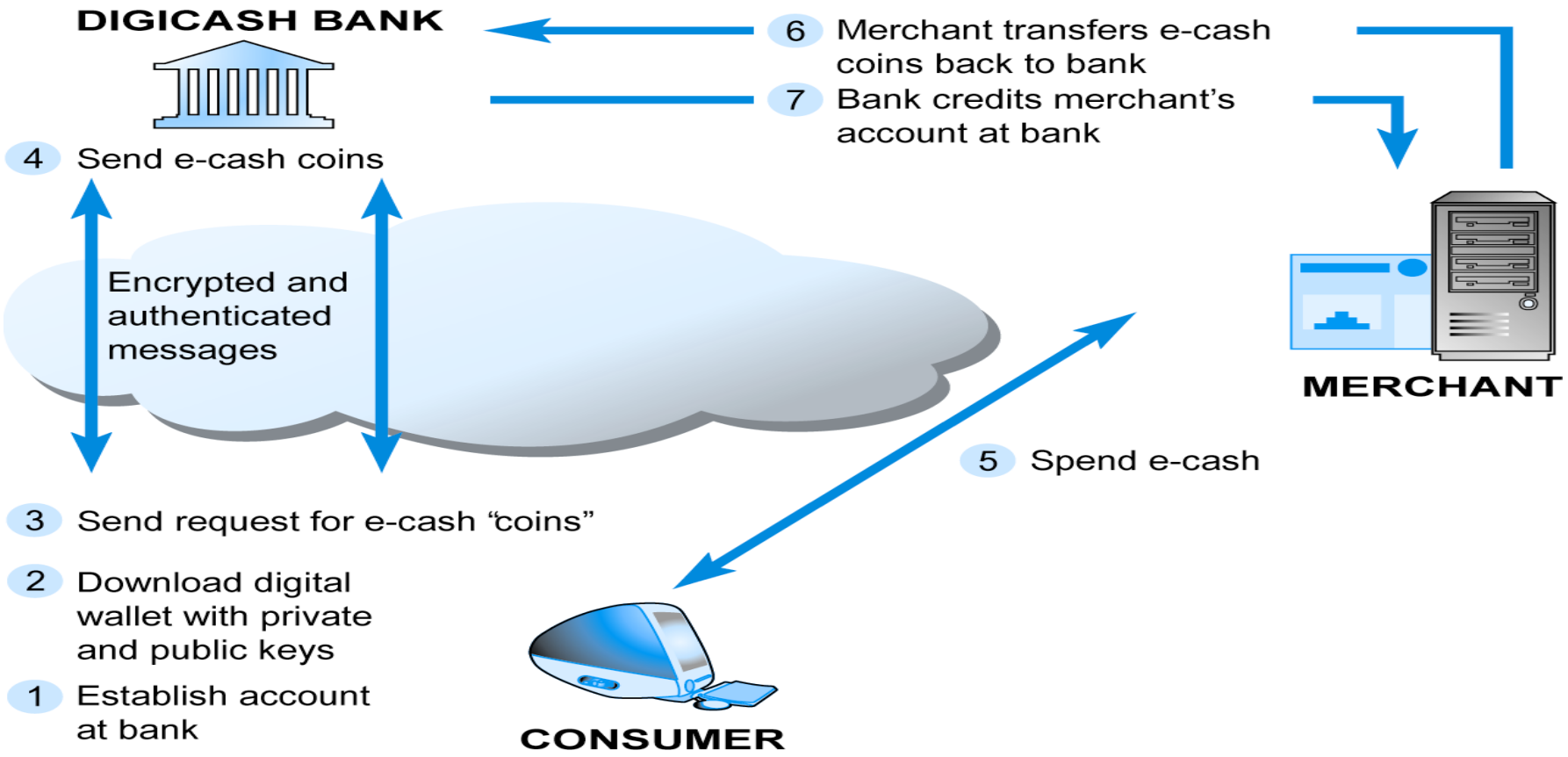
- Concept of digital wallet relevant to many of the new digital payment systems
- Seeks to emulate the functionality of traditional wallet
- Most important functions:
  - Authenticate consumer through use of digital certificates or other encryption methods
  - Store and transfer value
  - Secure payment process from consumer to merchant
- Most common types are client-based software applications: Gator eWallet.com, MasterCard Wallet

Digital Cash

- One of the first forms of alternative payment systems
- Not really “cash”: rather, are forms of value storage and value exchange that have limited convertibility into other forms of value, and require intermediaries to convert
- Many of early examples have disappeared; concepts survive as part of P2P payment systems

Digicash: How First Generation Digital Cash Worked

Figure 6.6, Page 324

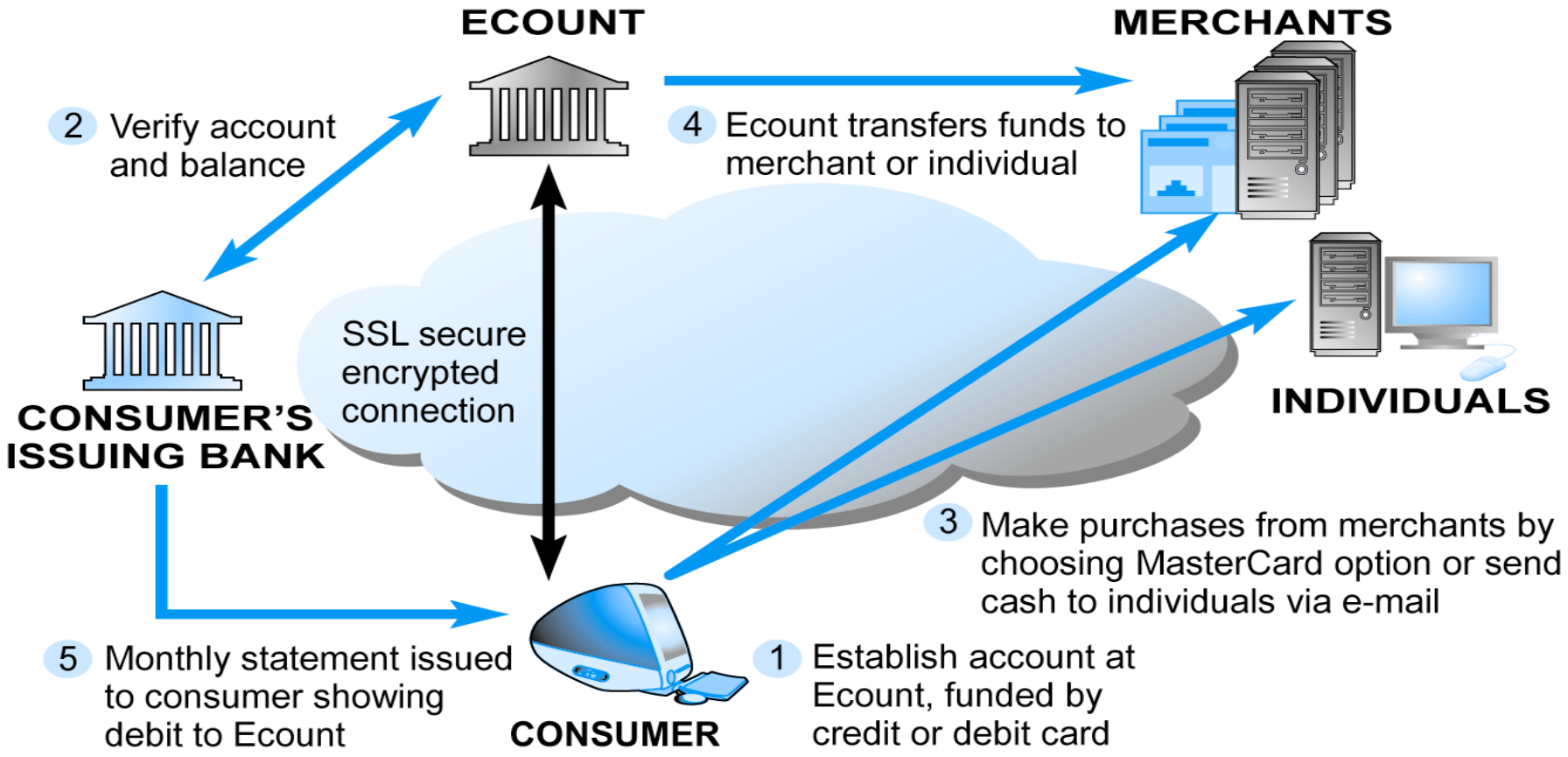


Online Stored Value Systems

- Permit consumers to make instant, online payments to merchants and other individuals based on value stored in an online account
- Rely on value stored in a consumer's bank, checking, or credit card account

How Ecount.com Works: A Stored Value System

Figure 6.7, Page 327



Smart Cards as Stored Value Systems

- Another kind of stored value system based on credit-card sized plastic cards that have embedded chips that store personal information
- Two types:
  - Contact
  - Contactless
- Examples: Mondex, Octopus

Digital Accumulating Balance Payment Systems

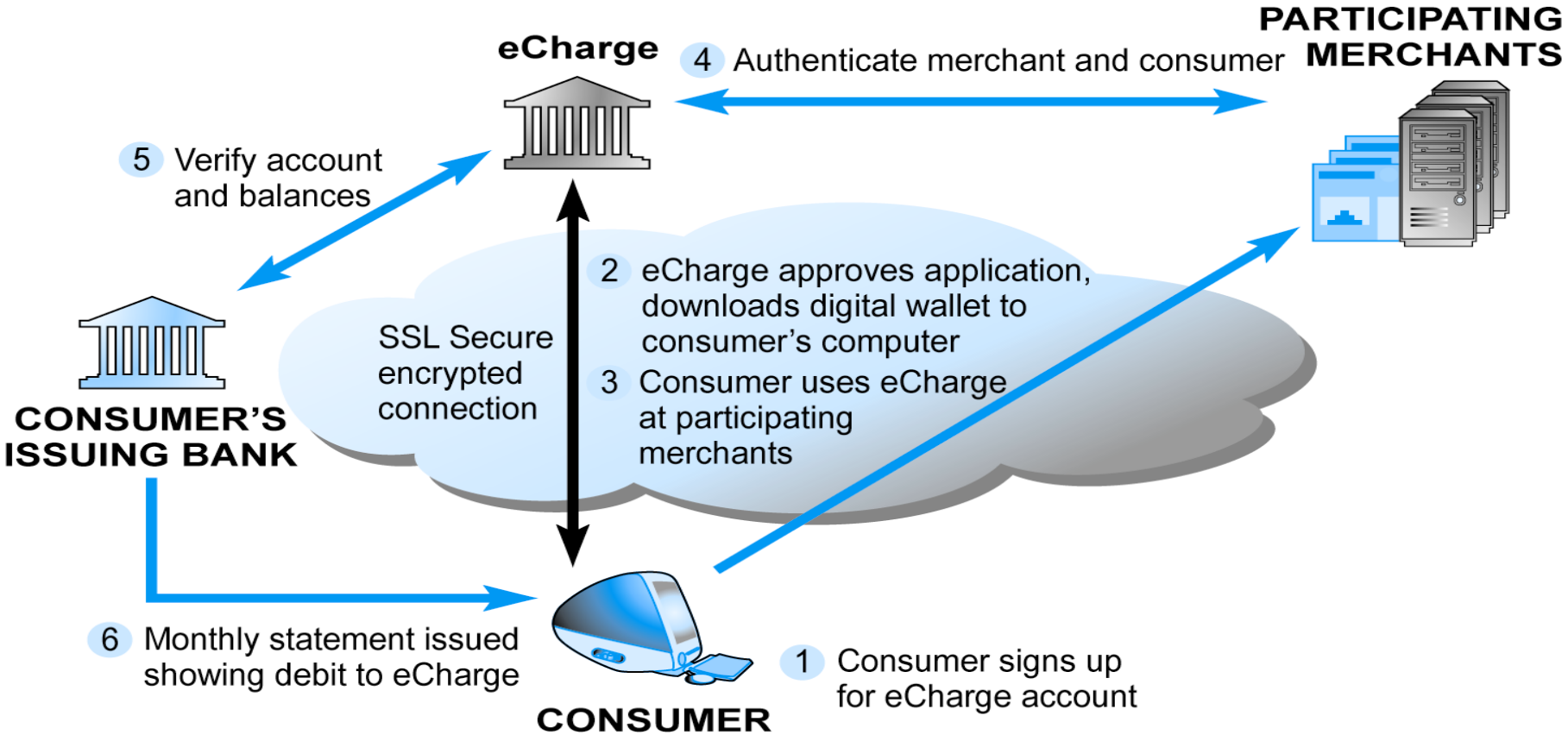
- Allows users to make micropayments and purchases on the Web, accumulating a debit balance for which they are billed at the end of the month
- Examples: Qpass, Valista, Clickshare, Click & Buy, Peppercoin

Digital Credit Card Payment Systems

- Extend the functionality of existing credit cards for use as online shopping payment tools
- Focus specifically on making use of credit cards safer and more convenient for online merchants and consumers
- Example: eCharge

How a Digital Credit Card Payment System Works: eCharge

Figure 6.8, Page 334



Digital Checking Payment Systems

- Extend the functionality of existing checking accounts for use as online shopping payment tools
- Examples: PayByCheck, Western Union MoneyZap

Digital Payment Systems and the Wireless Web

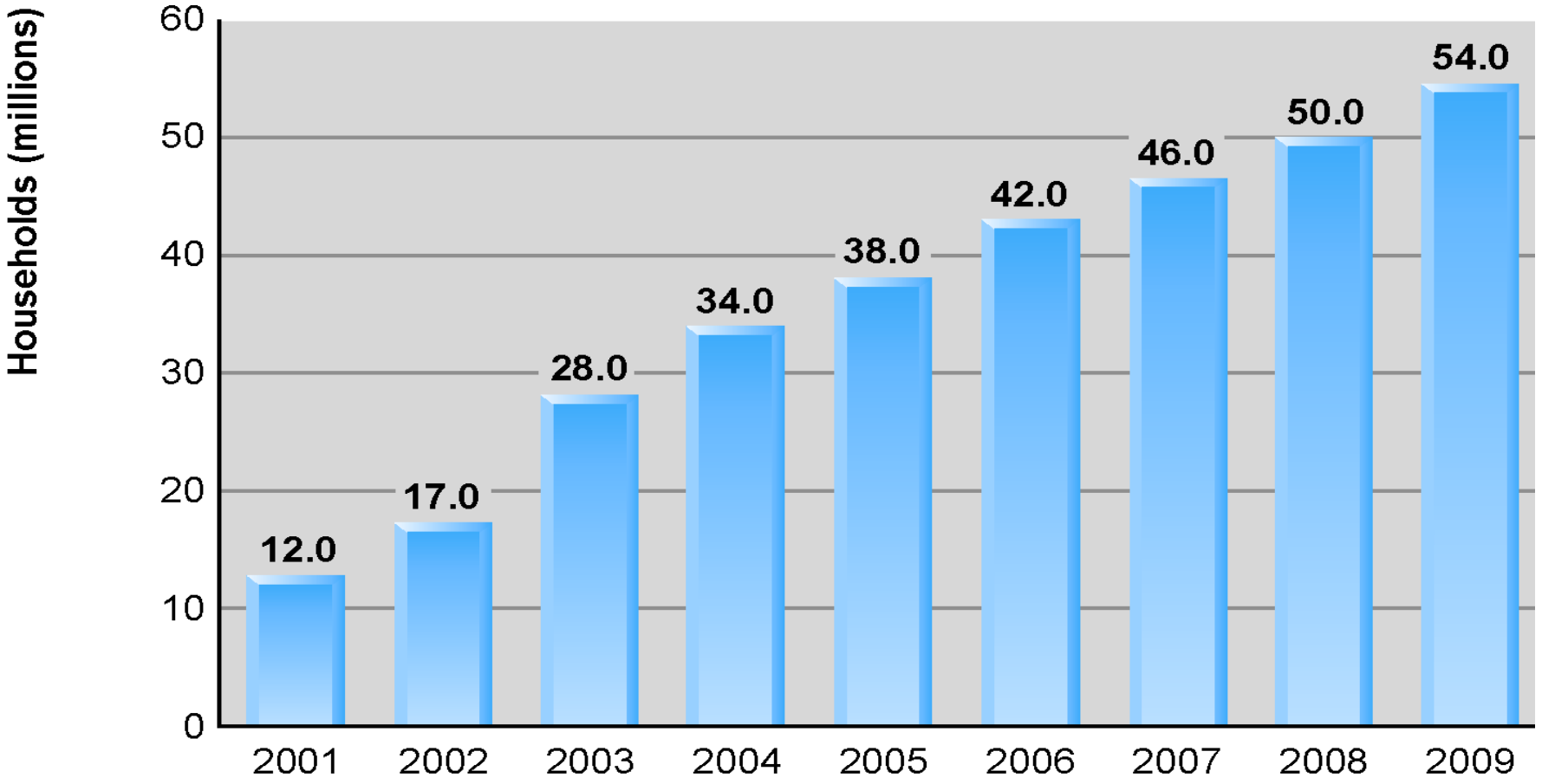
- Mobile payment (m-payments) systems not very well established yet in U.S, but with growth in Wi-Fi and 3G cellular phone systems, this is beginning to change
- Juniper Research predicts global m-commerce will total at least $88 billion by 2009, majority of transactions will be micro-m-payments

Electronic Billing Presentment and Payment (EBPP)

- Online payment systems for monthly bills
- EBPP expected to grow rapidly, to an estimated 40% of all households by 2007
- Main business models in EBPP market include:
  - Biller-direct
  - Consolidator
- Above are supported by EBPP infrastructure providers

Growth of the EBPP Market

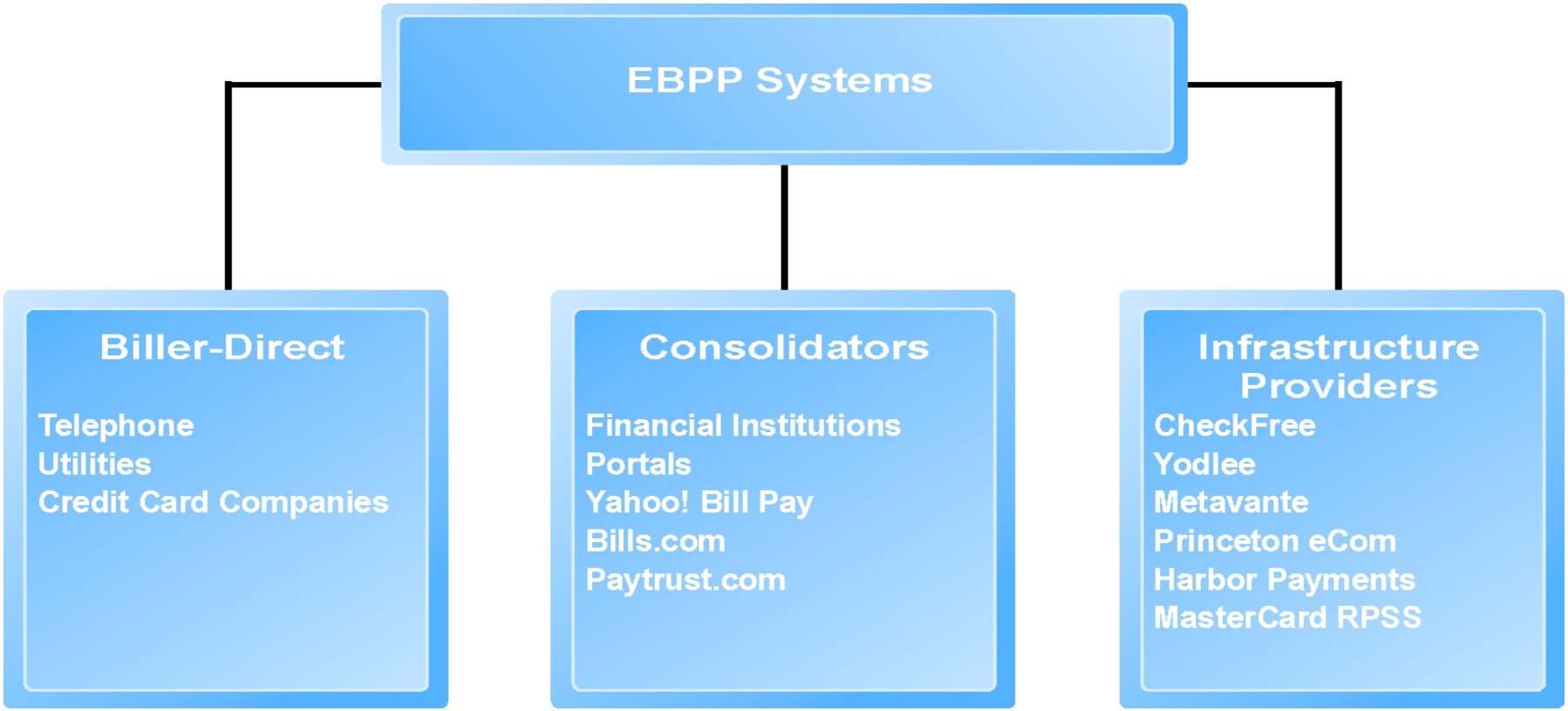
Figure 6.10, Page 340



SOURCE: Based on data from eMarketer, Inc., 2004b; Forrester Research, 2005; authors' estimates.

Major Players in the EBPP Marketspace

Figure 6.11, Page 342



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