MIS 304: Using and Managing Information Systems

Ch2: Competitive Advantage through Information Systems

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** Originally created by Matthew Hashim and Faiz Currim for MIS 304. Was later updated and modified by Wenli Zhang.

Learning Objectives

1. Enabling organizational strategy through information systems
2. Business models in the digital world
3. Valuing innovations

1. Enabling Organizational Strategy Through Information Systems

- Discuss how information systems can be used for automation, organizational learning, and strategic advantage.

Why do we invest in IS?

- To gain **competitive advantage**
  - To be better, faster, more economical

- How do we evaluate IS investments?
- How do we use investments strategically?
- How do we gain competitive advantage?

Case study: How Dave does it

- **How Dave, the founder of the fast food restaurant Wendy's, does Information Technology.**
- **https://youtu.be/5s9W_Am_vQ0**

Case study: How Dave does it

A sensor is installed in the drive-thru to alert employees that a new customer has pulled up and would like to place an order

Case study: How Dave does it

- Employees wears a headset – regardless if they are talking with the customer.
- Doing so allows all employees to start on the order before the order is even finalized

Case study: How Dave does it

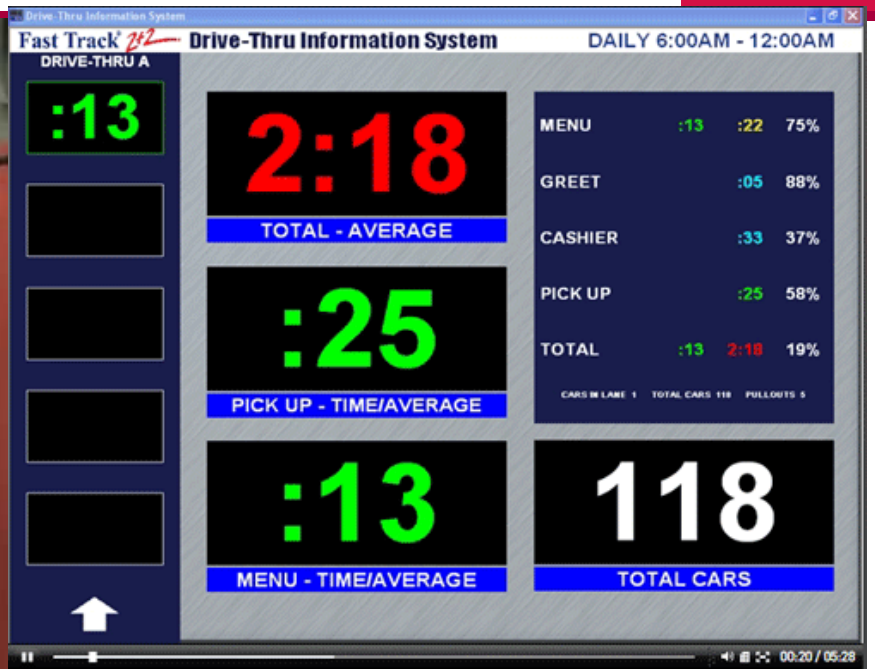
Logically designed interface.

Case study: How Dave does it

Employees can see the finalized order and quickly prepare the food

Keeps track of information in order to determine how well the stores are performing

Case study: How Dave does it

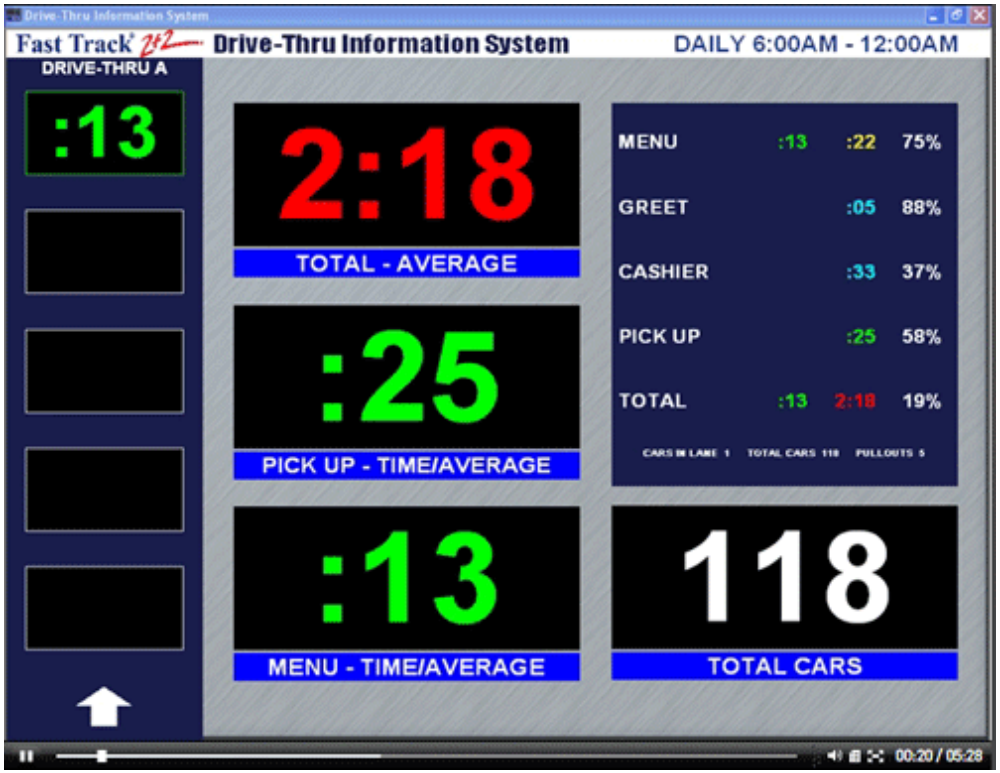


Statistics regarding performance of Wendy's employees

Operational Level Concerns (Structured)

- How many customers?
- How long did they wait?
- How much spoilage?
- Who is calling in sick?
- Who is doing a great job?

- How can we automate?



Organizational Decision-Making Levels

- **Executive**/Strategic Level
  - Upper Management
- **Managerial**/Tactical Level
  - Middle Management
- **Operational** Level
  - Operational Employees, Foremen, Supervisors

Organizational Decision-Making Levels: Operational Level

Operational information systems primarily focus on process automation.

Automation Example

Effectively servers different types of customers:

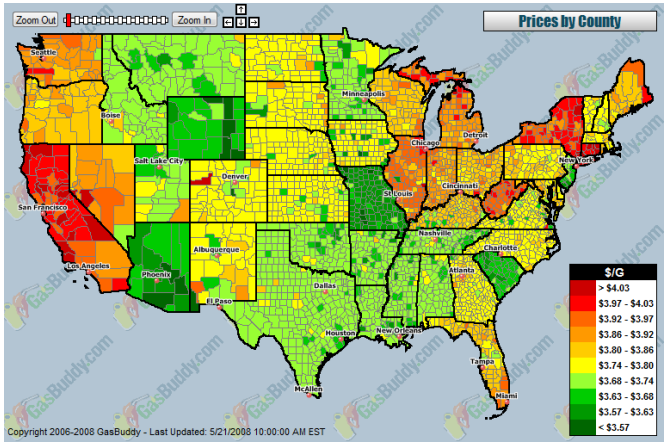
- Simple and standardized orders: kiosk
- Highly customized orders: counter

McDonald's Build Your Own Burger Menu System: https://youtu.be/U02-FpxoNXc

Organizational Decision-Making Levels: Managerial/Tactical Level

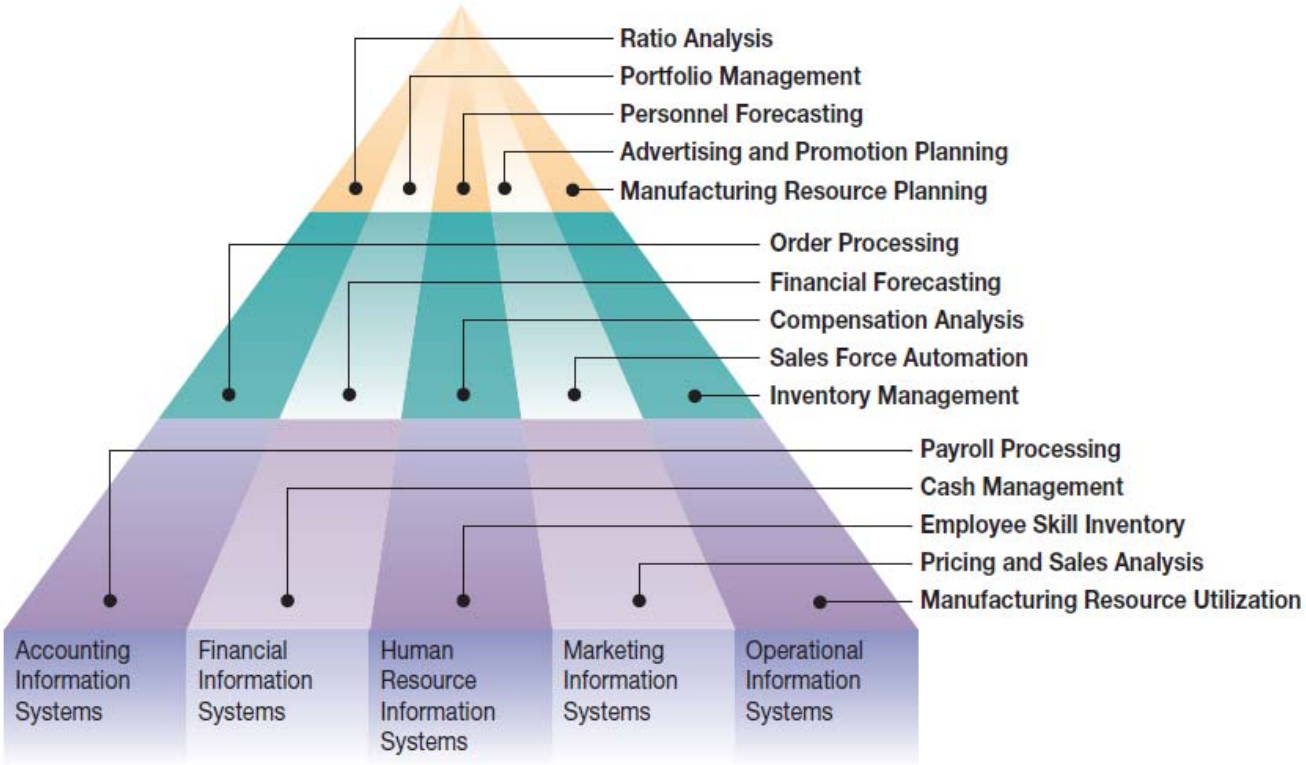
Information systems at the managerial level focus on helping middle management make semi-structured decisions with better input and resources

Organizational Decision-Making Levels: Executive/Strategic Level



Information systems at the executive level focus on helping managers understand the current business trends

Organizational Functions and Functional Levels



Managers within each function at each organizational level have unique information system needs.

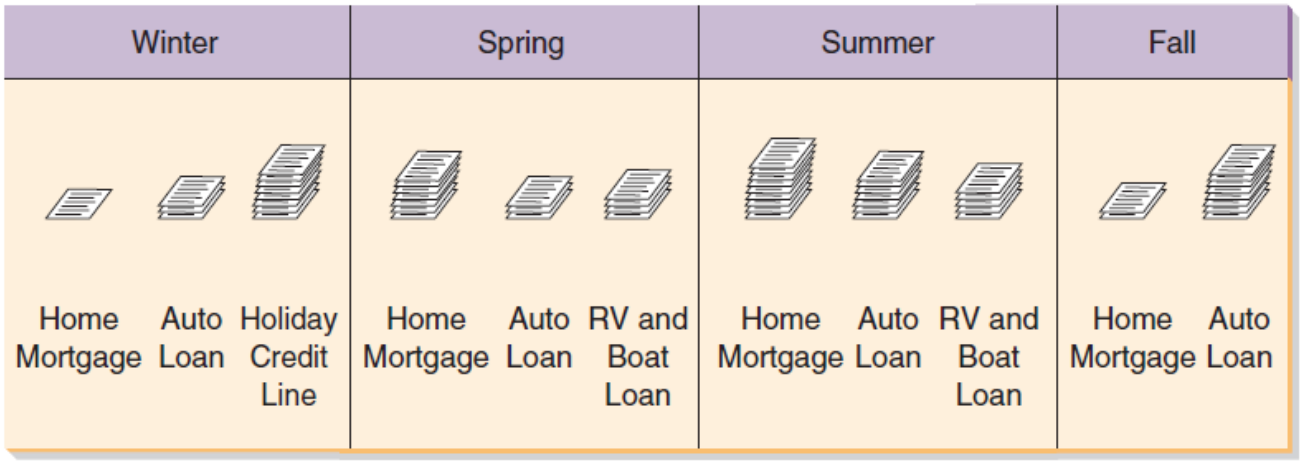
Information Systems for Automating: Doing Things Faster

Primary Activities of Loan Processing	Manual Loan Process	Technology-Supported	Fully Automated
Complete and submit application	Completed at home (1.5 days)	Completed at home (1.5 days)	Completed online (15 minutes)
Check application for errors	Done in batches (2.5 days)	Done in batches (2.5 days)	Computerized (1 sec)
Input data into the information system	NA some paper handling (1 hr)	Done in batches (2.5 days)	NA (already done)
Assess loan apps under $250K	Done by hand (15 days)	Computer assisted (1 hr)	Computer processed (1 sec)
Committee decides if loan over $250K	(15 days)	(15 days)	(15 days)
Applicant notified	Batches (1 week)	(1 day)	E-mail (1 sec)
Total time	25 to 40 days	5 to 20 days	15 min to 15 days

Doing things faster: automation

Information Systems for Organizational Learning: Doing Things Better

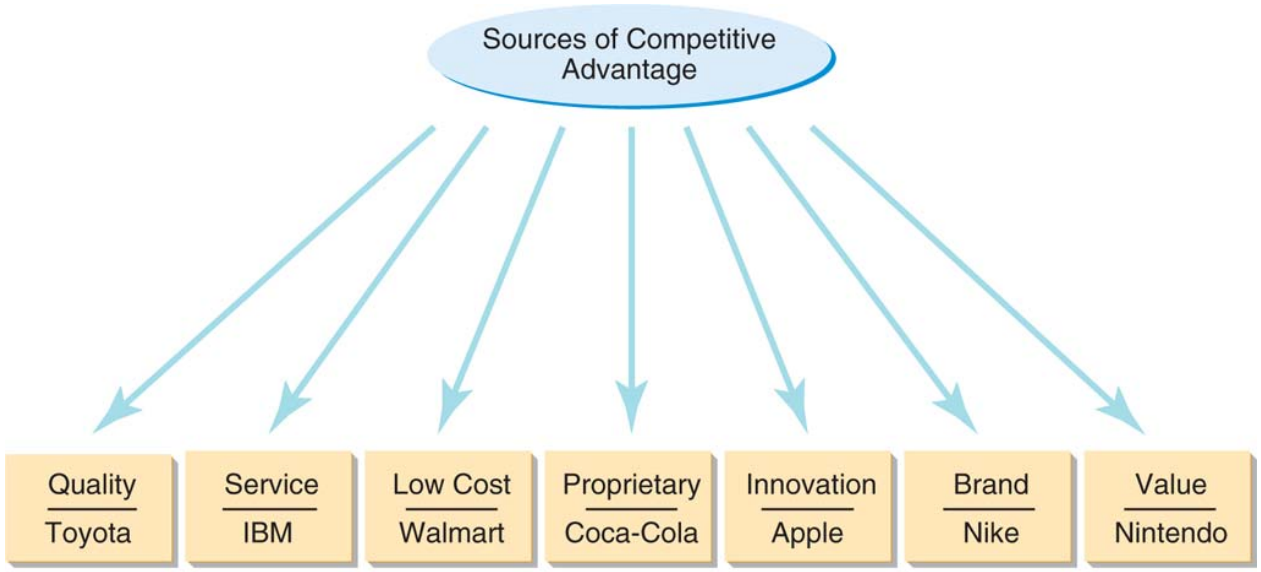
- Information systems can track and identify trends and seasonality
- Managers can use this to plan staffing levels and cross-training



Information Systems for Supporting Strategy: Doing Things Smarter

- Companies have a competitive strategy
- Information Systems should be implemented that **support that strategy**
  - Low cost strategy implies information systems to minimize expenses
  - High quality strategy implies information systems to support ensuring excellent quality and minimal defects

Sources of Competitive Advantage



When a company does or is perceived by customers to do something distinctively better than the competitors, it has a competitive advantage based on that distinctive feature.

Identifying Where to Compete: Analyzing Competitive Forces

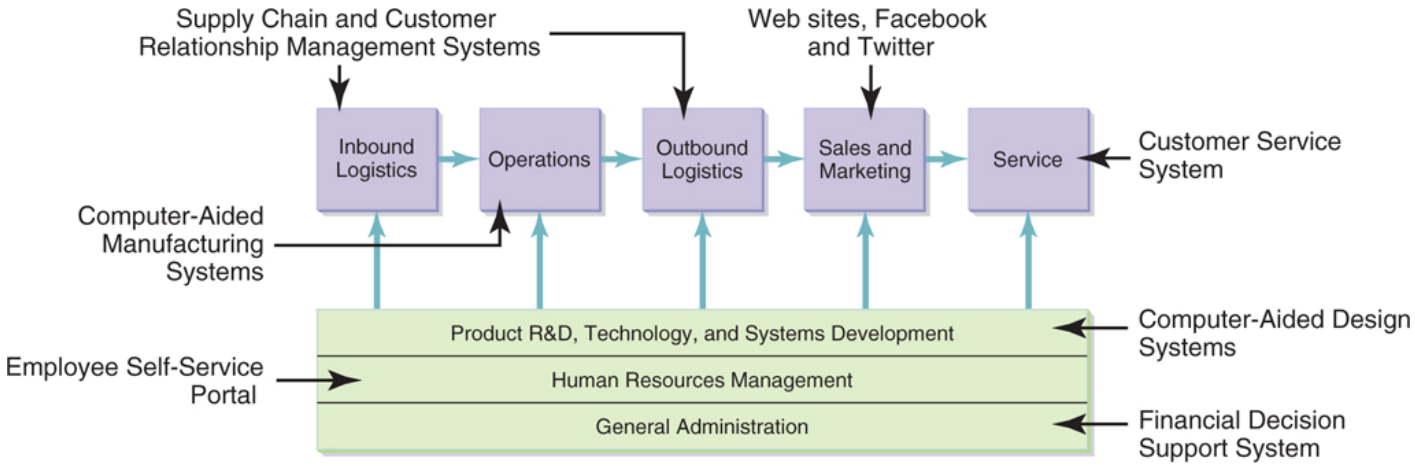
The Five Competitive Forces That Shape Strategy (Michael Porter):

https://youtu.be/mYF2_FBCvXw

Influence of the Internet on Competitive Forces

Competitive Force	Implication for Companies	Internet Influence on Competitive Force
Rivals within your industry	Competition in price, product distribution, and service	Geographic reach, ease of product comparison, price competition
New entrants	Increased capacity in industry, reduced prices and market share	Reduced entry barriers and eased critical resource access
Customers' bargaining power	Reduced prices, demand for better quality and service	Wider customer choices, lower switching costs, higher customer bargaining power
Suppliers' bargaining power	Increased costs and reduced quality	Equalized access to suppliers
Threat of substitute products	Potential returns on product, decreased market share, customer loss	New substitutes created by Internet and IT

Identifying How to Compete: Analyzing the Value Chain



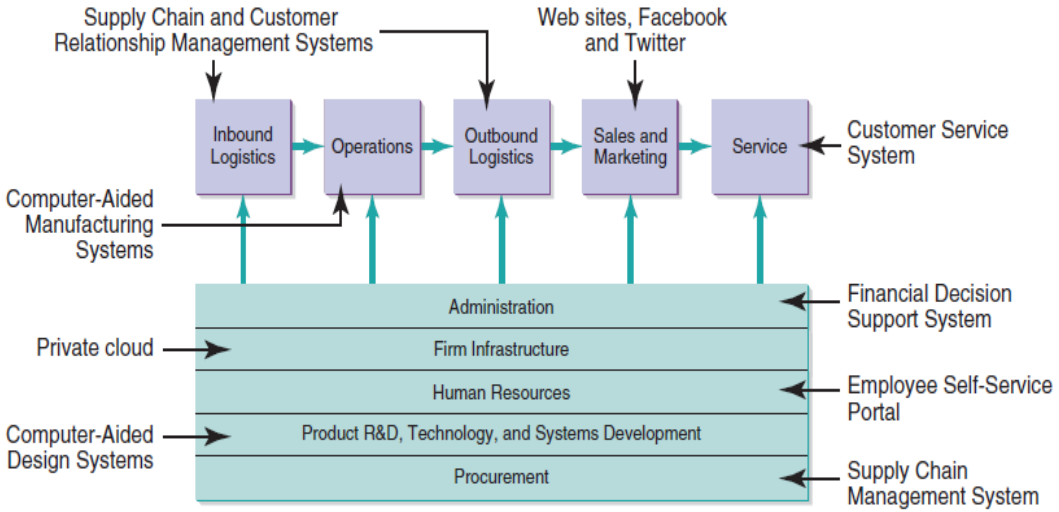
Example:

Coke value chain – example

Value chain:

- A set of activities that a company operating in a specific industry
- Performs in order to deliver a valuable product or service for the market

Identifying How to Compete: Analyzing the Value Chain



Information systems can make an organization more efficient, and secure a **competitive advantage**.

Identifying **cost structure** at each level of the value chain and benchmarking against competitors → identify changes that will enhance your performance.

Assessing Value for the IS Infrastructure

- **Economic Value**
  - Direct financial impact
- **Architectural Value**
  - Extending business capabilities today and in the future
- **Operational Value**
  - Enhancing ability to meet business requirements
- **Regulatory and Compliance Value**
  - Complying with regulatory requirements

The Technology/Strategy Fit

- There are never enough resources to implement every possible IS improvement
- Therefore, organizations try to maximize **business/IT alignment.** Matching the IT investment to the company's strategy
  - e.g., don't invest in IS that maximizes product differentiation if your company's strategic focus is on being a low-cost leader
- Companies that focus on the improvements & business process management that help their value creation strategy the most will see the greatest competitive benefit

2. Business Models in the Digital World

- Describe how information systems support business models used by companies operating in the digital world.

Business Models in the Digital World

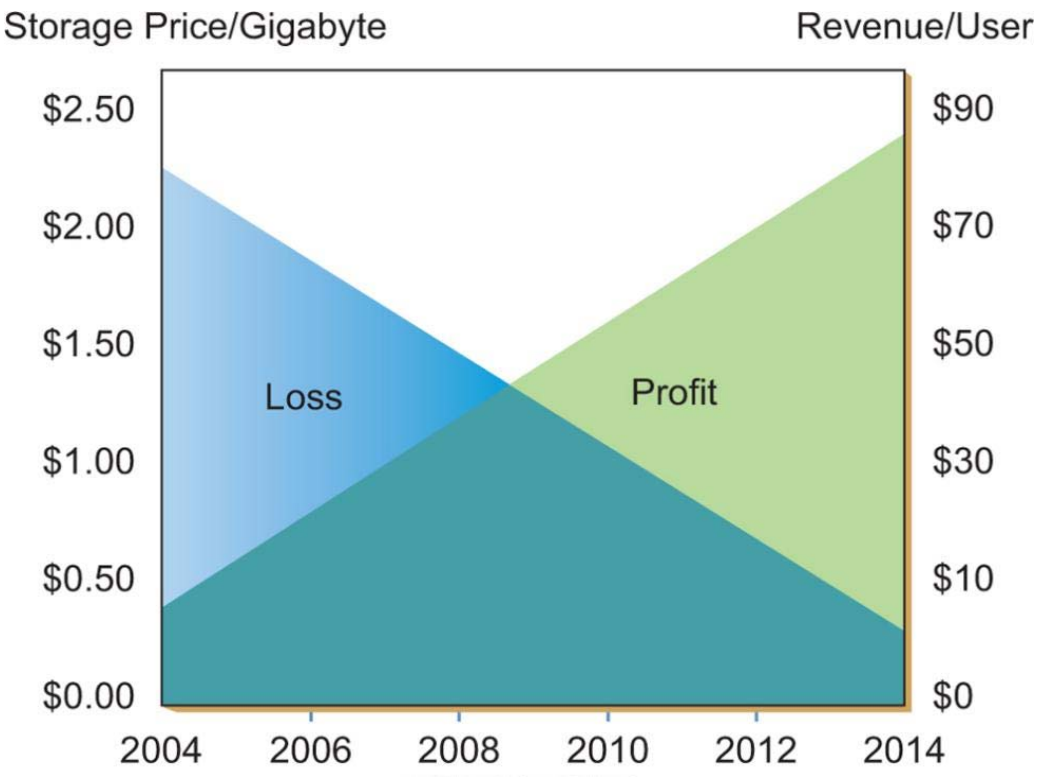
1. What does a company do?
2. How does a company uniquely do it?
3. In what way (or ways) does the company get paid for doing it?
4. What are the key resources and activities needed?
5. What are the costs involved?

Getting From Business Idea to Business Model:
https://youtu.be/wwShFsSFb-Y
https://youtu.be/wlKP-BaC0jA

Components and E-business Revenue of a Business Model

- **Business Model Components**
  - Customer segments
  - Value proposition
  - Channels
  - Customer relationships
  - Revenue streams
  - Key resources
  - Key activities
  - Key partners
  - Cost structure
- **Revenue Model**
  - Affiliate marketing
  - Subscription
  - Licensing
  - Transaction fees and Brokerage
  - Traditional sales
  - Web advertising

Freeconomics: Free Products Are the Future



- Market for digital goods and services **increases**
- Total and marginal per-user costs **decrease**

- **Competition forces companies to pass reduced costs to customers to maintain competitiveness**

Applying Freeconomics to Various Industries

Approach	What it Means	Examples
Advertising	Free services are provided to customers and paid for by a third party	▪ Yahoo!'s banner ads ▪ Google's pay-per-click
Freemium	Basic services are free; a premium is charged for special features	▪ Skype ▪ Dropbox.com
Cross subsidies	Sale price of one item is reduced in order to sell something else of value	▪Comcast DVR ▪Free cell phone with two-year contract
Zero Marginal Cost	Products are distributed to customers without an appreciable cost to anyone	▪ iTunes music distribution ▪ Software distribution ▪ YouTube Video content
Labor Exchange	The act of customers using free services creates value	▪ Yahoo! Answers ▪ Answers.com
Gift Economy	People participate and collaborate to create value for everyone	▪ Open source software ▪ Wikipedia

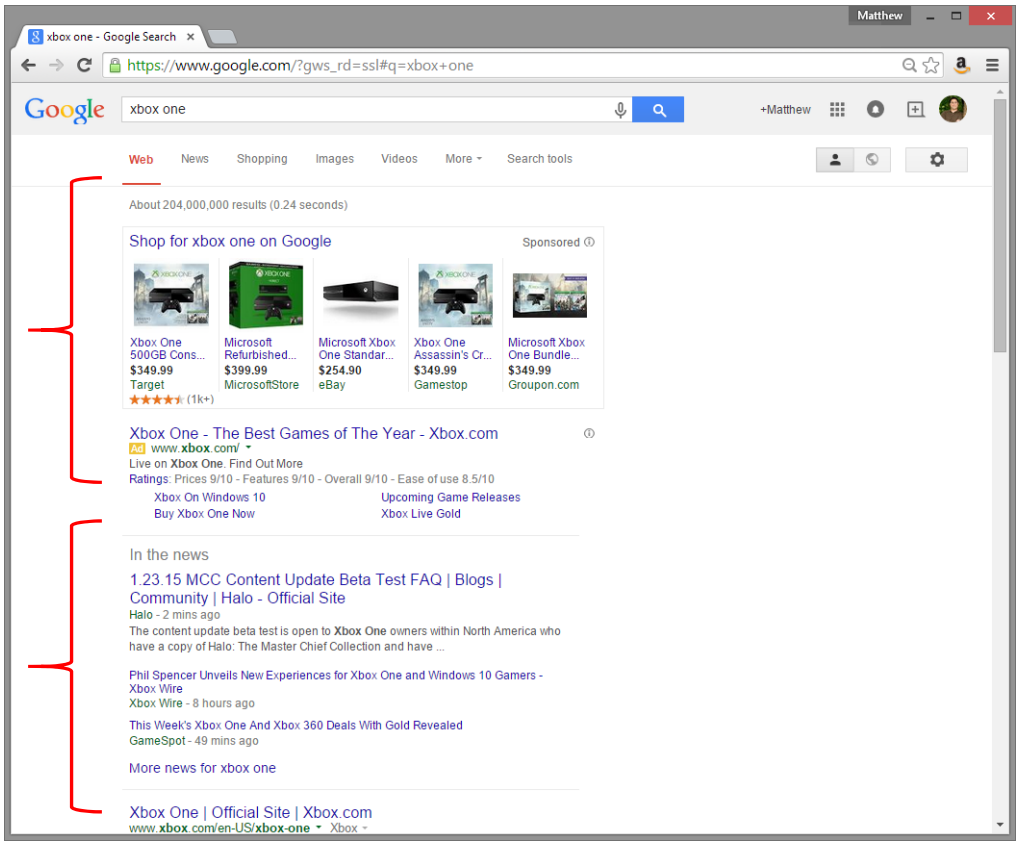
The Freeconomics Value Proposition

- **Free doesn't mean no profit**
  - Google gives away search
  - Users give Google search results their attention
    - This can include attention to sponsored links
    - Google sells space for sponsored links
  - Advertisers pay Google for that attention to sponsored links
    - Some users convert into customers
    - Customers pay advertising companys for their products

Google Search

“Sponsored” Search

“Organic” Search



Google cofounder Larry Page on Google's business model: https://youtu.be/493kjpR8M4o

Read more: http://www.google.com/adwords/

Freemium

- Dropbox
  - Free ($0)
  - Professional ($9.99/month)
  - Business ($15/month)

Dropbox Basic

Free

2 GB of space
Safe, reliable backup
Access from anywhere
Simple file sharing

Get started

Dropbox Pro

$9.99 / month

Dropbox Basic plus:
1 TB (1,000 GB) of space
Additional sharing controls
Remote wipe

Upgrade to Dropbox Pro

Dropbox for Business

$15 / user / month

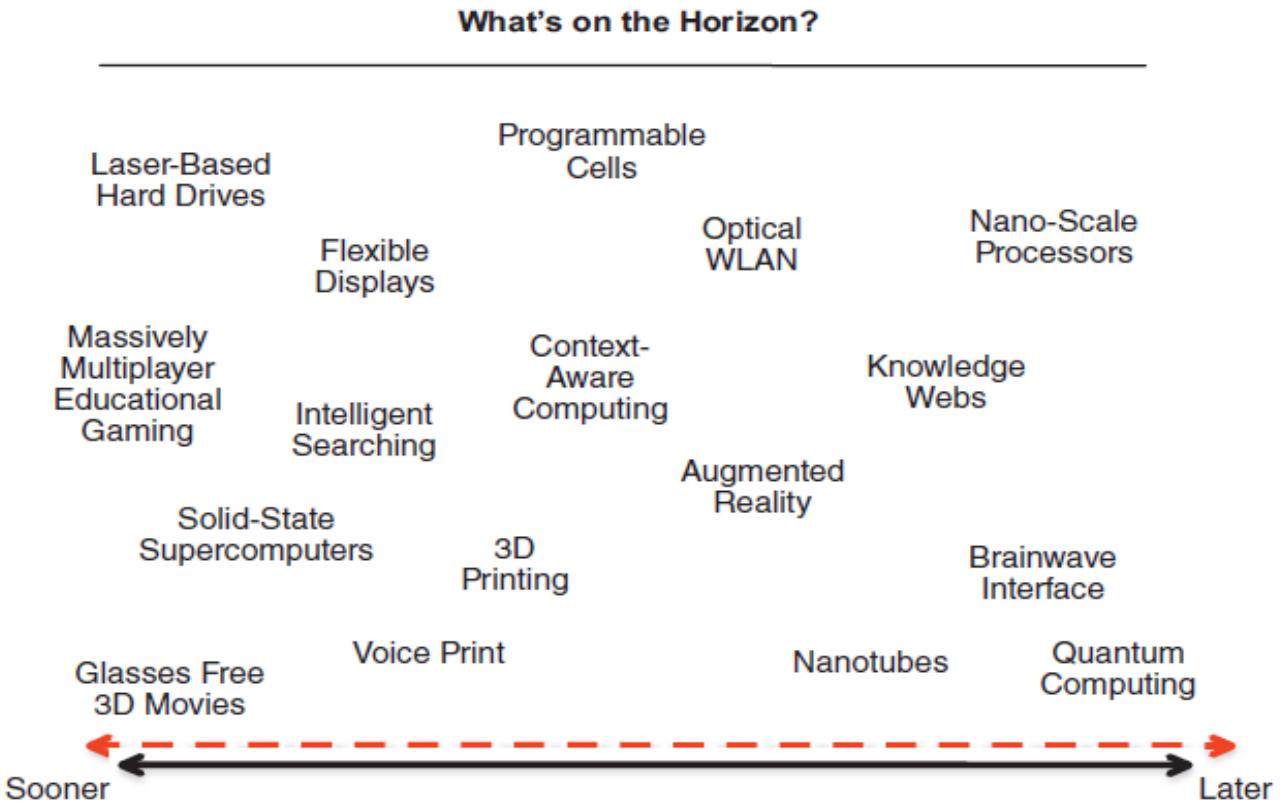
Dropbox Pro plus:
Centralized admin controls
Unlimited version history
Comprehensive audit log

Learn more

3. Valuing Innovations

- Explain why and how companies are continually looking for innovative ways to use information systems for competitive advantage.

Some Enabling Technologies on the Horizon



The Need for Constant IS Innovation

"The most important discoveries of the next 50 years are likely to be ones of which **we cannot now even conceive**"

John Maddox

- If a company wants to stay ahead of the competition, it needs to stay on top of the changing environment.

The Need for Constant IS Innovation

- Transformation Technologies are difficult or even impossible to see coming
  - Think of the Internet in 1999
  - Many of the critical discoveries in the next 50 years will be in areas we don’t see coming

“This ‘telephone’ has too many shortcomings to be seriously considered as a means of communication.
The device is inherently of no value to us.”

Western Union

1876

FIRST BELL TELEPHONES, PHOTOGRAPHED FROM THE ORIGINAL INSTRUMENTS IN THE PATENT OFFICE AT WASHINGTON

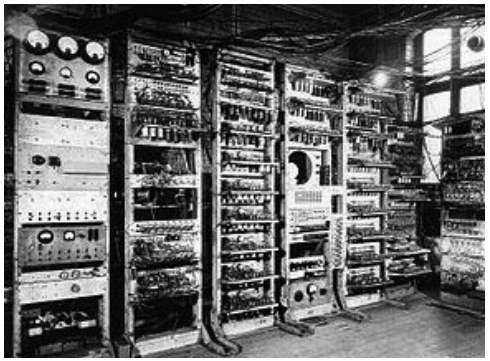
“Who the hell wants to hear actors talk?”

Warner Brothers

1927

“I think there is a world market for maybe 5 computers.”

Chairman IBM
1943



“…there is no reason anyone would want a computer in their home.”

President, Digital Equipment Corporation
1977

Successful Innovation Is Difficult

- **Innovation is often fleeting**
  - The pace of change is fast
  - Smart rivals quickly adopt any advantage
- **Innovation is often risky**
  - Competing technologies result in a winner and a loser (e.g.: Blu-ray and HD DVD)
- **Innovation choices are often difficult**
  - It is impossible to pursue all opportunities
  - It is hard to predict which opportunities will lead to success

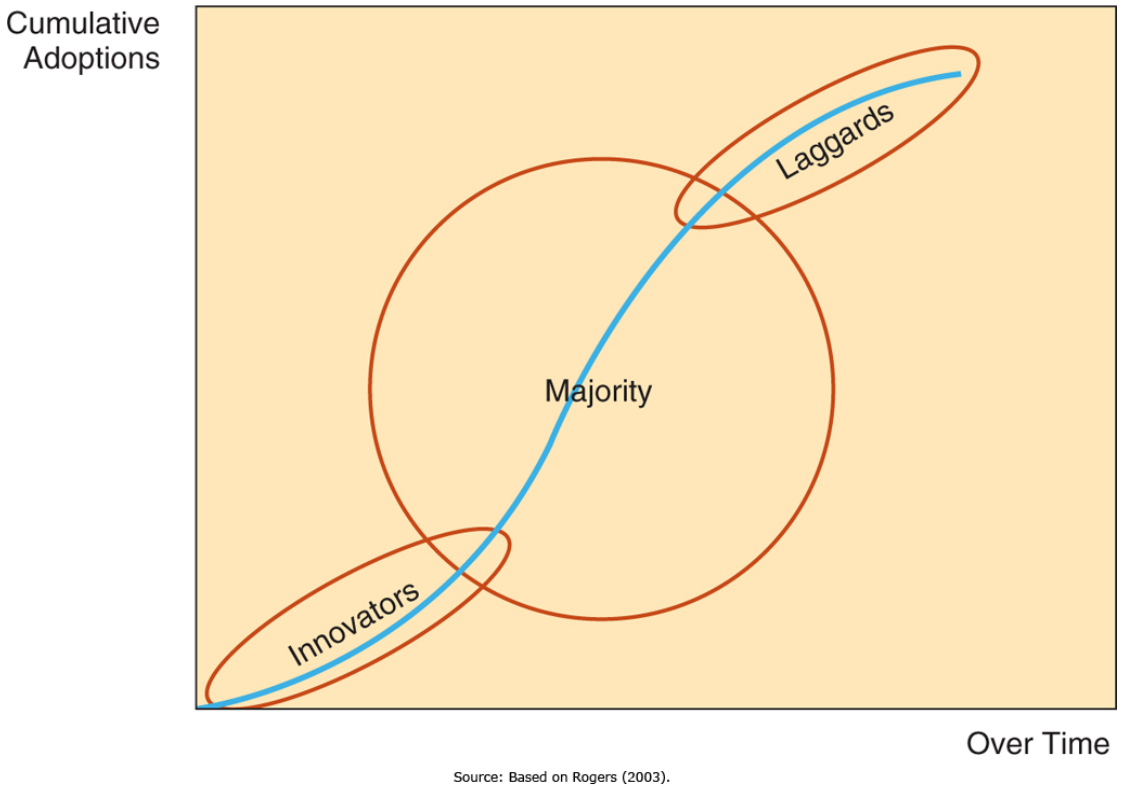
Organizational Requirements for Innovation

- **Process Requirements**
  - Focus on success over other objectives
- **Resource Requirements**
  - Employees with knowledge, skill, time & resources
  - Partner with appropriate requirements
- **Risk Tolerance Requirements**
  - Tolerance for risk
  - Tolerance for failure

Predicting the Next New Thing

- **Many innovations can be copied**
  - Limited time span of any advantage
  - May become a requirement for staying competitive
- **Some innovations deliver longer advantages**
  - Unique customer service based on customer data
  - High levels of customer investment in proprietary systems – high switching costs
  - Technologies that are very difficult to copy

The Diffusion of Innovations



Source: Based on Rogers (2003).

- Typical innovations are often slow to take off
- Then are rapidly adopted by majority
- Finally there is a long tail of late adopters who slowly change over

Disruptive Innovations

Disruptive Innovation	Displaced or Marginalized Technology
Digital photography	Chemical photography
Online stock brokerage	Full-service stock brokerages
Online retailing	Brick-and-mortar retailing
Semiconductors	Vacuum tubes
MP3 players and music downloading	Compact discs and music stores
Smartphones	MP3 players, dedicated GPS navigation

- **Disruptive Innovations** can completely replace the technology they are disrupting
- A failure to recognize that a disruptive innovation is changing the market can easily lead to a companies demise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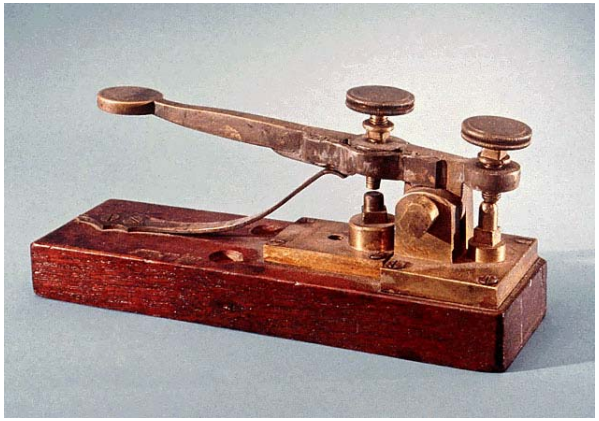


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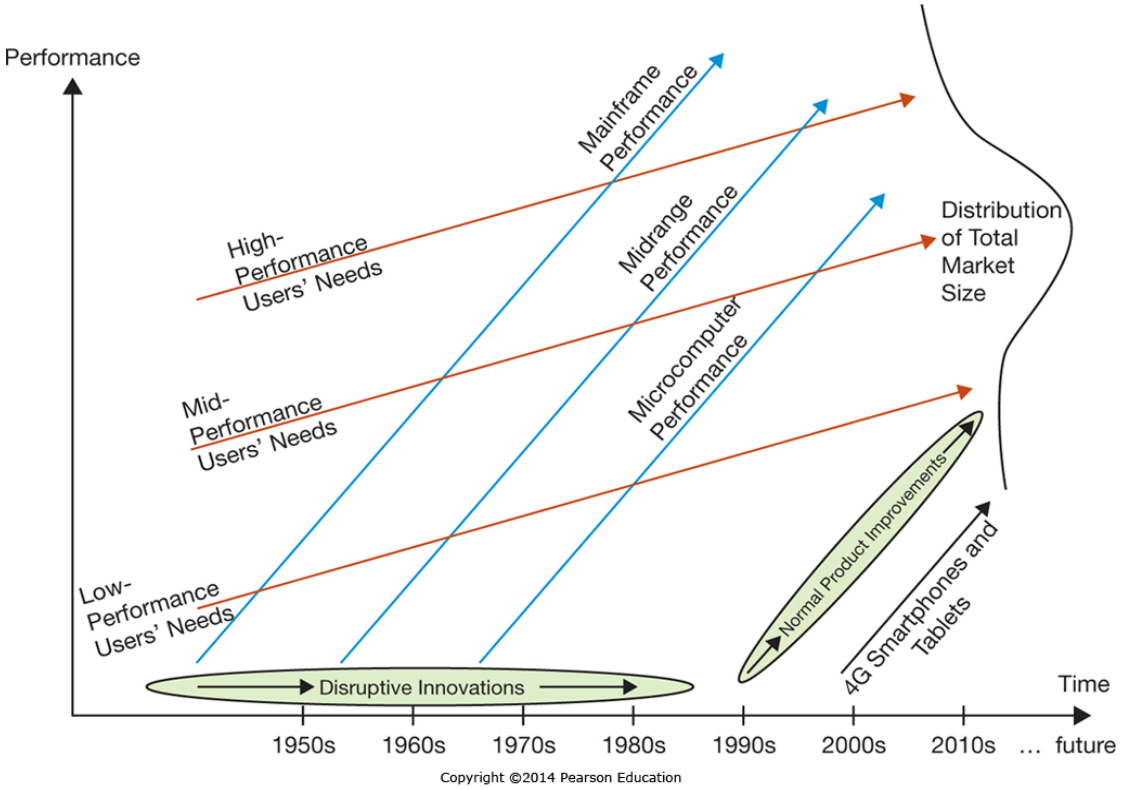
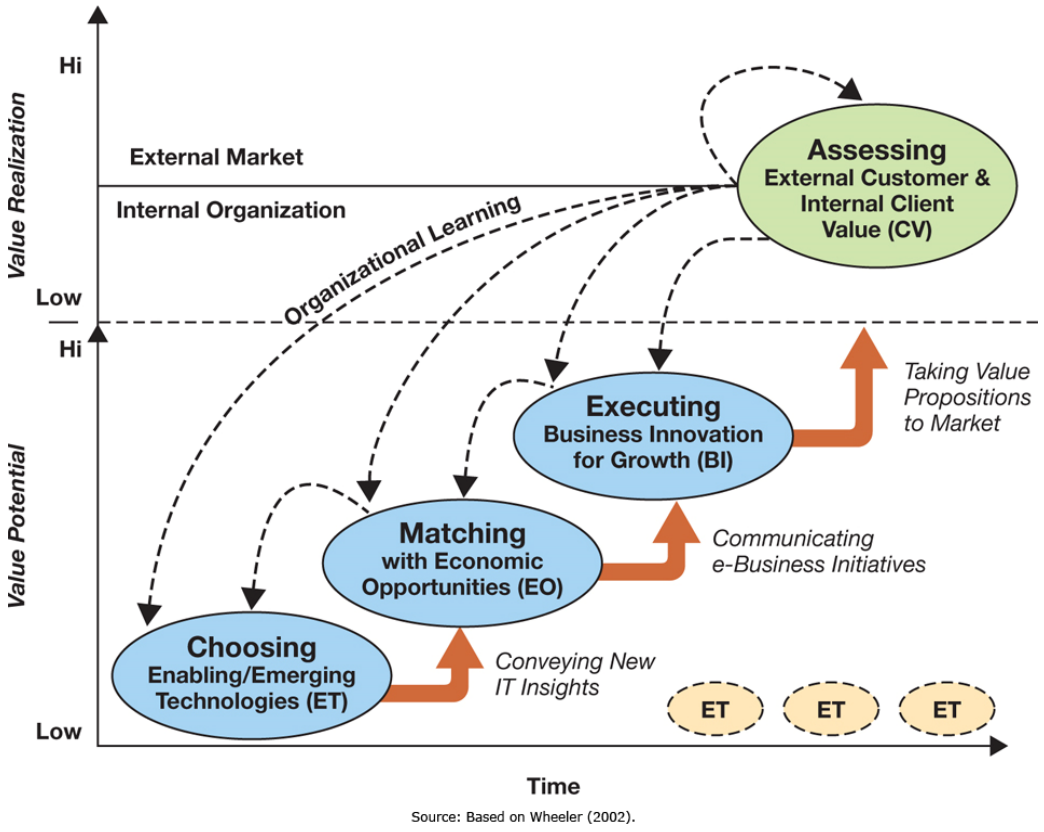
The Innovator's Dilemma



The capabilities of the lowest performing category of the market improve faster than the needs of the lowest need users.

Executing Innovation



Source: Based on Wheeler (2002).

Innovation cycle:

- Choosing technologies
- Matching them to opportunities
- Executing against the opportunity
- Assessment

Questions?

- Post your question on **piazza** if you feel it may benefit others

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