E commerce (EC):

Applications & Issues

A definition for e-commerce

- A universally accepted definition does not exist

- Anything that uses electronic technology in order to do business can be intended as *e-business*

- We can look at e-commerce as to a subset of e-business concerning commerce

- Commerce is intended as the activity of exchanging goods and services with some kind of payment

The EU definition for e-commerce

- "e-commerce is based on the electronic processing and transmission of data. It encompasses many diverse activities including electronic trading of goods and services, on-line delivery of digital content, electronic fund transfer, electronic share trading, public procurement." (EU(97)/157)

Definition

- **Electronic Commerce (EC) is where business transactions take place via telecommunications networks, especially the Internet**.

    - **Electronic commerce** describes the buying and selling of products, services, and information via computer networks including the Internet.
    - The infrastructure for EC is a **networked computing** environment in business, home, and government.

- **E-business**

    A broader definition of EC that includes not just the buying and selling of goods and services, but also servicing customers, collaborating with business partners, and conducting electronic transactions within an organization

Relationship between the concepts of e-commerce and e-business.

E-commerce is generally understood to be a sub-set of e-business. E-commerce refers to financial and non-financial transactions between organizations. These transactions are often considered in the context of a supplier organization distributing and selling its product to consumers.

E-business includes transactions from a buy-side and sell-side e-commerce perspective and also the use of communications technology to improve internal process efficiencies.

Origins of e-commerce applications

- E-commerce applications existed long before Internet
  - EDI (Electronic Data Interchange)
  - EFT (Electronic Funds Transfer)

- Internet offered the general public the opportunity to conduct businesses online

Examples of E-Commerce

Sites	Description
Amazon.com	Provides access to several million books electronically. It also sells music CDs, electronics, software, toys, video games, prescription drugs, and much more.
Drugstore.com	Refills and sells new drugs and vitamins and other health products online.
Apple Computer (apple.com).	sells computers online
Peapod.com	sells groceries over the Web

Five support areas for EC applications

➢People

➢Public policy

➢Marketing and advertisement

➢Support services

➢Business partnerships

E-Commerce Framework *(cont.)*

EXHIBIT 1.3 A Framework for Electronic Commerce

Electronic Commerce Applications
- Direct Marketing • Search Jobs • Online Banking
- E-government • E-purchasing • B2B Exchanges • C-commerce • Social Networks
- E-learning • M-commerce • Auctions • Travel • Online Publishing • Consumer Services

People:
Buyers, Sellers, Intermediaries, Service, IS People, and Management

Public Policy:
Taxes, Legal, Privacy Issues, Regulations, Compliance, and Technical Standards

Marketing and Advertisement:
Market Research, Promotions, Web Content, and Targeted Marketing

Support Services:
Order Fulfillment, Logistics, Payments, Content, and Security System Development

Business Partnerships:
Affiliate Programs, Joint Ventures, Exchanges, E-marketplaces, and Consortia

Support Services

(1) Common business services infrastructure (security, smart cards/authentication electronic payments, directories/catalogs, hardware, peripherals)

(2) Messaging and information distribution infrastructure (EDI, e-mail, hypertext transfer protocol, chat rooms)

(3) Multimedia content and network publishing infrastructure (HTML, JAVA, XML, VRML)

(4) Network infrastructure (telecom, cable TV wireless, Internet, VAN, WAN, LAN, intranet, extranet) access, Wi-Fi, WiMax (cell phones)

(5) Interfacing infrastructure (with databases, business partners applications, Web Services, ERP)
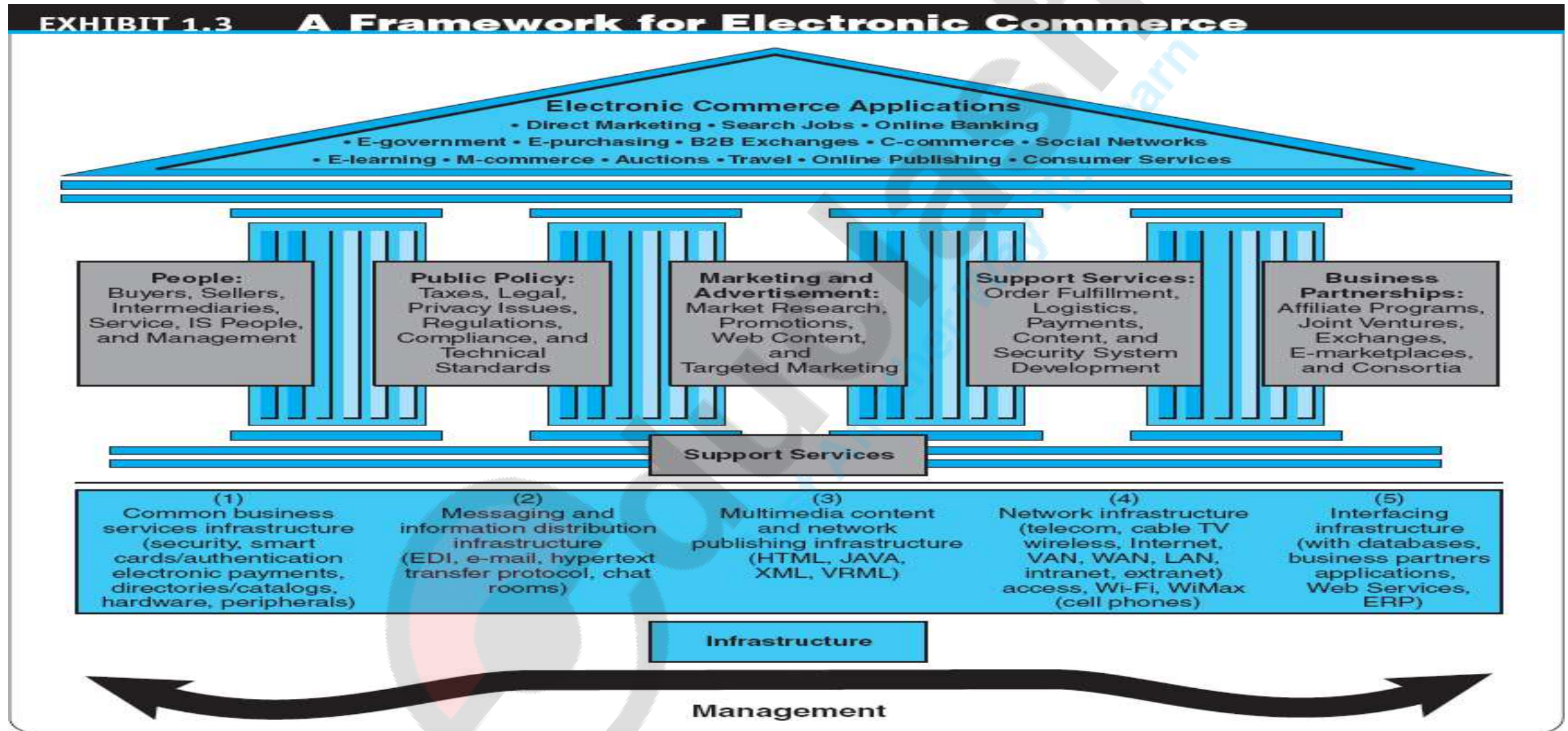
Infrastructure

Management

Figure 1.3: **E-Commerce Framework**

OTHER ELECTRONIC COMMERCE CONCEPTS

- Three dimensions
  - the product (service) sold [physical / digital]
  - the process [physical / digital]
  - the delivery agent (or intermediary) [physical / digital]

- Traditional commerce
  - all dimensions are physical (Brick & Mortar)
- Pure EC
  - all dimensions are digital   (Virtual/online)
- Partial EC
  - all other possibilities include a mix of digital and physical dimensions (click & Mortar)

Taxonomy of e-commerce applications

- Three main categories:
  - Business to consumer (B2C)
  - Business to business (B2B)
  - Consumer to consumer (C2C)
- Other categories:
  - Business to government (B2G)
  - Mobile Commerce

B2C

- *What is B2C ecommerce?*

- *Business-to-consumer **e-commerce**, or commerce between companies and consumers, involves customers gathering information; purchasing physical goods or receiving products over an electronic network.*

- *Example:*
  - *Dell selling me a laptop*
  - *Mc Donalds selling me a Big Mac*

B2C applications

- Offer directly to the customer an interface of activity
  - Typical examples:
    - Online book store (e.g. amazon.com)
    - Online car purchasing (e.g. automall.com)
    - Booking and purchase of airline tickets (e.g. ryanair.com)
- Correspond to retail sale
- Growth of B2C applications thanks to Internet
- A new kind of B2C applications are the Cybermalls

B2C applications: advantages and disadvantages

- Advantages:
  - Allow company to extend existing services to customers
  - Allow company to increase its customers
  - Offer a wider choice and allow cheaper prices
  - May give to the company a worldwide visibility
  - Online shops are accessible 24h a day

- Disadvantages:
  - Low order conversion rates
  - High risk *(see Cyberphobia)*

B2B

- *What is B2B **e-commerce**?*

- *B2B **e-commerce** is simply defined as ecommerce between companies. About 80% **of e-commerce** is **of** this type.*

- *Examples:*
  - *Intel selling microprocessor to Dell*
  - *Heinz selling ketchup to McDonalds*

B2B applications

- Realize transactions needed to perform financial or commercial activities by companies over the Internet

- Some typical applications:
  - E-procurement
  - E-Marketplace

- The turnover is much greater than that dealed with B2C applications

B2B applications:
advantages and disadvantages

- Advantages:
  - Help to automate communications between   companies making them easier and quicker
  - Allow to cut prices drastically
  - Help in reducing mistakes

- Disadvantages:
  - Often need legacy integration

C2C

- *What is C2C ecommerce?*
- *Consumer-to-consumer **e-commerce** or C2C is simply commerce between private individuals or consumers.*
- *Example:*
  - *Mary buying an iPod from Tom on eBay*
  - *Me selling a car to my neighbour*

C2C applications

- Concern the consumers who run negotations with other consumers sometimes utilizing as intermediary a company

  - Examples:
    - Ebay
    - Autotrader.com

C2C applications: advantages and disadvantages

- Advantages
  - Allow consumers to interact directly among them
  - Give to the consumers a new way of purchasing and selling services and goods

- Disadvantages
  - Little earning capacity
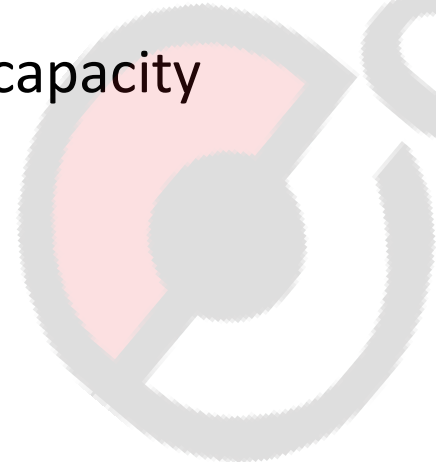
B2G

- *What is B2G ecommerce?*
- *Business-to-government* **e-commerce** *or B2G is generally defined as commerce between companies and the public sector. It refers to the use* **of** *the Internet for public procurement, licensing procedures, and other government-related operations*
- *Example:*
  - *Business pay taxes, file reports, or sell goods and services to Govt. agencies.*

B2G applications

- Correspond to all kind of transactions between company and public administrator

- Utilized mostly in the USA

Classification of EC by the Nature of the Transactions

HW: Visit all these sites and study them.

	From
	Business B	**Consumer** C
Consumer C **To**	•**Organization site** (Dell) •**Consumer marketplace** (shopsmart.com)	•**Auctions** (E-Bay) •**Consumer Reviews** (Bizrate.com)
Business B	•**Organization site** (Dell) •**Business Marketplace** (CommerceOne)	•**Customer bids** (Priceline.com)

Models of Electronic Commerce:
- Business-to-customer (B2C)
- Business-to-business (B2B)
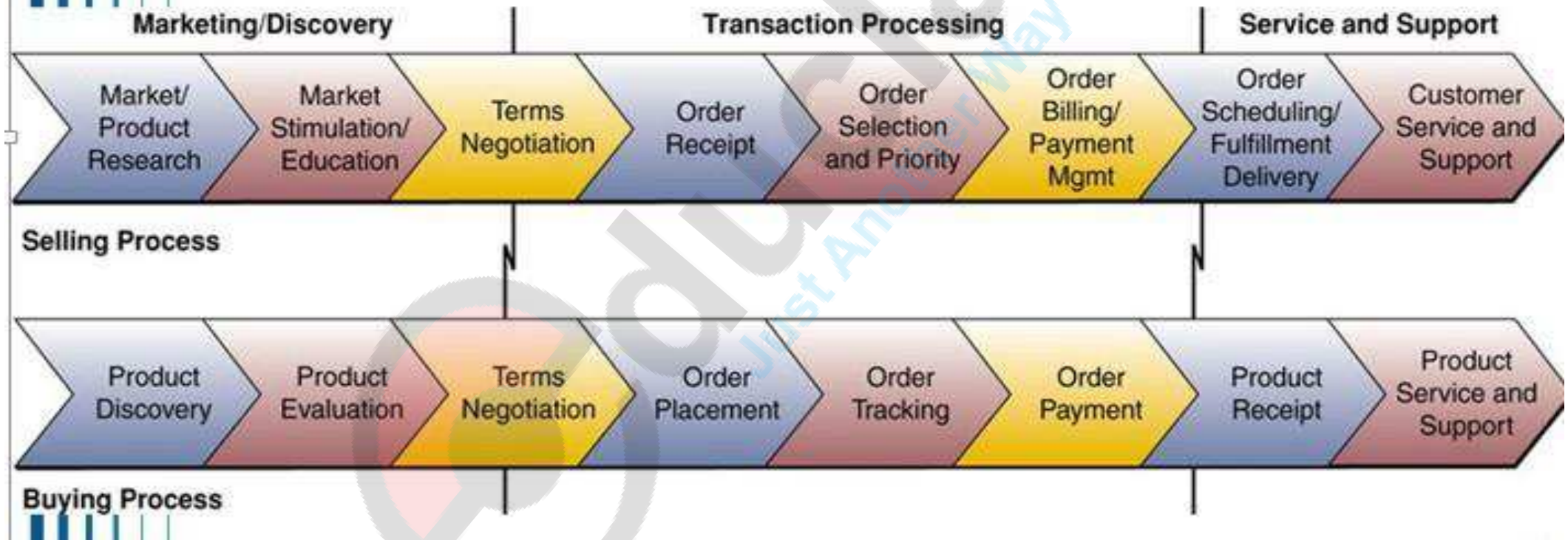- Others: B2G, G2C, G2B, C2C

Mobile commerce applications

- Concern doing businesses by means of mobile wireless devices

- Can be both B2B and B2C

- Have a growing importance in the future of e-commerce applications

- Will introduce completely new forms of electronic commerce
  - E.g. E-tickets

- The development of such applications faces some of the greatest challenges in the security area to secure the trust of consumers

SCOPE OF E-COMMERCE

- Selling can be focussed to the global customer
- Pre-sales, subcontracts, supply
- Financing and insurance
- Commercial transactions: ordering, delivery, payment
- Product service and maintenance
- Co-operative product development
- Distributed co-operative working
- Use of public and private services
- Business-to-administrations (e.g. customs, etc)
- Transport and logistics
- Public procurement
- Automatic trading of digital goods
- Accounting
- Dispute resolution

II. The Scope of e-Commerce

Marketing/Discovery | **Transaction Processing** | **Service and Support**

Selling Process

| Market/ Product Research | Market Stimulation/ Education | Terms Negotiation | Order Receipt | Order Selection and Priority | Order Billing/ Payment Mgmt | Order Scheduling/ Fulfillment Delivery | Customer Service and Support |

Buying Process

| Product Discovery | Product Evaluation | Terms Negotiation | Order Placement | Order Tracking | Order Payment | Product Receipt | Product Service and Support |

APPLICATIONS

Some common applications related to electronic commerce are the following:

- Document automation in supply chain and logistics
- Domestic and international payment system
- Enterprise content management
- Group buying
- Automated online assistants
- Instant messaging
- Newsgroup
- Online shopping
- Online banking
- Shopping cart software
- Teleconferencing
- Electronic tickets

E-Commerce Business Models

Online direct marketing

: manufacturers or retailers sell directly to customers.

Electronic tendering system

:businesses (or governments) request quotes from suppliers.

:electronic tending system homepage.

Name-your-own-price

:customers decide how much they want to pay.

Find-the-best-price

:customers specify a need and an intermediary compares providers and shows the lowest price.

Issues in developing e-commerce applications

- Many of the following issues:
  - Security
  - Flexibility
  - Scalability
  - Fault tolerance
  - Integration
  - Interfaces (graphical and not)
  - Time-to-market

  are common to many applications, but they are all critical in the case of e-commerce because of its nature

Issues in developing e-commerce applications

- A state-of-the-art application always fail if people do not utilize it
  - A constant attention must be payed to the users over the whole development process
- A close integration with every business aspect is needed:
  - For an online buyer security and easy access to the informations are the primal needs
  - A manager will need a flexible application to adapt the business to the new trends in a faster way

Security Issues

- Security is a crucial feature
  - Most transactions take place in a fully automated way
  - Restricted data are transmitted through a public network

- Users must be sure that their money will not be lost or stolen

Flexibility Issues

- E-commerce systems are subject to frequent structural changes because of mutations of:
  - Products and services provided by the firm
  - Commercial partnerships

Scalability

- Capability to support a certain number of users (thousands, even millions) without compromising performances

- It is important because a slow application often means to lose customers (especially in B2C) since they have very small patience

Fault tolerance

- A less fault-tolerant application will be less available to the user

- Every minute that a site is not available costs 1400$ to the company (survey on 400 major companies by Oracle)

- It is easy to lose customers forever

- It is necessary to redirect the users without they perceive it

Integration

- Always needed since no application offering every commercial functionality can be realized

- Critical because the commercial funcionalities are often realized by many different legacy and third-party applications
  - Examples:
    - ERP systems
    - Legacy systems

User Interfaces

- Must be intuitive,easily comprehensible and of simple utilization

- In the case of B2C must support profiling in order to anticipate the customer requests

- They also need to be customizable

Multi-channel interfaces

- Application interfaces must support several kinds of connections:
  - Web browsers
  - Web TV
  - Cellular phones (via WAP)
  - PDA

Legal Issues Specific to E-Commerce

Fraud on the Internet

stocks, investments, business opportunities, auctions.

Domain Names

problems with competition.

Cybersquatting

refers to the practice of registering domain names solely for the purpose of selling them later at a higher price.

Legal Issues Specific to E-Commerce
(continued)

Domain Tasting

is a practice of registrants using the five-day "grace period" at the beginning of a domain registration to profit from pay-per-click advertising

Taxes and Other Fees

when and where (and in some cases whether) electronic sellers should pay business license taxes, franchise fees, gross-receipts taxes, excise taxes

Copyright

protecting intellectual property in e-commerce and enforcing copyright laws is extremely difficult.

The Benefits of E-Commerce

Benefits to Organizations

- Expands the marketplace to national and international markets

- Decreases the cost of creating, processing, distributing, storing and retrieving paper-based information

- Allows reduced inventories and overhead by facilitating "pull" type supply chain management

- The pull type processing allows for customization of products and services which provides competitive advantage to its implementers

- Electronic commerce can increase sales and decrease costs

Benefits to Organizations *(cont.)*

- Reduces the time between the outlay of capital and the receipt of products and services

- Supports business processes reengineering (BPR) efforts

- Lowers telecommunications cost - the Internet is much cheaper than value added networks (VANs)

Benefits to Customers

- Enables customers to shop or do other transactions 24 hours a day, all year round from almost any location

- Provides customers with more choices

- Provides customers with less expensive products and services by allowing them to shop in many places and conduct quick comparisons

- Allows quick delivery of products and services in some cases, especially with digitized products

Benefits to Customers *(cont.)*

- Customers can receive relevant and detailed information in seconds, rather than in days or weeks

- Makes it possible to participate in virtual auctions

- Allows customers to interact with other customers in electronic communities and exchange ideas as well as compare experiences

- Electronic commerce facilitates competition, which results in substantial discounts.

Benefits to Society

- Enables more individuals to work at home, and to do less traveling for shopping, resulting in less traffic on the roads, and lower air pollution

- Allows some merchandise to be sold at lower prices

- Enables people in third world countries and rural areas to enjoy products and services which otherwise are not available to them

- Facilitates delivery of public services at a reduced cost, increases effectiveness, and/or improves quality

The Limitations of Electronic Commerce

Technical Limitations of Electronic Commerce

- Lack of sufficient system's security, reliability, standards, and communication protocols

- Insufficient telecommunication bandwidth

- The software development tools are still evolving and changing rapidly

- Difficulties in integrating the internet and electronic commerce software with some existing applications and databases

- The need for special Web servers and other infrastructures, in addition to the network servers (additional cost)

- Possible problems of interoperability, meaning that some EC software does not fit with some hardware, or is incompatible with some operating systems or other components

The Limitations of Electronic Commerce

Non-Technical Limitations of Electronic Commerce

- ## Cost and justification:
  - The cost of developing an EC in house can be very high, and mistakes due to lack of experience, may result in delays. There are many opportunities for outsourcing, but where and how to do it is not a simple issue. Furthermore, to justify the system one needs to deal with some intangible benefits which are difficult to quantify.

- ## Lack of trust and user resistance:
  - Customers do not trust an unknown faceless seller, paperless transactions, and electronic money. So switching from a physical to a virtual store may be difficult.

Non-Technical Limitations *(cont.)*

- Other non-technical limiting factors are:

    - Lack of touch and feel online

    - Many unresolved legal issues

    - Rapidly evolving and changing EC Technology

    - Insufficiently large enough number of sellers and buyers

    - Breakdown of human relationships

    - Expensive and/or inconvenient accessibility to the internet

- Perishable grocery products are much harder to sell online

- It is difficult to:

    - Calculate return on investment

    - Integrate existing databases and transaction-processing software into software that enables e-commerce

- Cultural and legal obstacles also exist