

# ICS 544

## E-Commerce Technologies

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Second Semester 2004 - 2005 (042)

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### Course Outline

- Introduction
- **Business Models and Concepts**
- B2B
- Networking Technologies
- Web Architecture
- Web Programming
- Databases
- Data and Web Mining
- Security & Encryption
- XML Technologies
- Web Services
- Electronic Payment Systems
- Agents and Electronic Negotiation
- Privacy and Other Social Issues



## E-commerce Business Models

- Business model – set of planned activities designed to result in a profit in a marketplace
- Business plan – document that describes a firm's business model
- E-commerce business model – aims to use and leverage the unique qualities of Internet and Web



## Key Ingredients of a Business Model

COMPONENTS	KEY QUESTIONS
Value proposition	Why should the customer buy from you?
Revenue model	How will you earn money?
Market opportunity	What marketplace do you intend to serve, and what is its size?
Competitive environment	Who else occupies your intended marketplace?
Competitive advantage	What special advantages does your firm bring to the marketplace?
Market strategy	How do you plan to promote your products or services to attract your target audience?
Organizational development	What types of organizational structures within the firm are necessary to carry out the business plan?
Management team	What kinds of experiences and background are important for the company's leaders to have?



## Value Proposition

- Defines how a company's product or service fulfills the needs of customers
- Questions to ask:
  - Why will customers choose to do business with your firm instead of another?
  - What will your firm provide that others do not or cannot?
- Examples of successful value propositions include:
  - Personalization/customization
  - Reduction of product search costs
  - Reduction of price discovery costs
  - Facilitation of transactions by managing product delivery
- What is the value proposition of Amazon?



## Revenue Model

- Describes how the firm will earn revenue, generate profits, and produce a superior return on invested capital
- Terms financial model and revenue model often used interchangeably
- Major types:
  - Advertising revenue model
  - Subscription revenue model
  - Transaction fee revenue model
  - Sales revenue model
  - Affiliate revenue model



## Advertising Revenue Model

- Web site that offers content, services and/or products also provides a forum for advertisements and receives fees from advertisers
- Example: Yahoo.com



## Subscription Revenue Model

- Web site that offers users content or services charges a subscription fee for access to some or all of its offerings
- Examples:
  - Consumer Reports Online
  - Encyclopedia Britannica



## Transaction Fee Revenue Model

- Company that receives a fee for enabling or executing a transaction
  
- Examples:
  - eBay.com
  - E-Trade.com
  - Tejari.com



## Sales Revenue Model

- Company derives revenue by selling goods, information, or services to customers
  
- Examples:
  - Amazon.com
  - JCPenney.com
  - Dell.com



## Affiliate Revenue Model

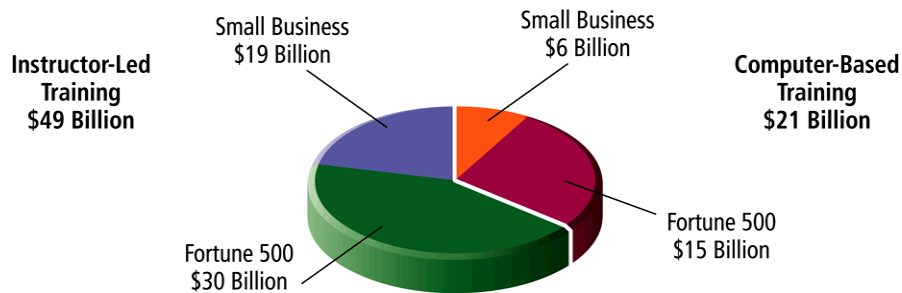
- Sites that steer business to an “affiliate” receive a referral fee or percentage of the revenue from any resulting sales
- Example:
  - MyPoints.com
  - Yahoo.com



## Market Opportunity

- Refers to a company’s intended marketplace and the overall potential financial opportunities available to the firm in that marketplace
- Marketplace – the area of actual or potential commercial value in which a company intends to operate
- Realistic market opportunity is defined by revenue potential in each of market niches in which company hopes to compete

## Marketspace and Market Opportunity in the Software Training Market



## Competitive Environment

- Refers to the other companies selling similar products and operating in the same marketspace
- Influenced by:
  - how many competitors are active
  - how large their operations are
  - what market share for each competitor is
  - how profitable these firms are
  - how they price their products



## Competitive Environment (cont'd)

- Direct competitors – companies that sell products or services that are very similar and into the same market segment
  - Example: Priceline.com and Travelocity.com
- Indirect competitors – companies that may be in different industries but that still compete indirectly because their products can substitute for one another
  - Example: CNN.com and ESPN.com



## Competitive Advantage

- Achieved when firm can produce a superior product and/or bring product to market at a lower price than most, or all, of competitors
- Firms achieve competitive advantage when they are able to obtain differential access to the factors of production that are denied to competitors
- Asymmetry – when one participant in a market has more resources than others





## Market Strategy

- A plan that details how a company intends to enter a new market and attract customers
- Best business concepts will fail if not properly marketed to potential customers



## Organizational Development

- Describes how the company will organize the work that needs to be accomplished
- Work is typically divided into functional departments
- Move from generalists to specialists as the company grows



## Management Team

- Employees of the company responsible for making the business model work
- Strong management team gives instant credibility to outside investors
- A strong management team may not be able to salvage a weak business model, but should be able to change the model and redefine the business as it becomes necessary



## Categorizing E-commerce Business Models

- No one correct way
- We categorize business models according to e-commerce sector (B2C, B2B, C2C)
- Type of e-commerce technology used can also affect classification of a business model
- Some companies use multiple business models

## B2C Business Models

BUSINESS MODEL	VARIATIONS	EXAMPLES	DESCRIPTION	REVENUE MODEL
Portal	Horizontal/General	Yahoo.com AOL.com MSN.com	Offers an integrated package of content services and content search, news, e-mail, chat, music downloads, video streaming, calendars, etc. Seeks to be a user's home base.	Advertising, subscription fees, transaction fees
E-tailer	Vertical/Specialized (Vortal)	Sailnet.com	Offers services and products to specialized marketplace	Same
	Virtual Merchant	Amazon.com	Online version of retail store, where customers can shop at any hour of the day or night without leaving their home or office.	Sales of goods
	Clicks and Bricks	Wal-Mart.com Sears.com	Online distribution channel for a company that also has physical stores	Same
Content Provider	Catalog Merchant	LandsEnd.com LLBean.com	Online version of direct mail catalog	Same
	Manufacturer direct	Dell.com Compaq.com		Sales of goods
		Wsj.com Sportline.com CNN.com Rhapsody.com ESPN.com	Information and entertainment providers like newspapers, sports sites, and other online sources that offer customers up-to-date news and special interest how-to guidance and tips and/or information sales.	Advertising, subscription fees, affiliate referral fees
Transaction Broker		E-Trade.com Expedia.com Monsters.com Travelocity.com Hotels.com Orbitz.com	Processors of online sales transactions, such as stock brokers and travel agents, that increase customers' productivity by helping them get things done faster and more cheaply.	Transaction fees
Market Creator	Auctions	Ebay.com Priceline.com Amazon.com	Web-based businesses that use Internet technology to create markets that bring buyers and sellers together	Transaction fees
Service Provider		Mybizconsulting.com Lawinfo.com xDrive myCFO.com	Companies that make money by selling users a service, rather than a product.	Sales of services
Community Provider		About.com iVillage.com NetNoir.com Ozygen.com Epinions.com	Sites where individuals with particular interests, hobbies, and common experiences can come together and compare notes.	Advertising, subscription, affiliate referral fees

## B2C Business Models: Portal

- Offers powerful search tools plus an integrated package of content and services
- Typically combines subscription/advertising/referral/transaction fee revenue model
- May be general
  - Ex: AOL, MSN, Yahoo
- or specialized
  - Ex: Sailnet



## A Portal Example: Google

- Founded in 1998 by 2 Stanford grad students
- Focused solely on search engine business in contrast to Yahoo, MSN, AOL
- 2000, introduced tiny paid advertising boxes on the right of Search Results page
- Feb 2002, began to allow firms to bid for placement and added sponsored links at top of Search Results page



## B2C Business Models: E-tailer

- Online version of traditional retailer
- Sales revenue model
- Types include:
  - Virtual merchants: online retail store only
    - Ex: Amazon.com
  - Clicks and bricks: online distribution channel for a company that also has physical stores;
    - Ex: Barnes&Noble, WalMart
  - Catalog merchants: online version of direct mail catalog
    - Ex: LLBeane
  - Manufacturer-direct: manufacturer selling directly over the Web
    - Ex: Dell.com



## B2C Business Models: Content Provider

- Information and entertainment companies that provide digital content over the Web
- Ex: WSJ.com, CNN.com
- Second largest source of B2C e-commerce revenue in 2002
  - 15% of online sales
  - More Internet users go to on the Web to retrieve information than to purchase goods (80% vs 53%)
- Typically utilizes an subscription, pay for download, or advertising revenue model



## B2C Business Models: Transaction Broker

- Processes online transactions for consumers
- Primary value proposition – saving of time and money
- Typical revenue model – transaction fee
- Industries using this model:
  - Financial services (E-Trade)
  - Travel services
  - Job placement services (Bayt.com)



## B2C Business Model: Service Provider

- Offers services online
  - Ex: FreshDirect, xDrive.com
- Value proposition – valuable, convenient, time-saving, low-cost alternatives to traditional service providers
- Revenue models – subscription fees or one-time payment



## B2C Business Models: Community Provider

- Sites that create a digital online environment where people with similar interests can transact, communicate, and and receive interest-related information.
- Typically rely on a hybrid revenue model
- Examples:
  - Epinions.com
  - About.com



## C2C Business Model: Market Creator

- Uses Internet technology to create markets that bring buyers and sellers together
- Examples:
  - Priceline.com
  - eBay.com
- Typically uses a transaction fee revenue model



## B2B Business Models

BUSINESS MODEL	EXAMPLES	DESCRIPTION	REVENUE MODEL
<i>(1) NET MARKETPLACES</i>			
E-Distributor	Grainger.com FindMRO.com Staples.com	Single-firm online versions of retail and wholesale stores; supply maintenance, repair, operation goods; indirect inputs	Sales of goods
E-Procurement	Ariba.com CommerceOne.com Siemens	Single firms creating digital markets where thousands of sellers and buyers transact for indirect inputs	Fees for market-making services; supply chain management, and fulfillment services
Exchanges	Exchange.eSteel.com IMX.com GEPolymerland.com	Independently owned digital marketplaces for direct inputs. Vertical industry orientation	Fees and commissions on transactions
Industry Consortia	Covisint.com Sciquest.com Pasticsnet.com	Industry-owned vertical digital markets open to select suppliers.	Fees and commissions on transactions
<i>(2) PRIVATE INDUSTRIAL NETWORKS</i>			
Single-firm networks	Wal-Mart Procter & Gamble DaimlerChrysler Ford Motor Co.	Company-owned networks to coordinate supply chains with a limited set of partners	Cost absorbed by network owner and recovered through production and distribution efficiencies.
Industry-wide networks	Nistevo Inc. Globalnetexchange.com UCCnet.org Worldwidetailexchange.org	Industry-owned networks to set standards, coordinate supply and logistics for the industry	Contributions from industry member firms and recovered through production and distribution efficiencies; fees for transactions and services



## B2B Business Models: E-distributor

- Company that supplies products and services directly to individual businesses
- Owned by one company seeking to serve many customers
- Examples:
  - Grainger.com
  - geae.com



## B2B Business Models: E-procurement Companies

- Create and sell access to digital electronic markets
- Examples:
  - Ariba
  - CommerceOne
- Revenue model: transaction fees, or annual licensing fees





## **B2B Business Models: Exchanges (B2B Hubs)**

- An electronic digital marketplace where suppliers and commercial purchasers can conduct transactions
- Usually owned by independent firms whose business is making a market
- Generate revenue by charging transaction fees
- Usually serve a single vertical industry
- Number of exchanges has fallen to around 700 in 2003
- Example:
  - Viacore.net



## **B2B Business Models: Industry Consortia**

- Industry-owned vertical marketplaces that serve specific industries
- Horizontal marketplaces, in contrast, sell specific products and services to a wide range of industries
- Leading example: Covisint, auto part exchange (backed by Daimler Chrysler, Ford, General Motors, Citroen,..)



## B2B Business Models: Private Industrial Networks

- Digital networks (usually, but not always Internet-based) designed to coordinate the flow of communications among firms engaged in business together
- Single firm network: the most common form
  - Suppliers can monitor the sales of their goods, inventory, status of shipment, settle payments
  - Ex: WalMart, Daimler Chrysler (over 20,000 suppliers)
- Industry-wide networks: often evolve out of industry associations
  - Ex: World Wide Retail Exchange (WWRE)



## Peer-to-Peer (P2P) Business Models

- Links users, enabling them to share files and common resources without a common server
- Challenge is for P2P ventures to develop viable, legal business models
- Example: Kazaa; Napster



## M-Commerce Business Models

- Takes traditional e-commerce business models and leverages emerging new wireless technologies
- Key technologies are telephone-based 3G, Wi-Fi, and Bluetooth



## E-commerce Enablers

- Internet infrastructure companies: companies whose business model is focused on providing infrastructure necessary for e-commerce companies to exist, grow and prosper
- Provide hardware, software, networking, security, e-commerce software systems, payment systems, databases, hosting services, etc.



### Mini-case: Encyclopedia Britannica

- The world's premier encyclopedia
- Large, expensive (US\$1000), sold door-to-door
- Introduction of CDs
  - Microsoft Encarta
  - Britannica's CD version more expensive



### Mini-case: Encyclopedia Britannica

- Online Transitions
  - 1994: Britannica debuts on the Web with Britannica Online, a subscription service for colleges and universities.
  - 1995: Britannica extends the service to consumers, offering an annual subscription for \$150 and eventually reducing the price to \$50.
  - October 1999: Britannica launches Britannica.com, offering the full text of the
  - encyclopedia for free and relying on advertising for revenues.
  - 2000: Britannica.com repositions itself as a portal, offering general information on a wide variety of topics designed to bring in as much traffic as possible.



### Mini-case: Encyclopedia Britannica

- March 2001: Britannica.com goes back to its roots, focusing on education, learning and reference, and plans to charge for its services again.
- July 2001: Britannica.com begins charging for the full text of the encyclopedia.
- September 2001: Britannica launches BritannicaSchool.com, a subscription site aimed at elementary and secondary schools.
- March 2002: Britannica introduces Britannica Online School Edition, a subscription site for school libraries and classrooms.



### References

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  - Publisher: Addison Wesley Publishing Company; (August 15, 2003)
  - ISBN: 0-321-20056-X
  - Companion Web Site: <http://www.LearnEcommerce.net>