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Chapter 2 - Gaining Competitive Advantage through Information Systems

A firm has competitive advantage over rival firms when it can do something better, faster, more economically, or uniquely

Chapter 2 Learning Objectives



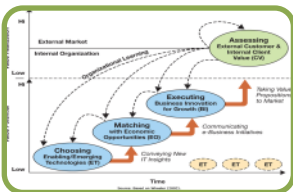
Enabling Organizational Strategy through Information Systems

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



International Business Strategies in the Digital World

- Describe international business and IS strategies used by companies operating in the digital world.



Valuing Innovations

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



Freeconomics: Why Free Products are the Future of the Digital World

- Describe freeconomics and how organizations can leverage digital technologies to provide free goods and services to customers as a business strategy for gaining a competitive advantage.

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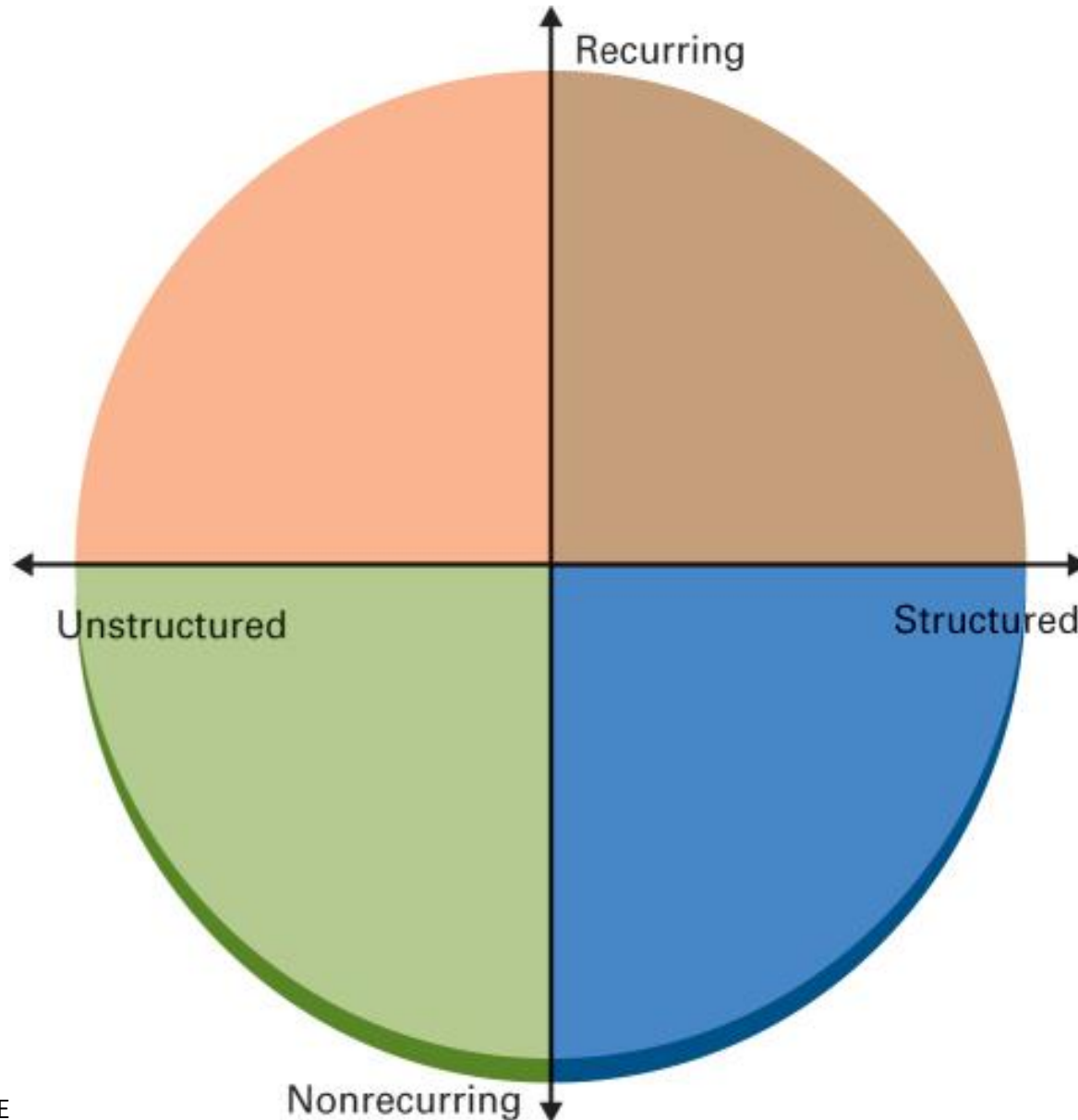
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Types of Decisions You Face



Organizational Decision-Making Levels

- Who has had a job?
- What level has this job been at?
- What types of decisions do you make?
 - Structured vs. Unstructured
 - Recurring vs. Non-recurring



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Organizational Decision-Making Levels: Operational Level



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Organizational Decision-Making Levels: Managerial/Tactical Level



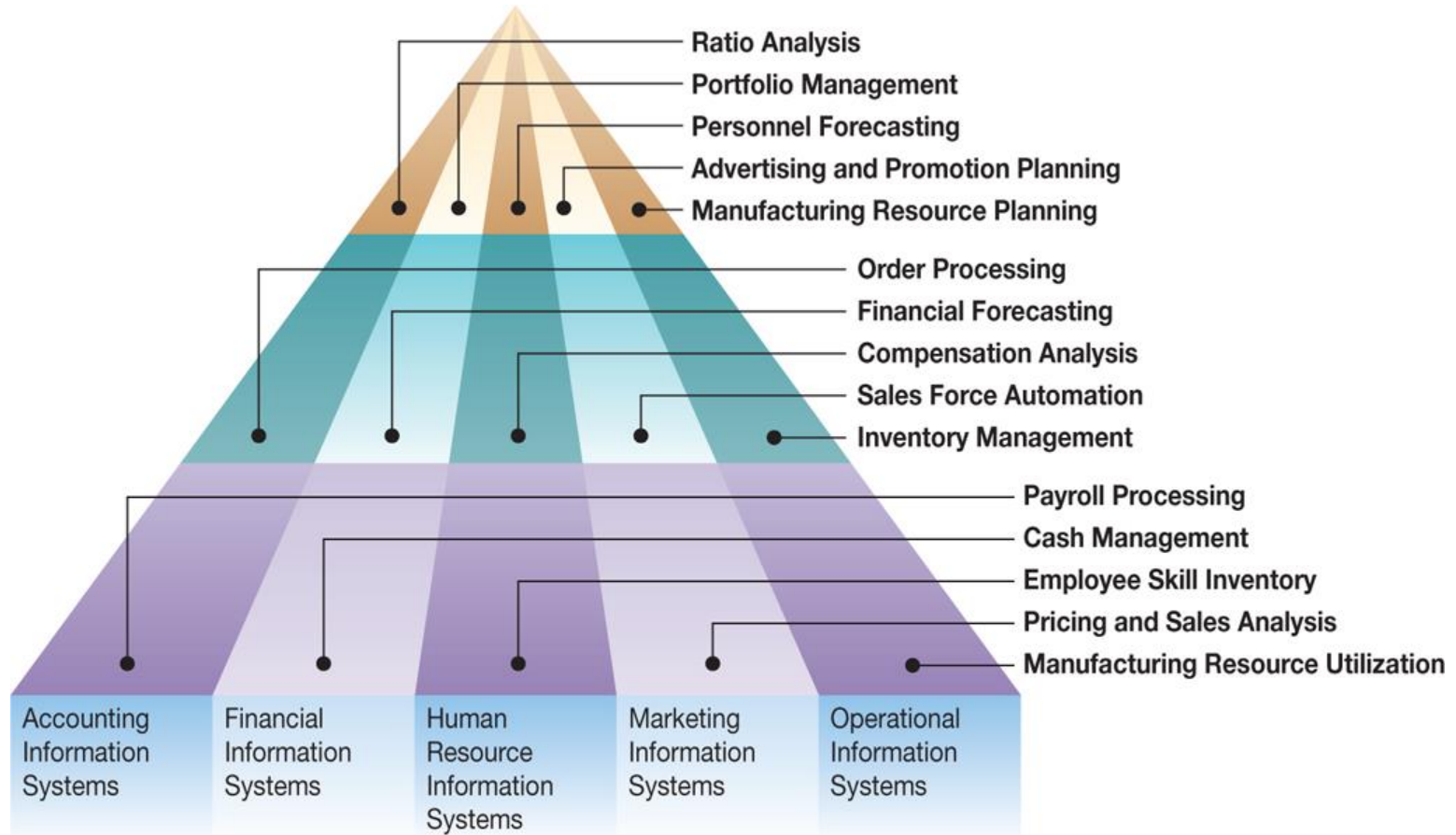
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Organizational Decision-Making Levels: Executive/Strategic Level



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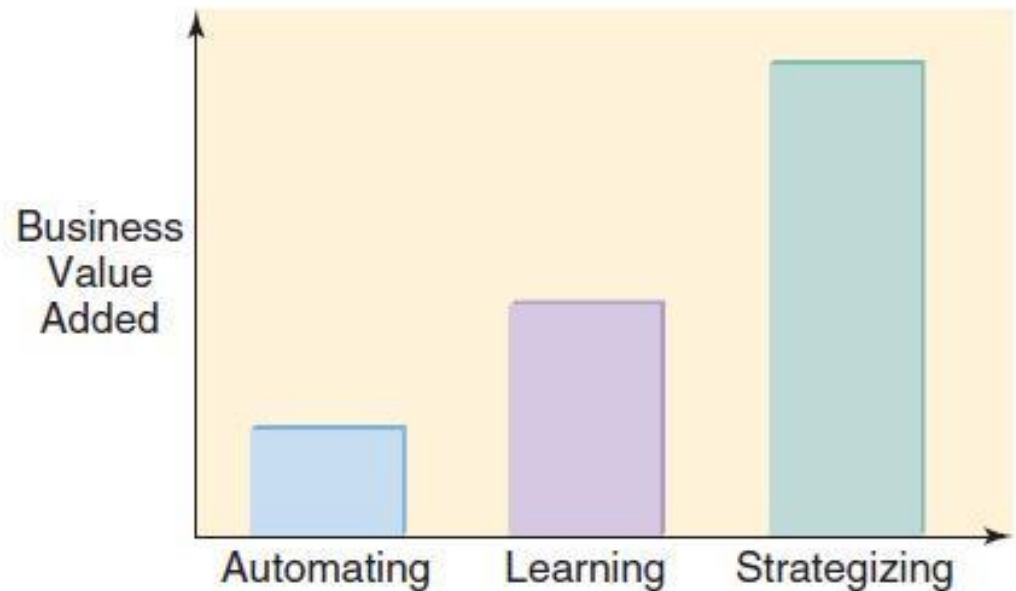
Organizational Functions and Functional Levels



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Major IS Tasks: Business Value Added

- What do we mean when we say we create business value by automating, organizational learning and supporting strategy

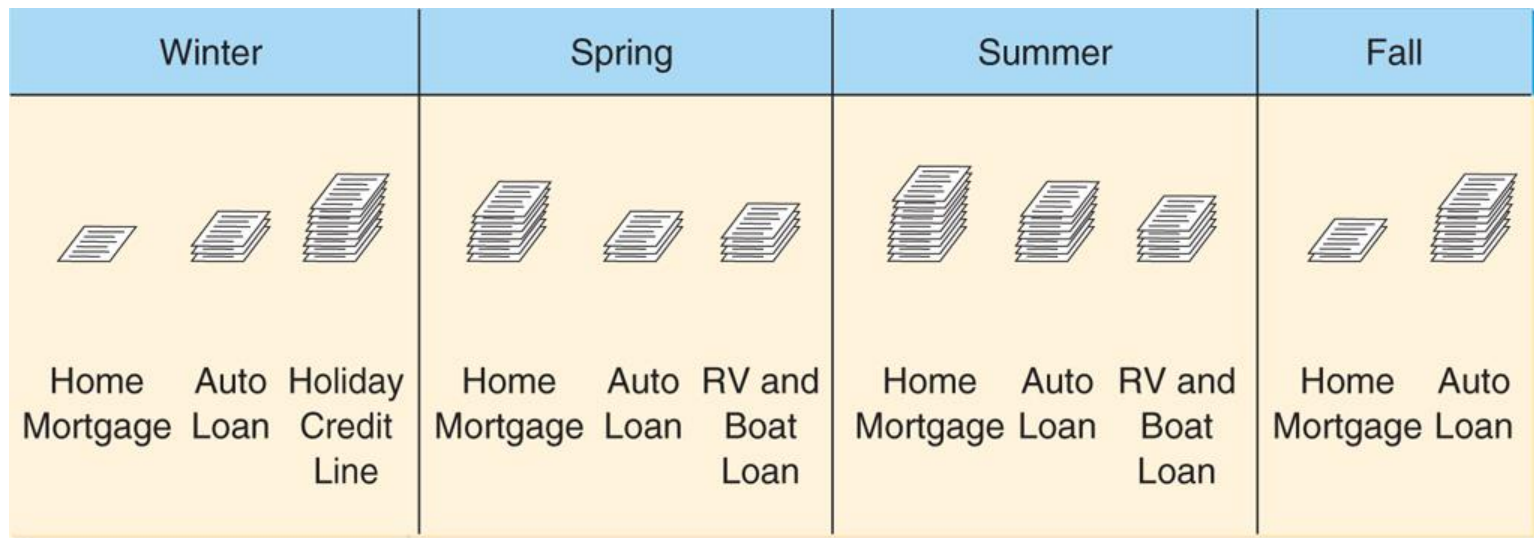


Information Systems for Automating: Doing Things Faster

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 (3.5 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 (5 days)	(1 day)	E-mail (3.5 sec)
Total time	25 to 40 days	5 to 20 days	15 min to 15 days

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

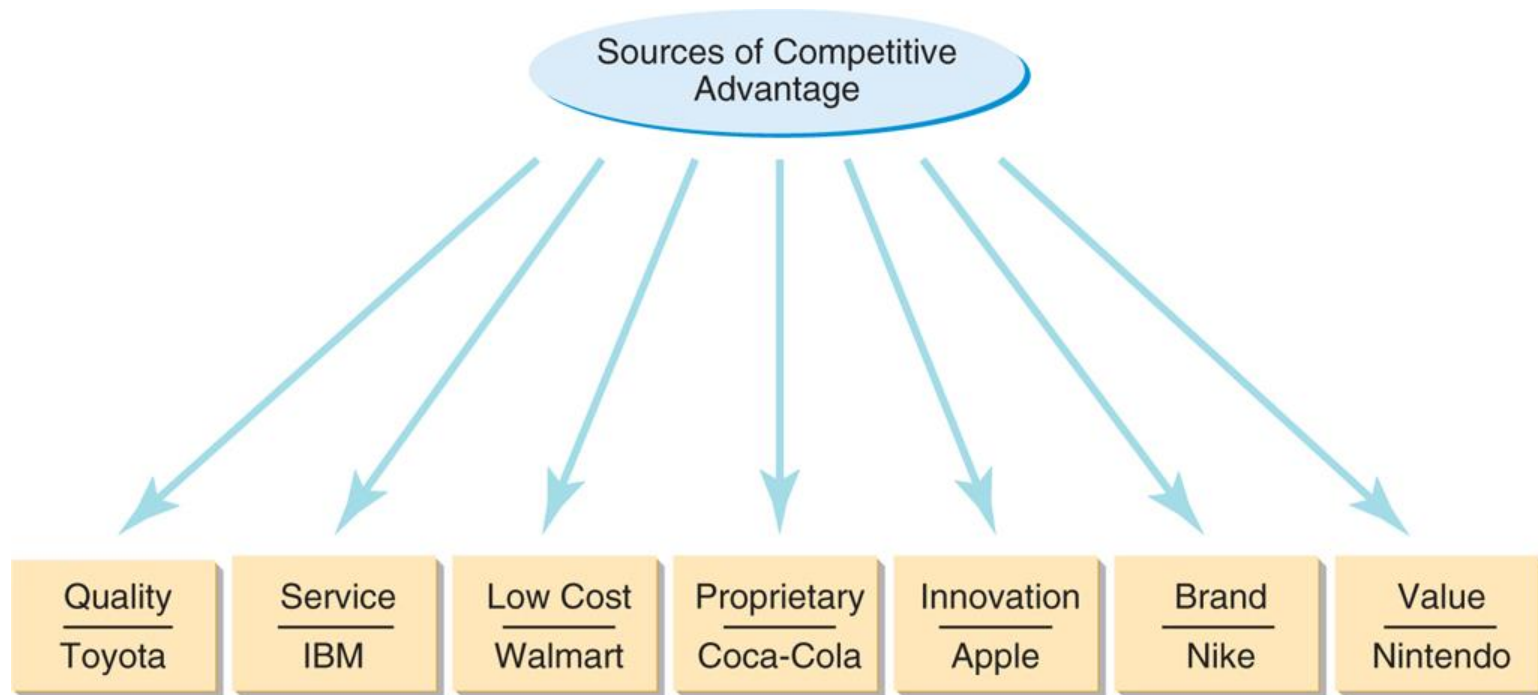


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Information Systems for Supporting Strategy: Doing Things Smarter

- Firms 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



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The Five Forces Model – Evaluating Business Segments

Product returns
 Lower market share
 Higher costs
 Lost customers
 Competition in price,
 distribution and
 service

**Threat of Substitute
 Products or Services**

Decision support and
 business intelligence
 Reduce prices
 Increase quality
 CAD product design
 Value added services

Supplier Power
 Bargaining power
 of suppliers

**Rivalry among
 Existing Competitors**

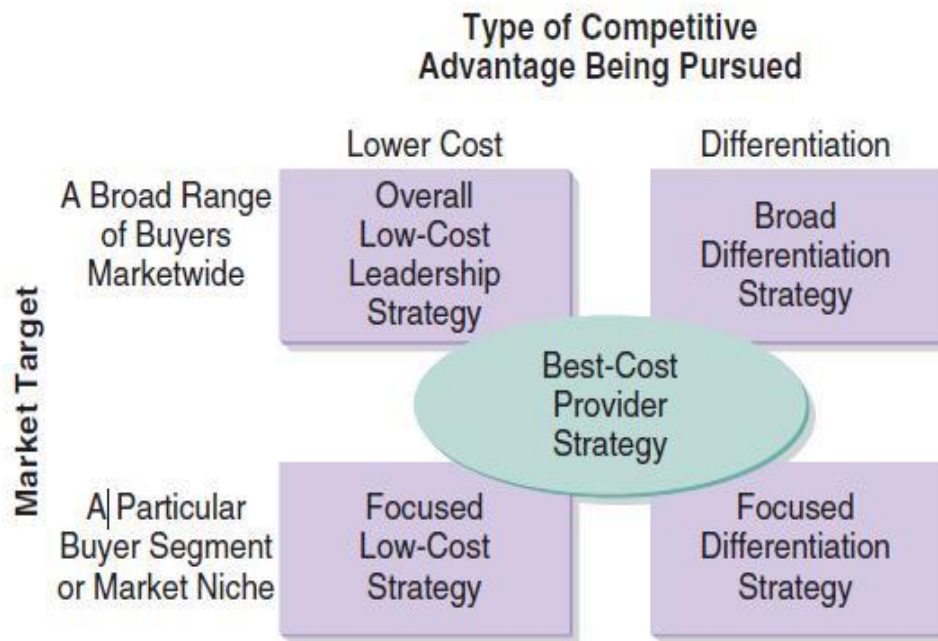
Buyer Power
 Bargaining power of
 channels
 Bargaining power of
 end users

Electronic connections to
 more suppliers
 Reduced prices
 Lost market share

**Threat of
 New Entrants**

ERP for reduce costs and
 react more quickly
 Better web presence
 Lower costs through ERP
 CAD/CAM improve quality
 supply chain, etc.

Pursuit of Competitive Advantage



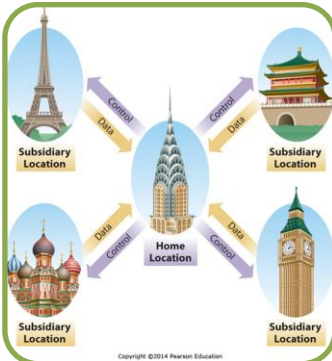
- What technologies enable an organization:
 - Best-made product
 - Superior customer service
 - Lower costs than rivals
 - Proprietary manufacturing technology
 - Shorter development/test lead times
 - Well-known brand name
 - More value for the money

International Business Strategies in the Digital World



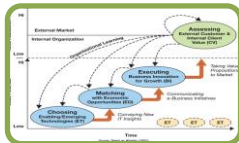
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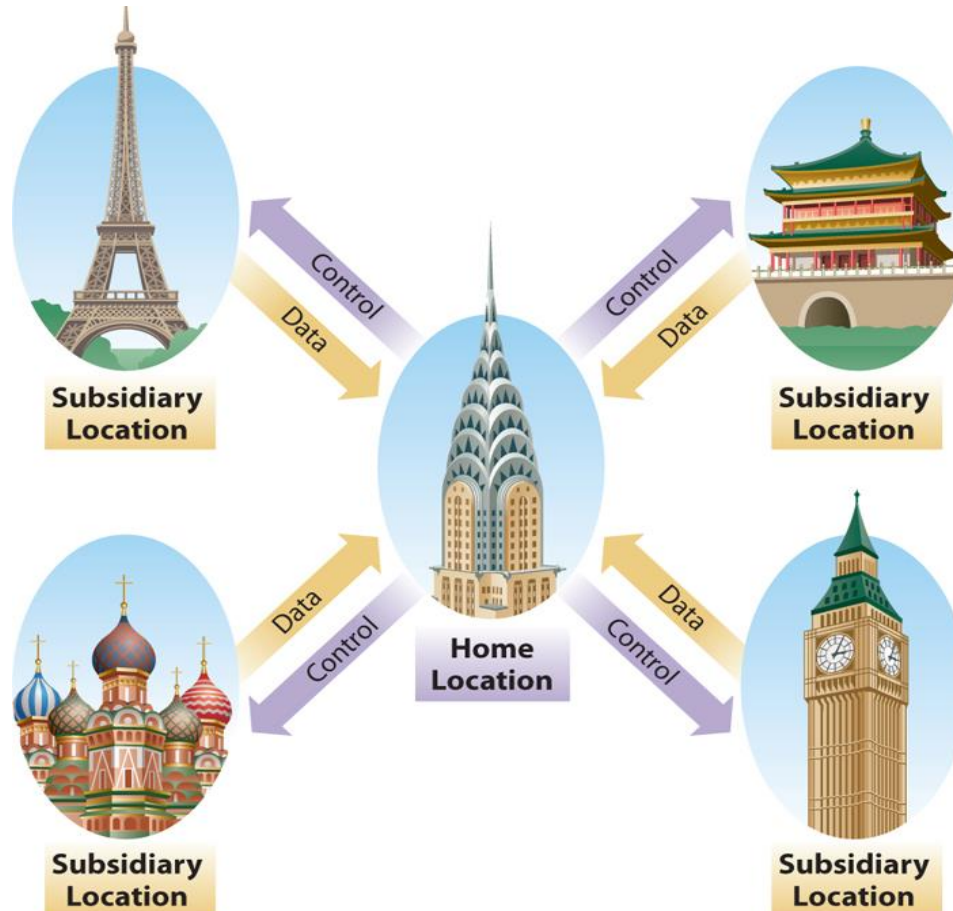
International IS Strategies

- There are four international business strategies
 - Home Replication
 - Global
 - Multidomestic
 - Transnational
- Each has pros and cons in terms of complexity, cost benefits, local responsiveness, and control

Home-Replication Strategy

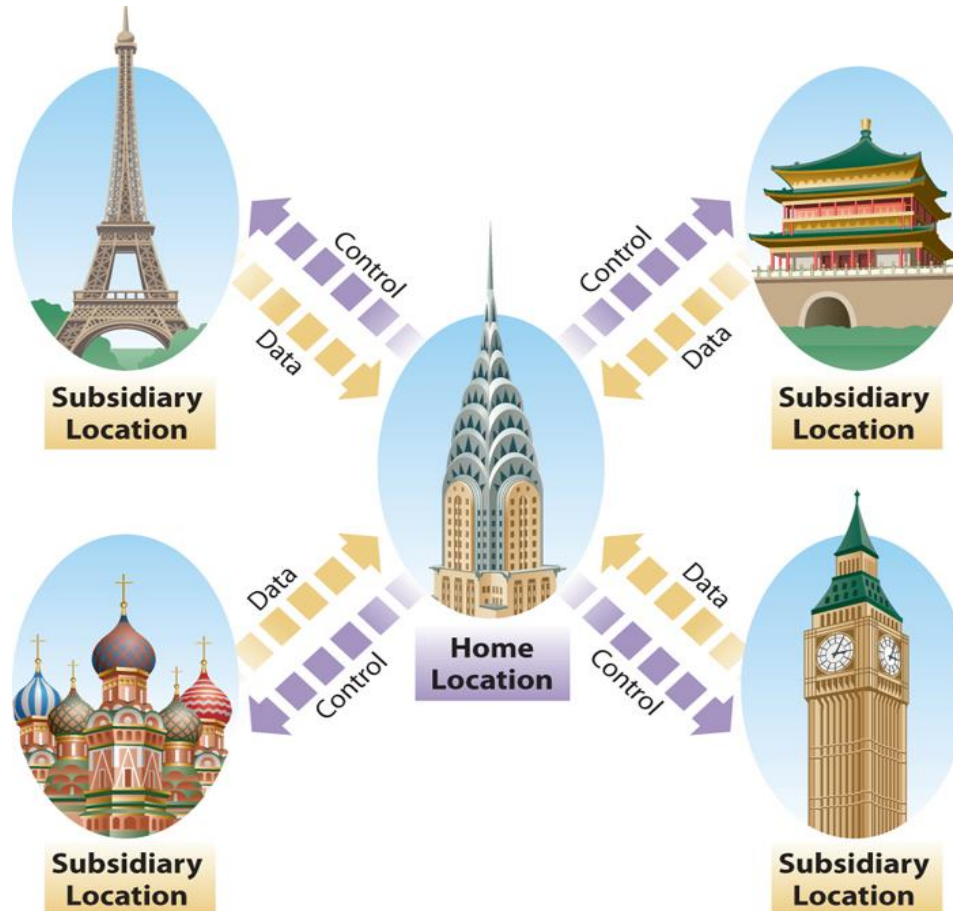
- Focused Domestically
- Exporting products to generate additional sales
- Secondary emphasis on international operations
- Information Systems not a significant factor in facilitating international export sales

Global Business Strategy



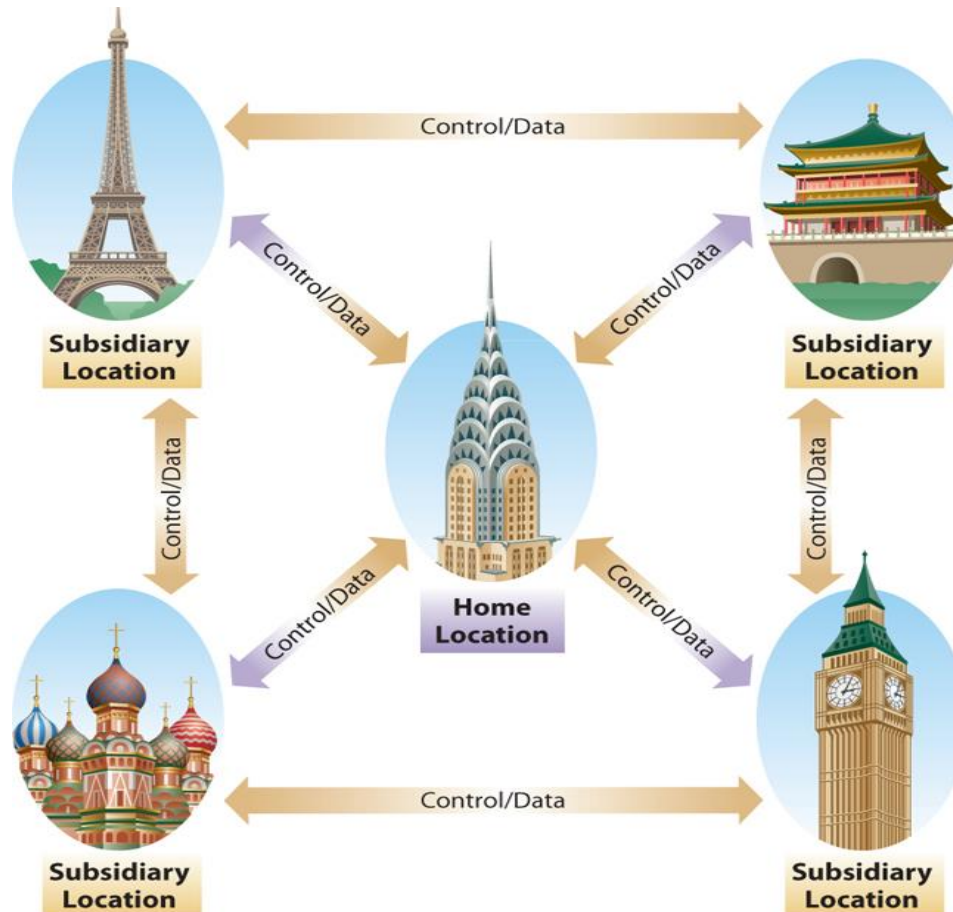
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Multidomestic Business Strategy



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Transnational Business Strategy



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Business/Information Systems Strategies

Strategy	Description	Strengths	Weaknesses	When to Use
Multidomestic	Federation of associated business units; decentralized	Ability to quickly react to local conditions	Differing product offerings limit economies of scale, and limited interunit communication limits knowledge sharing	Very heterogeneous markets
Global	Centralized organization with standardized offerings across markets	Standardized product offerings allow achieving economies of scale	Inability to react to local market conditions	Homogeneous markets
Transnational	Some aspects centralized, others decentralized; integrated network	Can achieve benefits of multidomestic and global strategies	Difficult to manage; very complex	Integrated global markets

IS/Business Strategy	Systems	Communications	Data Resources
Multinational	Decentralized systems	Direct communication between home office and subsidiaries	Local databases
Global	Centralized systems	Multiple networks between home office and subsidiaries	Data sharing between central home office and subsidiaries
Transnational	Distributed/shared systems; Internet-enabled applications	Enterprise-wide linkages	Common global data resources

Valuing Innovations



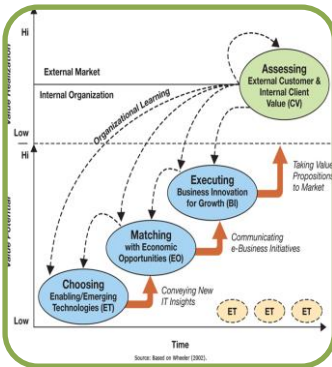
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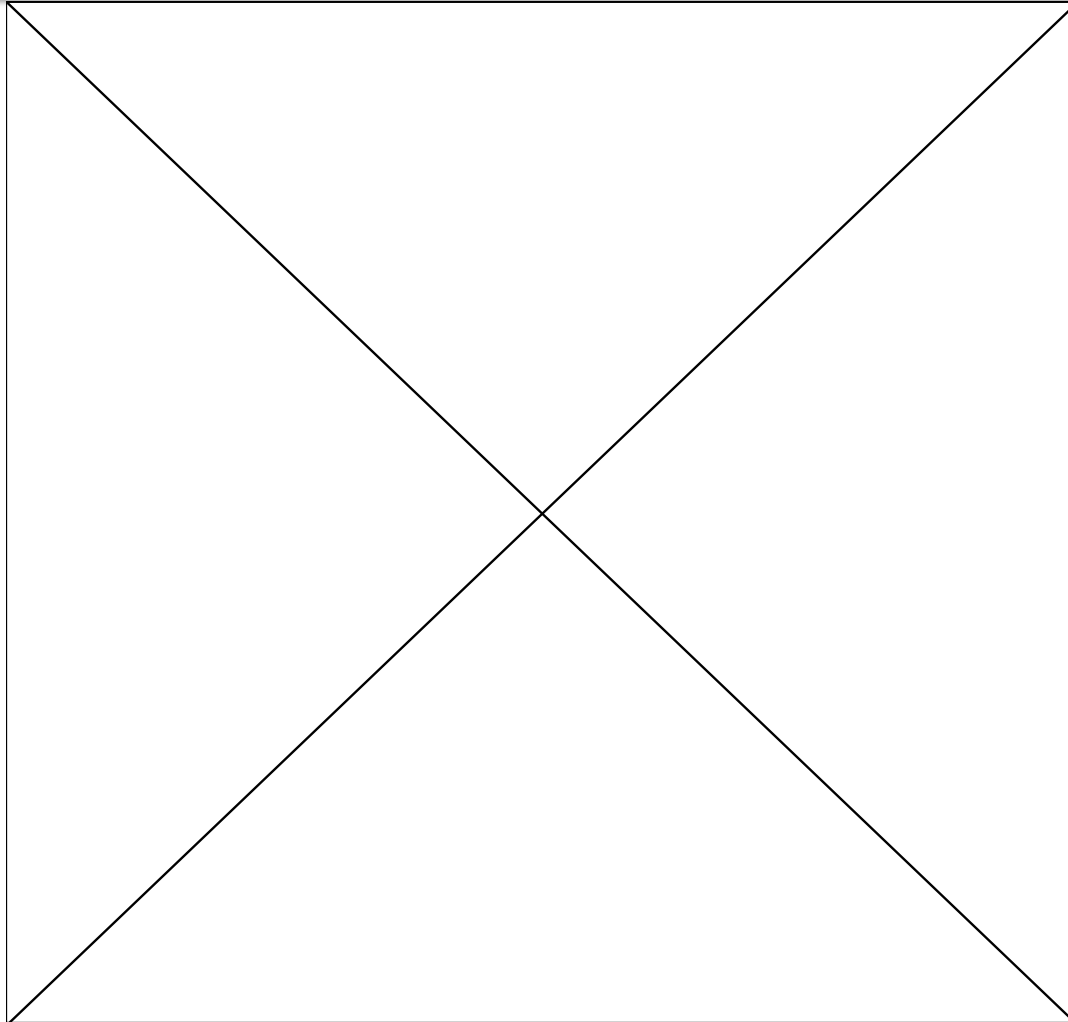
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The Need for Constant IS Innovation

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

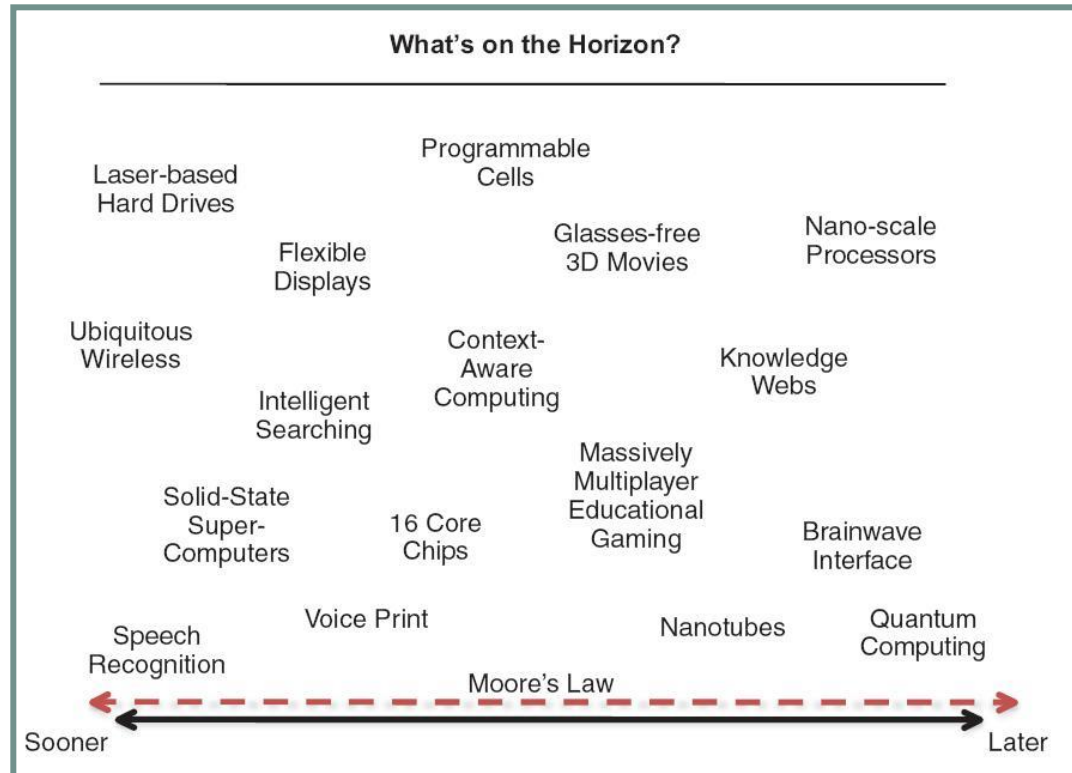
- Transformation Technologies are difficult or even impossible to see coming
 - Think of the Internet in 1999
 - Many of the critical discoveries in the next 50 years will be in areas we don't see coming

Miniaturization – What is Moore's Law?



Valuing Innovations

- Which new technology will make or break your business?



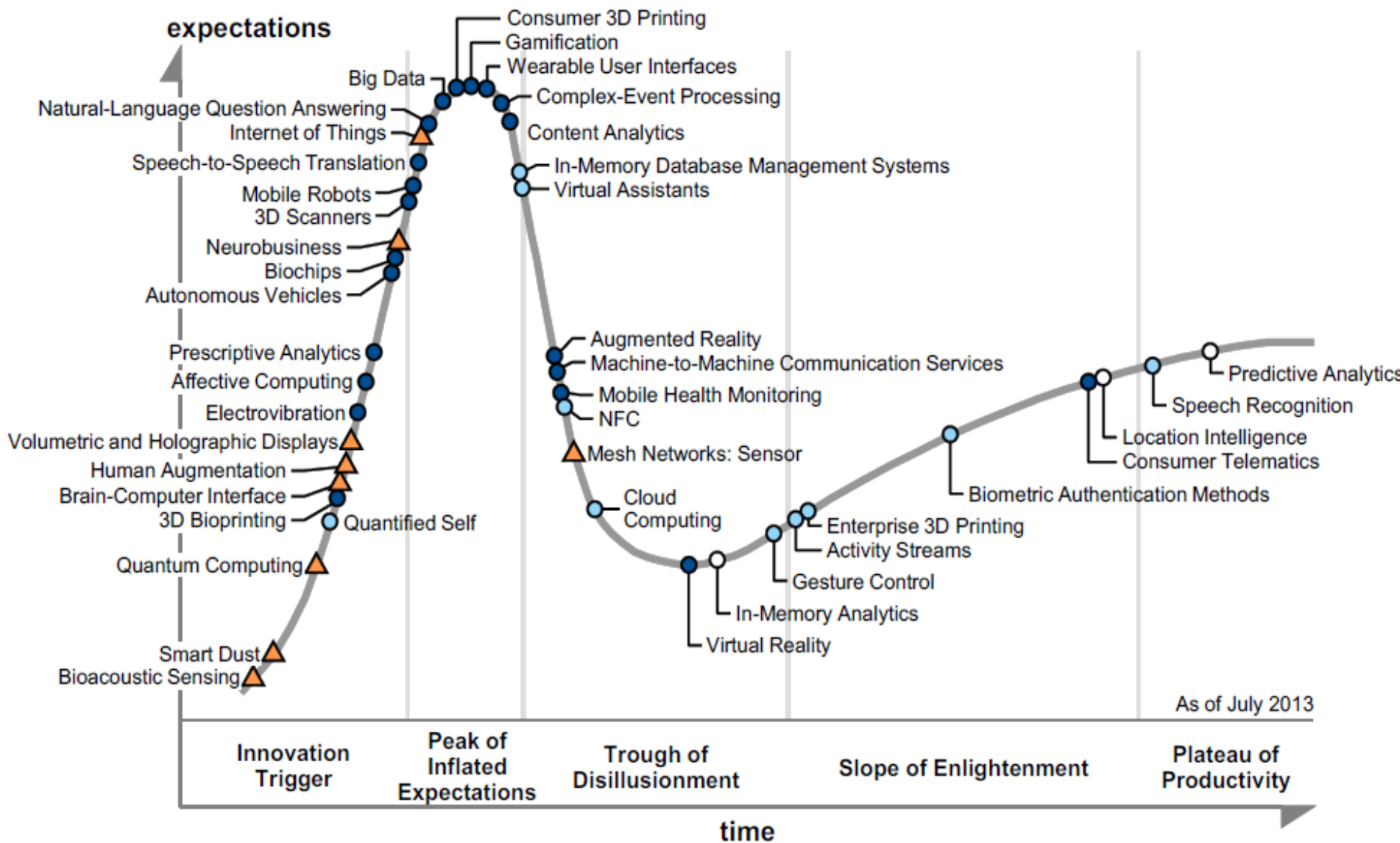
Successful Innovation Is Difficult

2-28

- **Innovation is often fleeting.**
 - The advantages gained from innovations are often short lived.
- **Innovation is often risky.**
 - Sometimes even superior products can lose the race.
 - ✦ Blu-ray vs. HD DVD
- **Innovation choices are often difficult.**
 - Foreseeing the future is not always possible.
 - ✦ In 1994, the Internet was not given much attention.



Figure 1. Hype Cycle for Emerging Technologies, 2013



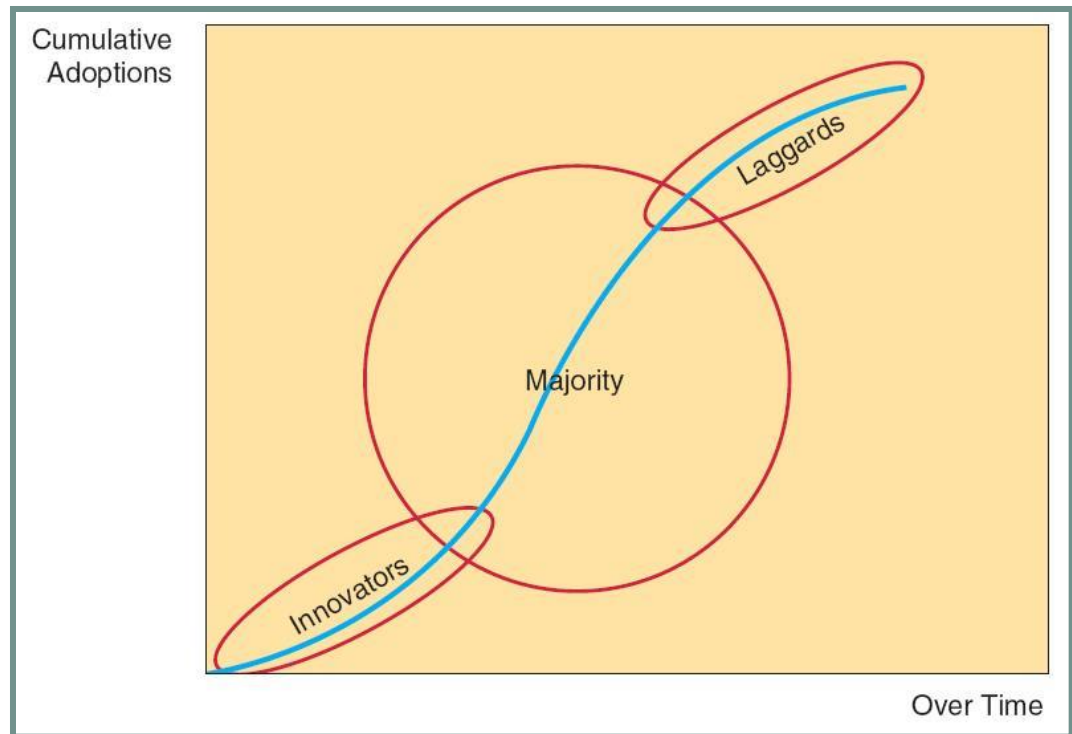
Organizational Requirements for Innovation

- **Process requirements**—the organization has to be willing to do whatever it takes to implement the change.
- **Resource requirements**—need to have the human capital necessary for successful deployment of the system
- **Risk tolerance requirements**—organizational members must have appropriate tolerance of risk and uncertainty.

Predicting the Next New Thing

2-31

- Deciding which innovations to adopt is very difficult.
- Diffusion of Innovations
 - Classic view of adoption of innovations



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

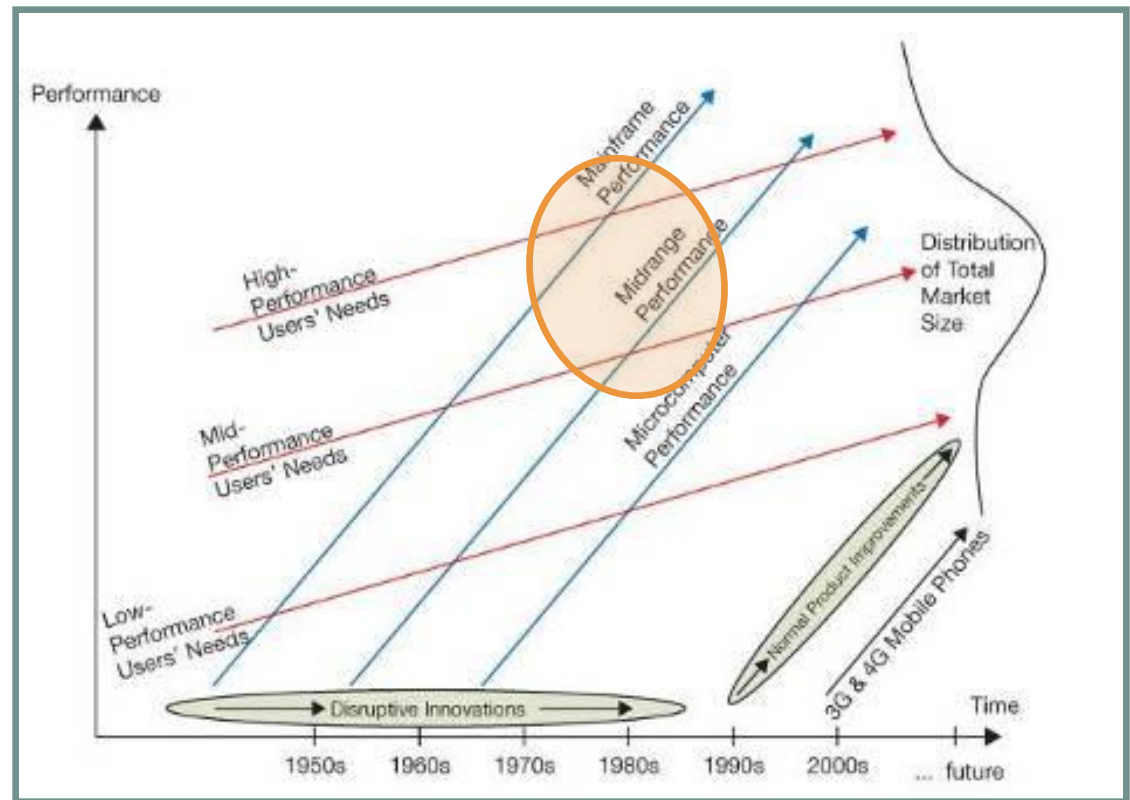
Disruptive Innovations

Examples from Table 2.8

Disruptive Innovation	Displaced or Marginalized Technology
Digital photography	Chemical photography
Online stock brokerage	Full-service stock brokerages
Online retailing	Brick-and-mortar retailing
Distance education	Classroom education
Unmanned aircraft	Manned aircraft
Semiconductors	Vacuum tubes
MP3 players and music downloading	Compact discs and music stores
Smartphones	MP3 players, dedicated GPS navigation
Tablets	Notebook computers

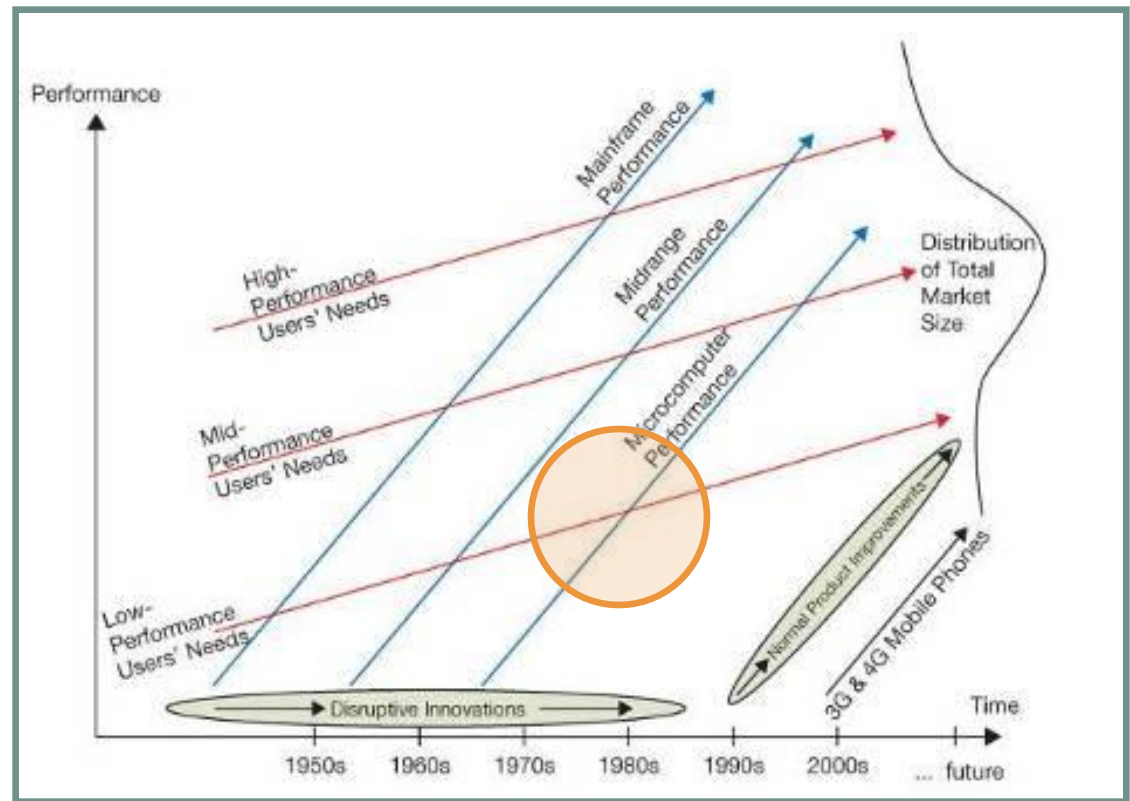
Disruptive Innovations

- 1970s: mid- and high-performance users were bulk of the market
- Digital Equipment Company (DEC) tried to sell to those markets
- Microcomputers seen as “toys”



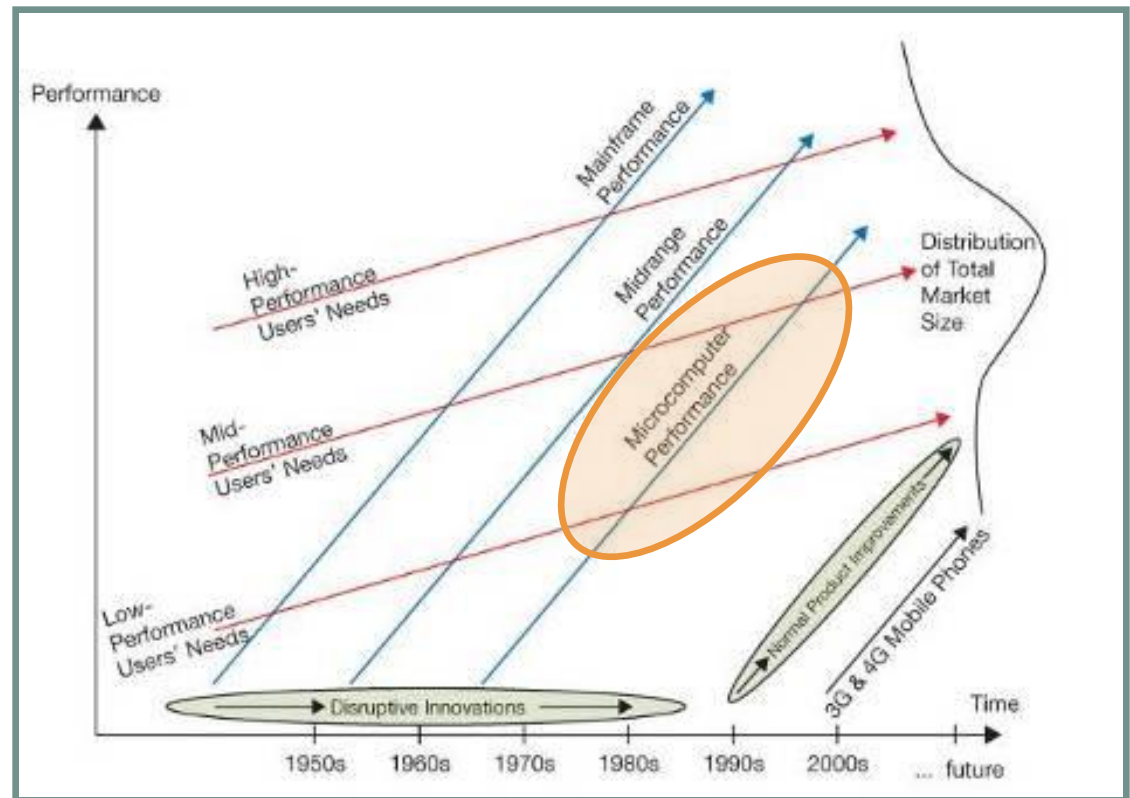
Disruptive Innovations (cont'd)

- 1980s:
Microcomputers focusing on low-performance users' needs
- Ignored by DEC



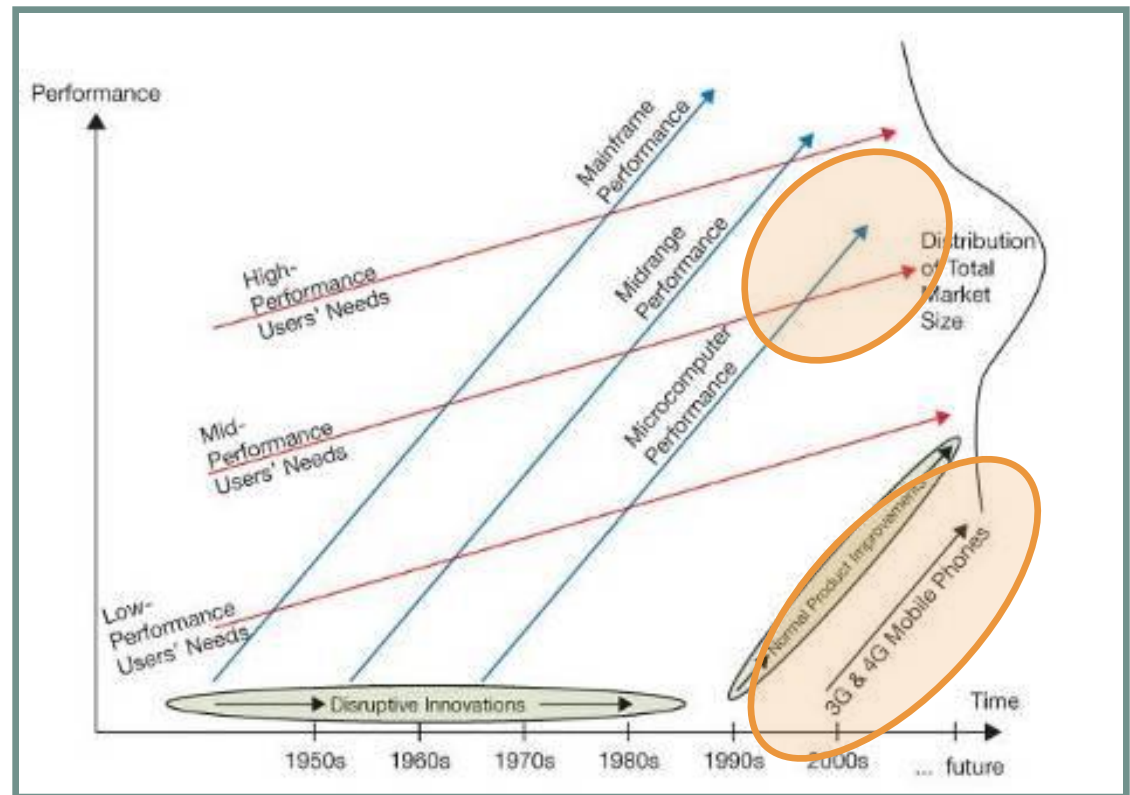
Disruptive Innovations (cont'd)

- 1990s:
Growing performance of Microcomputers, meeting mid-performance users' needs
- DEC lost biggest market segment



Disruptive Innovations (cont'd)

- Today, micro-computers meeting entire market's needs
- DEC out of business
- Next disruptive innovation: 3G and 4G mobile phones?

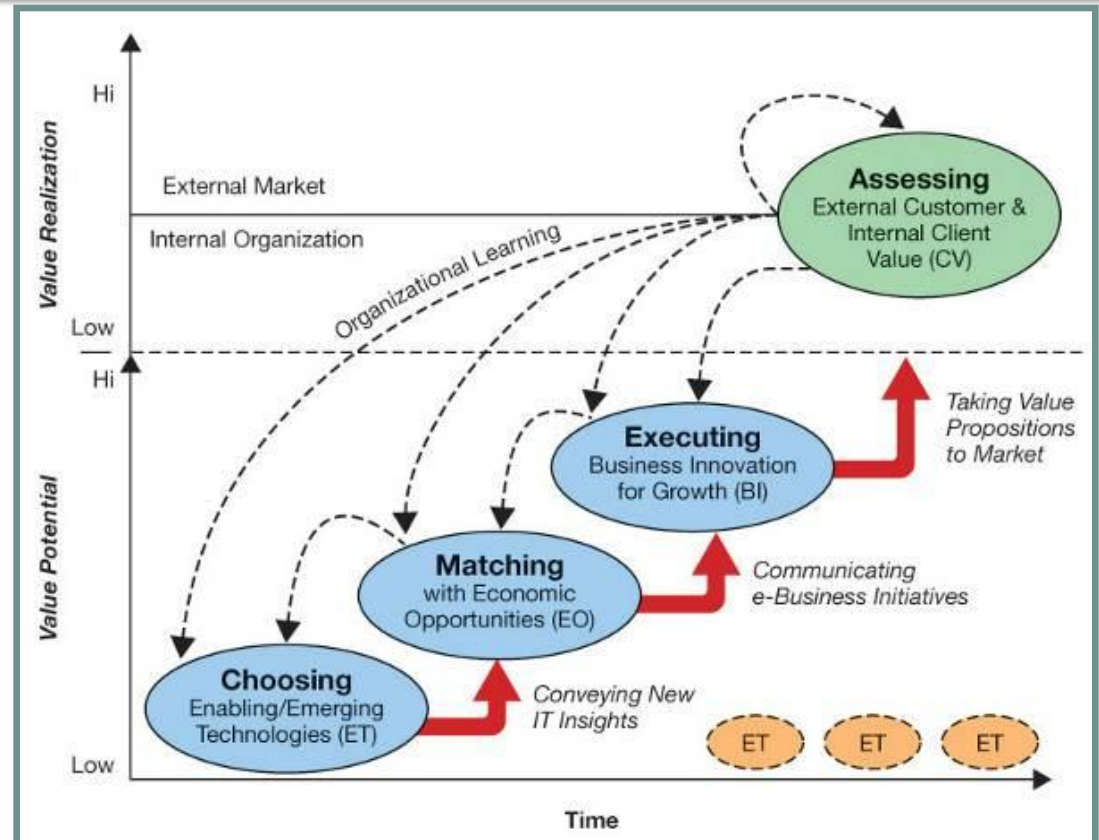


The Innovator's Solution

- Christensen outlines a process—*disruptive growth engine*—that helps organizations respond to disruptive innovations more effectively.
 1. Start early.
 2. Executive leadership.
 3. Build a team of expert innovators.
 4. Educate the organization.

Implementing the Innovation Process

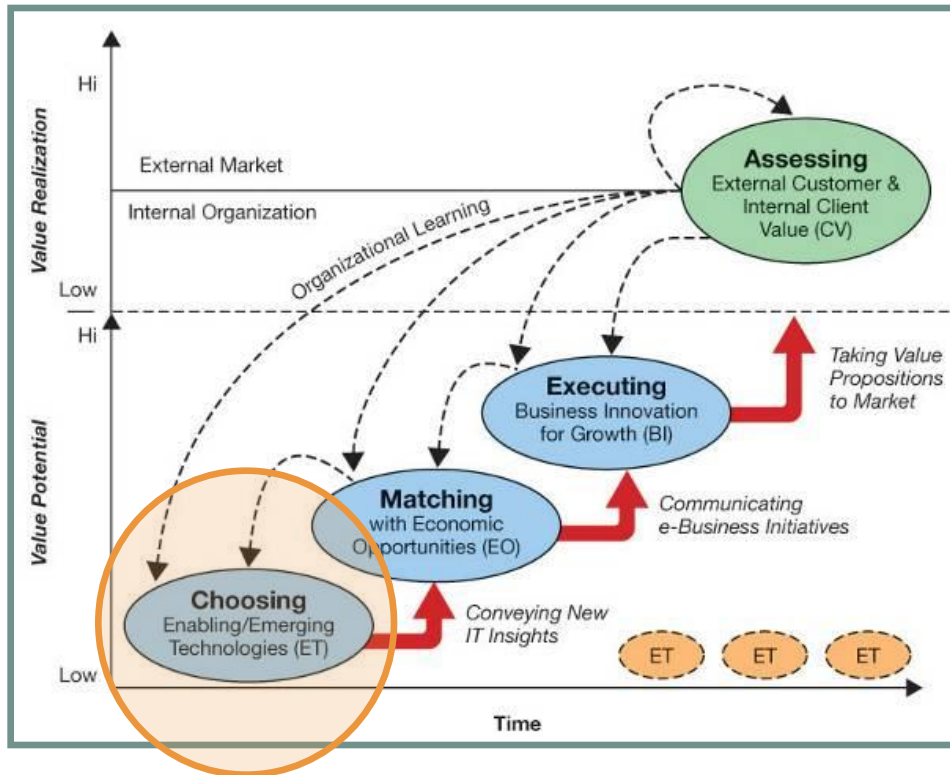
- E-Business Innovation Cycle
 - The key to success is the extent of IS use in timely and innovative ways.



Based on: Wheeler (2002)

E-Business Innovation Cycle

Choosing Enabling/Emerging Technologies



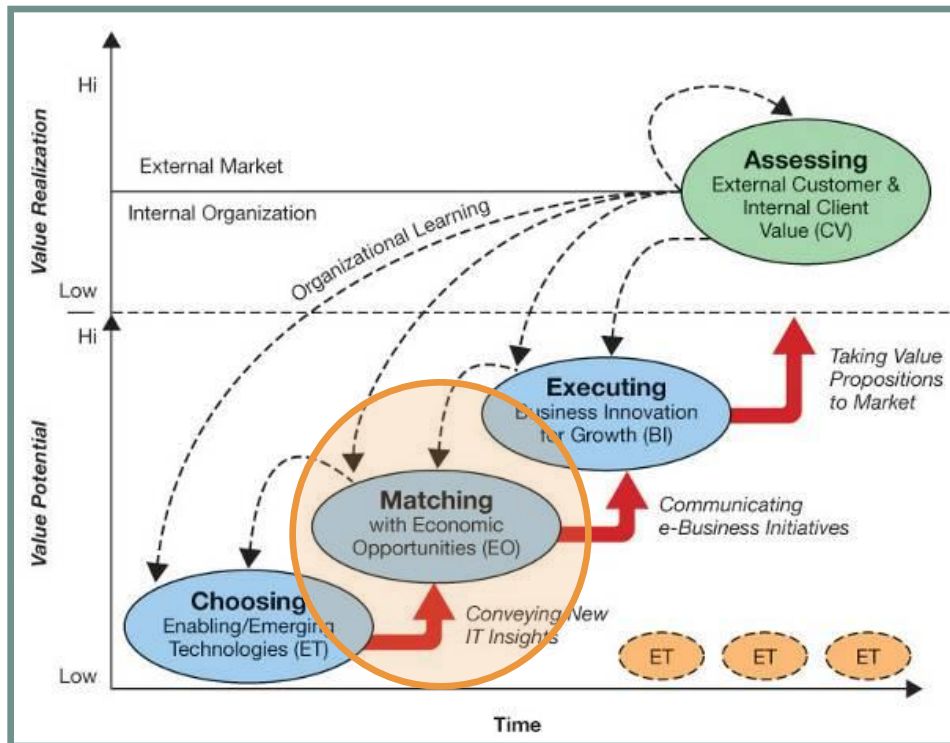
- Process/ group devoted to looking for emerging IT

Based on: Wheeler (2002)

E-Business Innovation Cycle (cont'd)

2-41

Matching Technologies to Opportunities

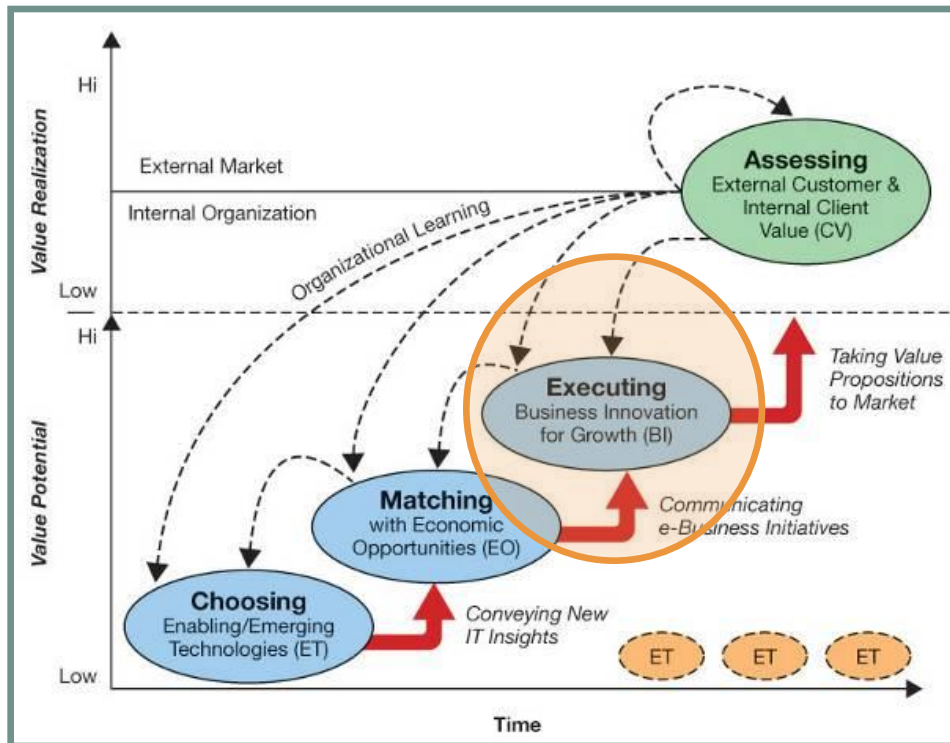


- Most promising new technology matched with current economic opportunities

Based on: Wheeler (2002)

E-Business Innovation Cycle (cont'd)

Executing Business Innovation for Growth

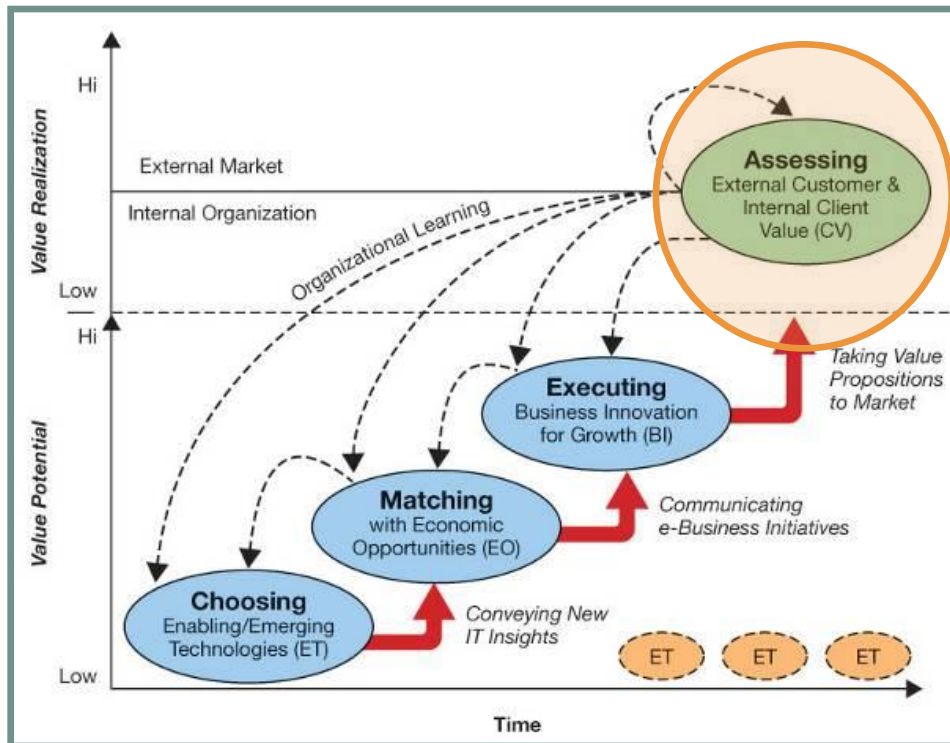


- Stage at which the change is actually implemented

Based on: Wheeler (2002)

E-Business Innovation Cycle (cont'd)

Assessing Value



- Value created for customers and internal operations assessed

Based on: Wheeler (2002)

Raspberry Pi

Raspberry Pi x 64

Freeconomics: Why Free Products are the Future of the Digital World



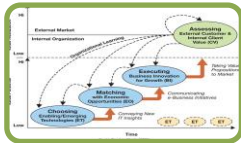
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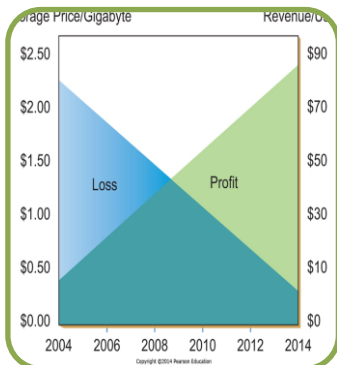
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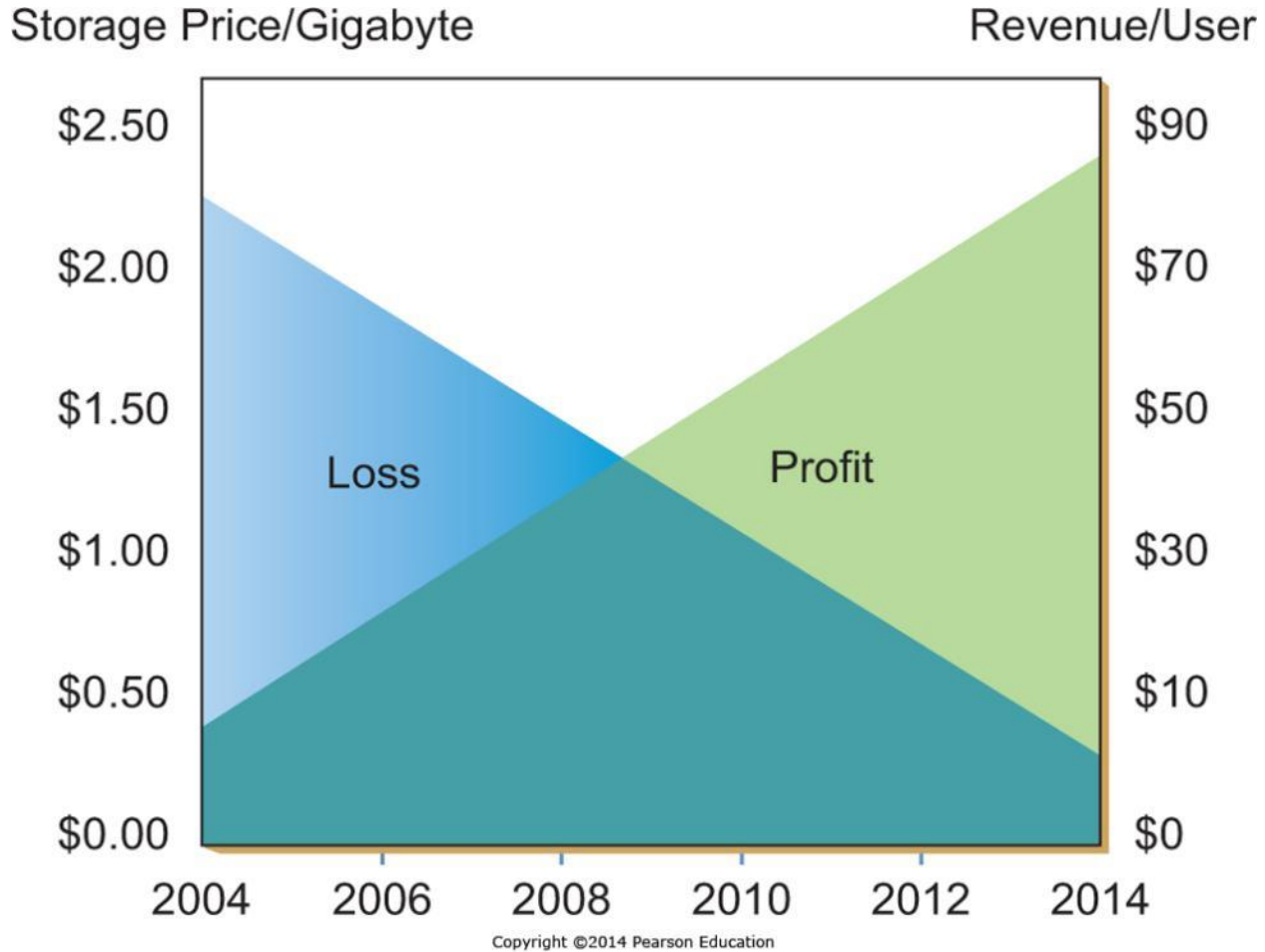
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Question?

- How many of you would take a free smartphone, both the phone and no cost monthly service, if all you had to do was put up with a few advertisements?

Free smartphone and free service

How Freeconomics Works



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 firms for their products

Applying Freeconomics in the Digital World

Approach	What it Means	Examples
Advertising	Free services are provided to customers & paid for by a third party	<ul style="list-style-type: none"> ▪ Yahoo!'s banner ads ▪ Google's pay-per-click
Freemium	Basic services are free, a premium is charged for special features	<ul style="list-style-type: none"> ▪ Skype ▪ Dropbox.com
Cross subsidies	Sale price of one item is reduced in order to sell something else of value	<ul style="list-style-type: none"> ▪ Free cell phone with two-year contract
Zero Marginal Cost	Products are distributed to customers without an appreciable cost to anyone	<ul style="list-style-type: none"> ▪ iTunes music distribution ▪ Software distribution ▪ YouTube Video content
Labor Exchange	The act of customers using free services creates value	<ul style="list-style-type: none"> ▪ Yahoo! Answers ▪ Answers.com
Gift Economy	People participate and collaborate to create value for Everyone	<ul style="list-style-type: none"> ▪ Open source software ▪ Wikipedia