



# **IS 3610**

# **Management**

# **Information Systems**

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# Learning Outcomes



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On successful completion of this module, students will be able to:

- Illustrate different information systems based on different functional business processes and management groups
- Analyze and design different types of enterprise applications
- Interpret and design e-commerce applications and models
- Distinguish different methods to manage knowledge within information systems
- Recommend new methods to enhance decision making in information systems

# Outline Syllabus

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- Foundations of information systems in business and organization
- Functional perspective on information systems
- Information systems, organizations & strategy
- Enterprise applications
- Electronic business & electronic commerce
- Managing knowledge
- Enhancing decision making

# Evaluation and Reading



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## Evaluation of Performance:

- Continuous Assessments: 30% (individual + group assessments)
  - Individual: 2 assignments
  - Group: 1 assignment
- Final Evaluation: 70%

## Recommended Reading:

Laudon, K. and Laudon, J., 2022, Management Information Systems: Managing the Digital Firm, Seventeenth Edition, Prentice Hall



# **Foundations of information systems in business and organization**

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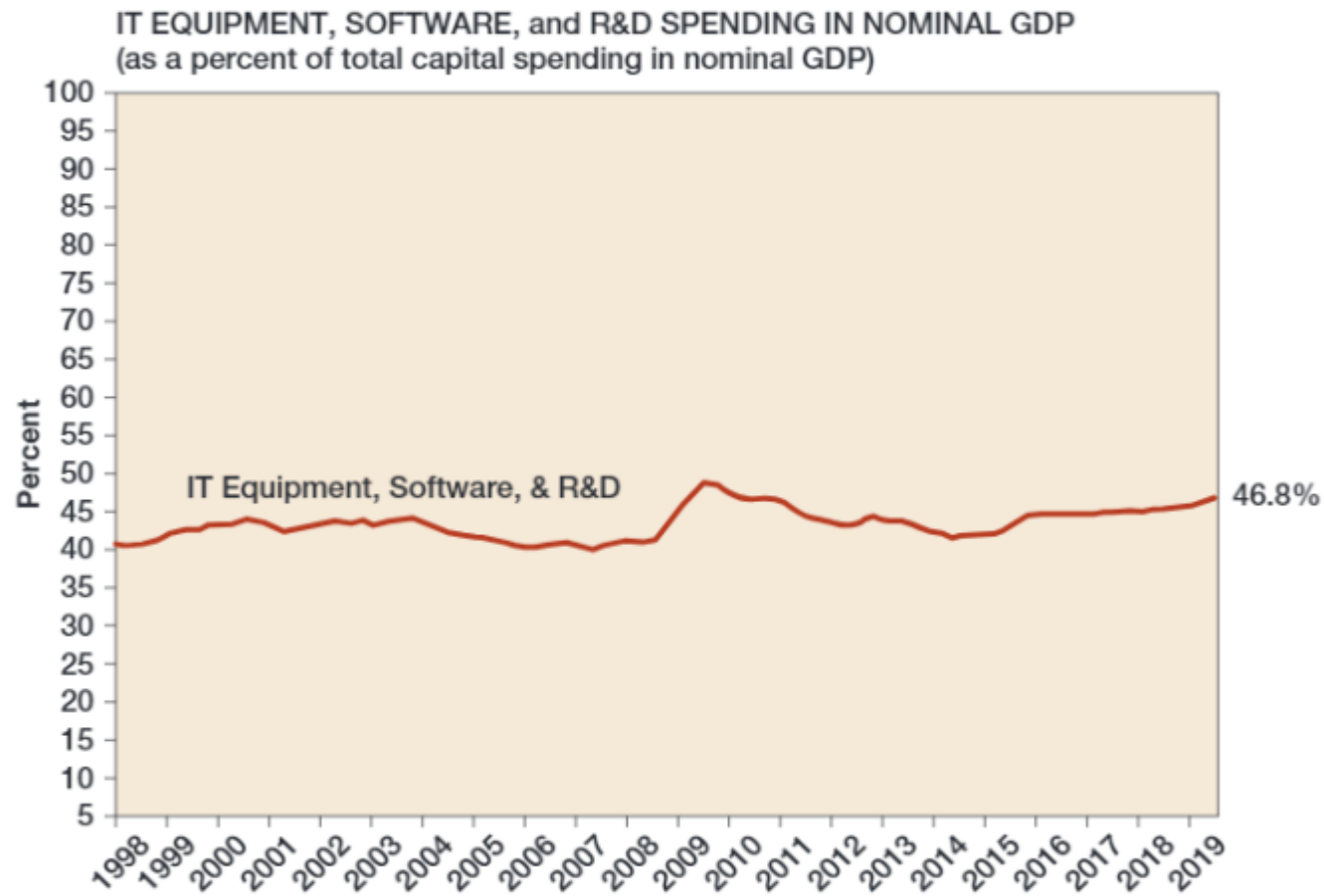
# What's New in Management Information Systems?

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Important paramount 5 items that change:

- IT Innovations
- New Business Models
- E-commerce Expansion
- Management Changes
- Changes in Firms and Organizations

# Information Technology Capital Investment



# Increased globalization

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- Globalization: The development of an increasingly integrated global economy
- Internet has drastically reduced costs of operating on a global scale



# The Emerging Digital Firm

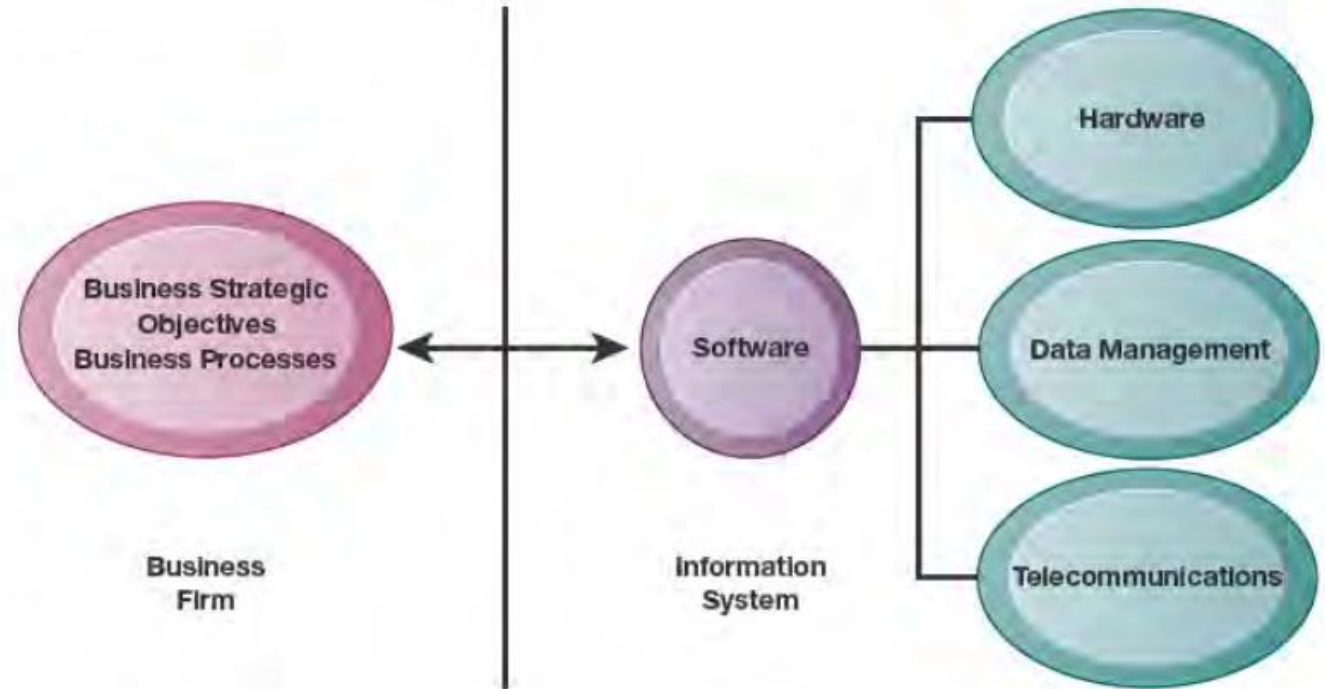


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- In a digital firm:
  - Significant business relationships are digitally enabled and mediated.
  - Core business processes are accomplished through digital networks.
  - Key corporate assets are managed digitally.
- Advantages of digital firms over traditional firms:
  - Rapid sensing of and response to environment
  - Greater flexibility in organization and management
  - “Time shifting” and “space shifting”

# Interdependence between Organizations and Information Systems

- There is a growing interdependence between a firm's information systems and its business capabilities.
- Changes in strategy, rules, and business processes increasingly require changes in hardware, software, databases, and telecommunications.
- Often, what the organization would like to do depends on what its systems will permit it to do.



# Strategic Business Objectives of Information Systems

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1. Operational excellence
2. New products, services, and business models
3. Customer and supplier intimacy
4. Improved decision making
5. Competitive advantage
6. Survival

# 1. Operational Excellence

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- Improvement of efficiency to attain higher profitability
- Information systems and technologies are important tools in achieving greater efficiency and productivity
- Example: Walmart's Retail Link system links suppliers to stores for a superior replenishment system

## 2. New Products, Services, and Business Models



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- **Business model:** describes how a company produces, delivers, and sells products or services to create wealth
- Information systems and technology are a major enabling tool for new products, services, business models
- Examples: Apple's iPad, Uber, and Netflix

# 3. Customer and Supplier Intimacy



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- Serving customers well leads to customers returning, which raises revenues and profits.

Example: High-end hotels that use computers to track customer preferences, which are used to monitor and customize the room environment

- Intimacy with suppliers allows them to provide vital inputs, which lowers costs.

Example: The US department store chain JCPenney's information system which links sales records to their contract manufacturers

# 4. Improved Decision Making



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Without accurate information:

- Managers must use forecasts, best guesses, luck
- Results in:
  - Overproduction, underproduction, misallocation of resources, poor response times
- Poor outcomes raise costs, lose customers

Information systems help managers use real-time data from the marketplace when making decisions.

# 5. Competitive Advantage

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- Competitive advantage: An advantage that a firm has over its competitors, allowing it to generate greater sales or margins and/or retain more customers than its competition.
- Competitive advantage can be achieved by:
  - Delivering better performance
  - Charging less for superior products
  - Responding to customers and suppliers in real time
    - *Examples:* Apple, Walmart, Toyota



# 6. Survival

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- Information technologies as a necessity of business
- Industry-level changes

*Example: Citibank's introduction of ATMs*

- Governmental regulations requiring record-keeping

*Example: Sarbanes-Oxley Act in USA*

# What is an Information System?

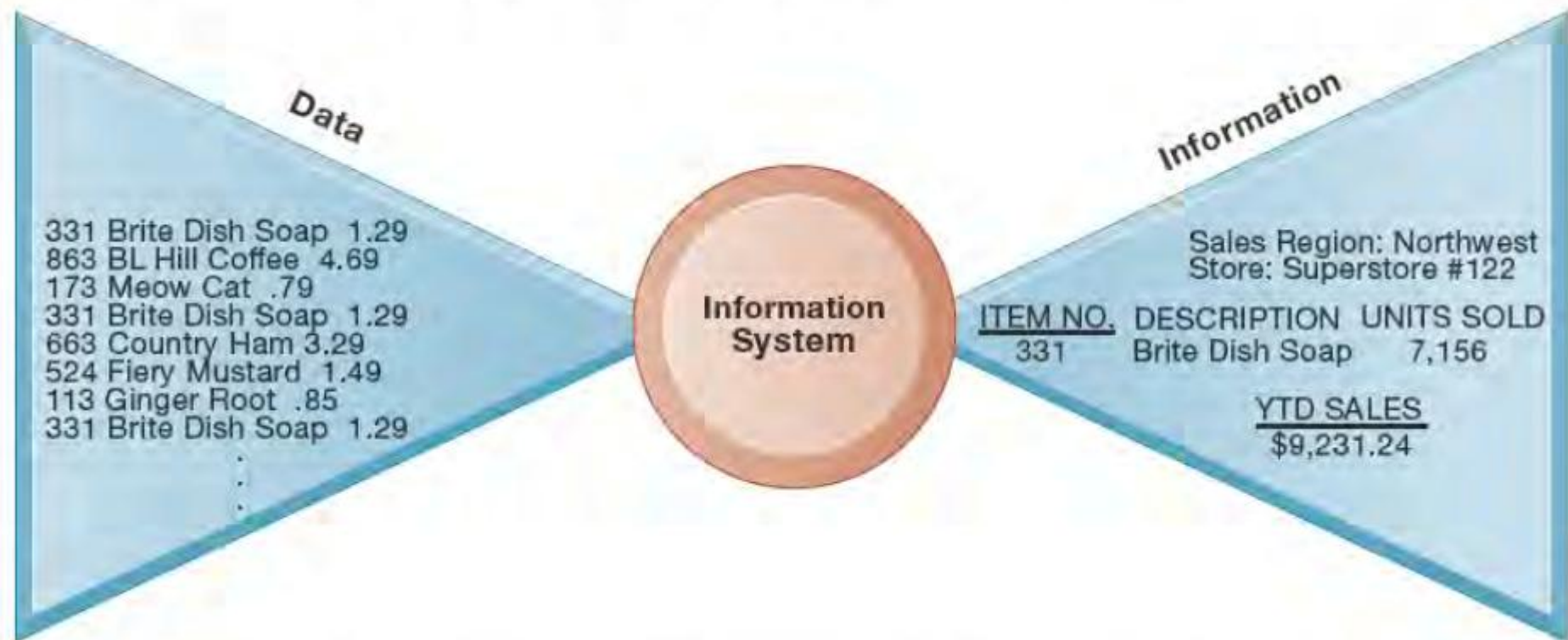
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Information system:

- Set of interrelated components that collect, process, store, and distribute information to support decision making, coordination, and control.
- Information systems may also help managers and workers analyze problems, visualize complex subjects, and create new products

# Data and Information

- Data are streams of raw facts.



# Functions of an Information System



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- **Input:**

Captures raw data from organization or external environment

- **Processing:**

Converts raw data into meaningful form

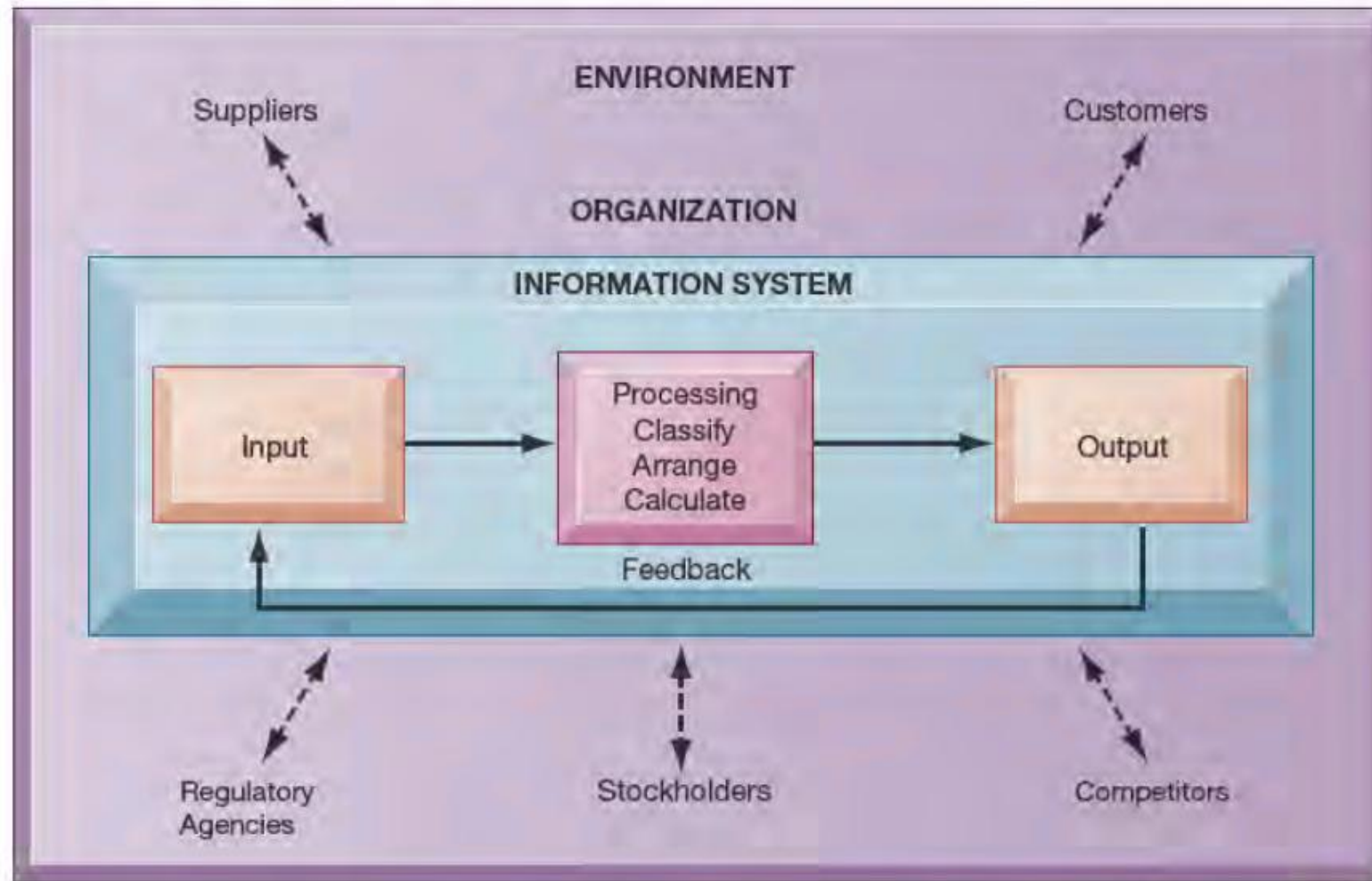
- **Output:**

Transfers processed information to people or activities that use it

- **Feedback:**

Output that is returned to appropriate members of the organization to help evaluate or correct the input stage.

# Functions of an Information System



# Hardware + Software = Information System ?

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- Do you have an information system if you have computer hardware and software?
- Computer hardware and software are the technical foundation and tools, similar to the material and tools used to build a house
- Systems need to be designed to fit the firms and the humans who work with the systems.

# Information Systems Are More Than Computers

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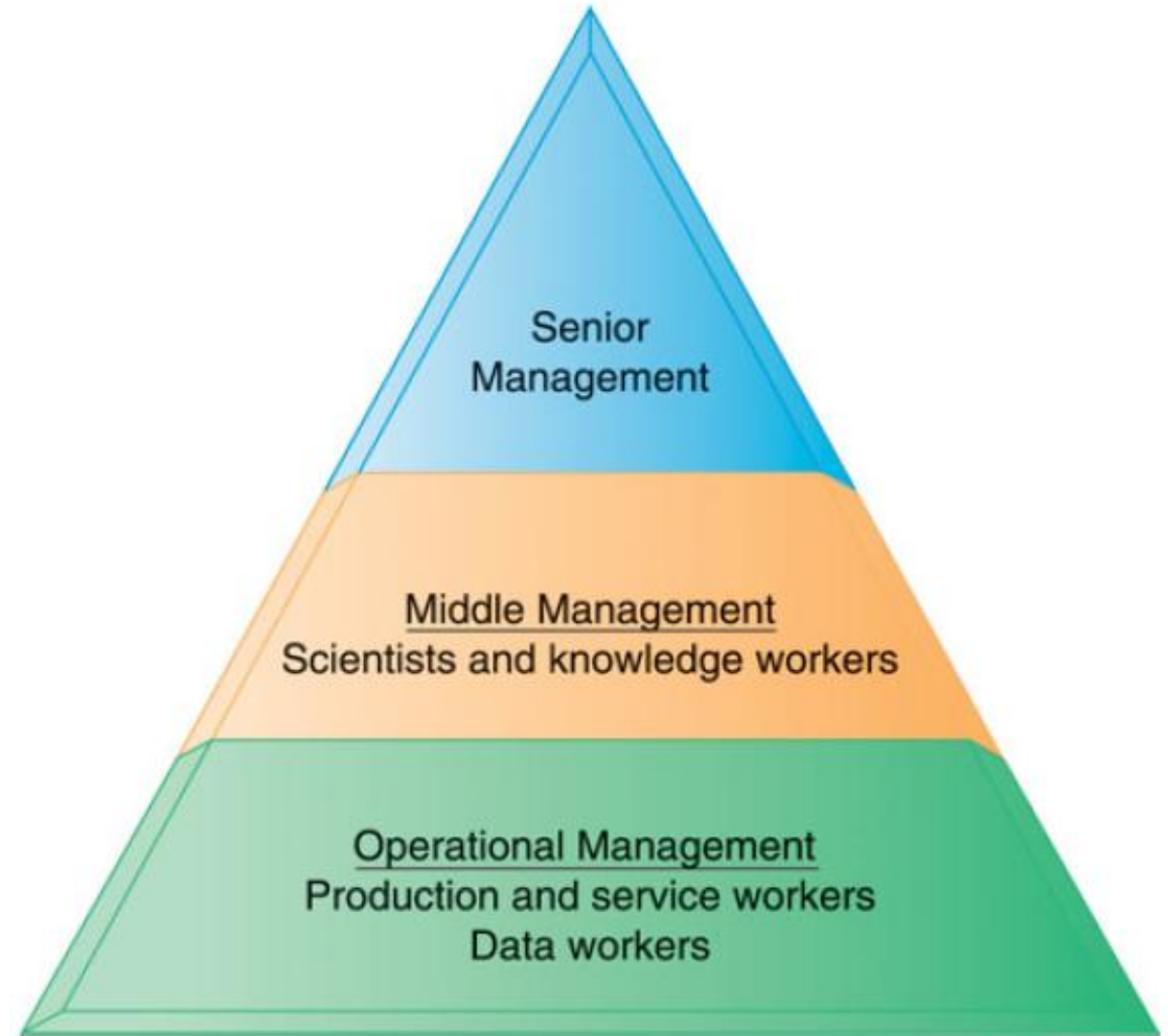
- An information system creates value for the firm as an organizational and management solution to challenges posed by the environment.
- The field of MIS tries to achieve the information systems literacy.



# Organizational Dimension of Information Systems

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- An organization coordinates work through its hierarchy and through its business processes.



Hierarchy of authority and responsibility in a business firm



# Organizational Dimension of Information Systems (contd.)

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- Major business functions
  - Sales and marketing
  - Human resources
  - Finance and accounting
  - Manufacturing and production
  - Procurement and distribution
- Unique business processes
- Unique business culture
- Organizational politics

# Management Dimension of Information Systems

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- Managers set organizational strategy for responding to business challenges.
- In addition, managers must act creatively:
  - Creation of new products and services
  - Occasionally re-creating the organization
- Information technology can play a powerful role in helping managers design and deliver new products and services and redirecting and redesigning their organizations.

# Technology Dimension of Information Systems

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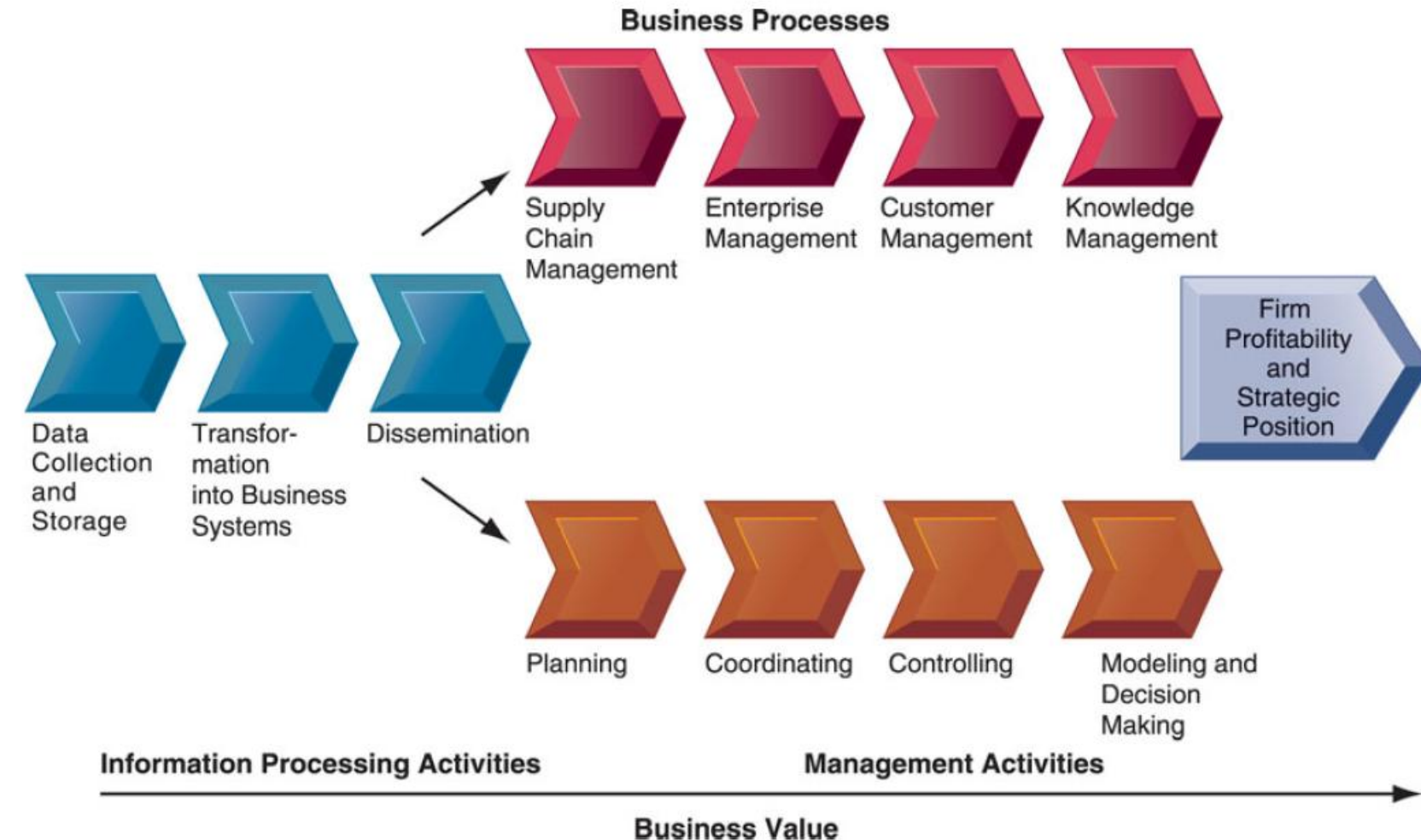
- Computer hardware and software
- Data management technology
- Networking and telecommunications technology
- IT infrastructure: provides the platform that systems are built on.

# Business Perspective on Information Systems

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- Information system is an instrument for creating value for the firm.
- Investments in information technology will result in superior returns:
  - Productivity increases
  - Revenue increases
  - Superior long-term strategic positioning

# Business Information Value Chain



- Raw data is acquired and transformed through stages that add value to that information.

# Discussion

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- What are the companies (or products) that have failed or nearly failed?
- What are the reasons for the failure?

# Discussion

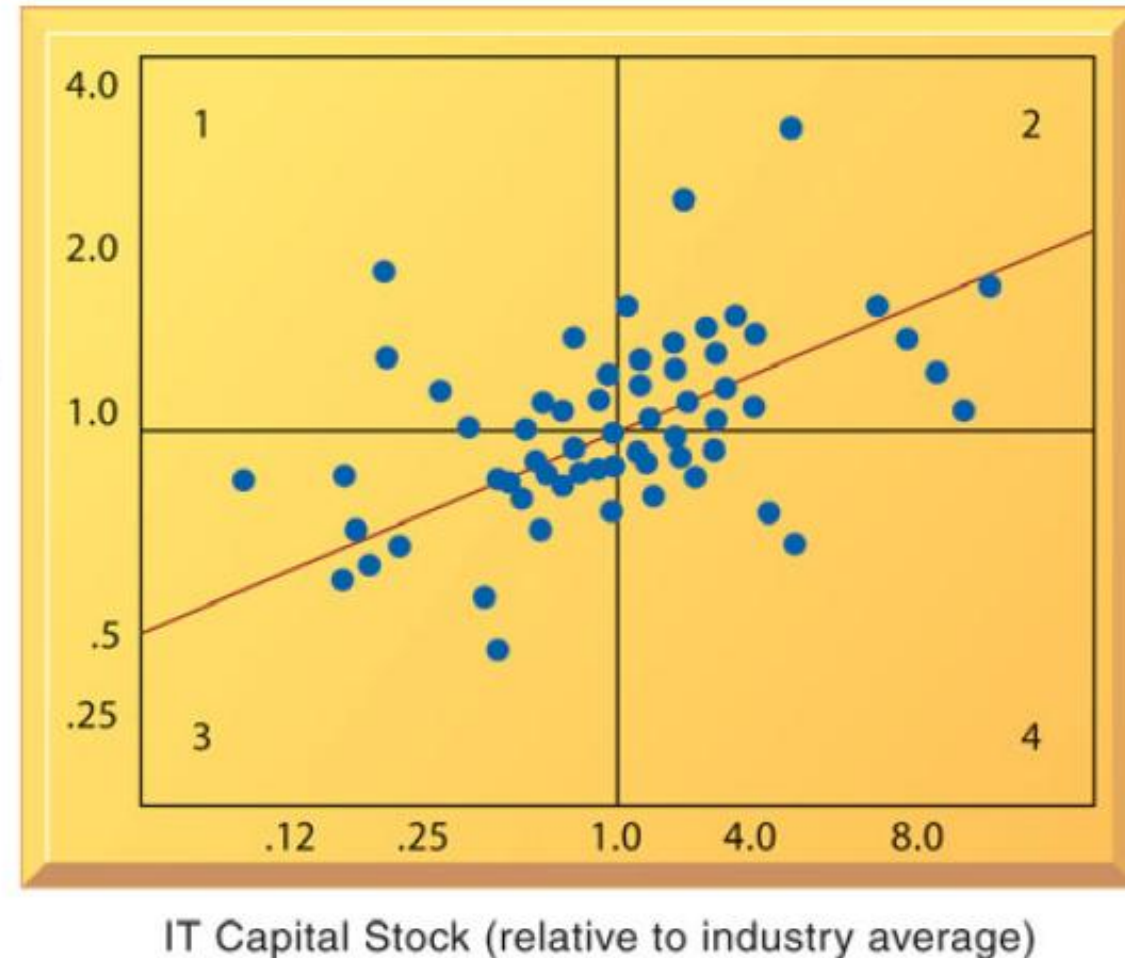


| Company                      | Product                  | Reason for failure  |
|------------------------------|--------------------------|---|
| Google - 2011                | Google+ (social network) | Difficulty in compete with Facebook                                       |
| Microsoft – 1999             | Office assistant clippy  | Did not able to match with customer requirement                           |
| Compaq (1982 – 2002)         | Larges sellers of PCs    | Lack of innovation (took by hp)   |
| General Motors (1908 – 2002) | Car manufacturer         | Failure to innovate and blatantly ignoring competition (took by “new GM”) |
| Nokia (1996 – 2013)          | Mobile phone company     | Lack of innovation, lack of leadership (took by Microsoft)                |

# Variation in Returns on Information Technology Investment

- Investing in information technology does not guarantee good returns.

Productivity  
(relative to  
industry  
average)





# Variation in Returns on Information Technology Investment (contd.)

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- There is considerable variation in the returns firms receive from systems investments.
- Factors:
  - Adopting the right business model
  - Investing in complementary assets (organizational and management capital)

# Complementary Assets

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- Assets required to derive value from a primary investment.
- Firms supporting technology investments with investment in complementary assets receive superior returns.

Example: new business models, new business processes, management behavior, organizational culture, training

- Complementary assets include organizational, managerial and social assets.

# Complementary Assets (contd.)

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- Organizational assets:
  - Supportive organizational culture that values efficiency and effectiveness
  - Efficient business processes
  - Decentralized authority
  - Distributed decision-making rights
  - Strong IS development team

# Complementary Assets (contd.)

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- Managerial assets:
  - Strong senior management support for technology investment and change
  - Incentives for management innovation
  - Teamwork and collaborative work environments
  - Training programs to enhance management decision skills
  - Management culture that values flexibility and knowledge-based decision making

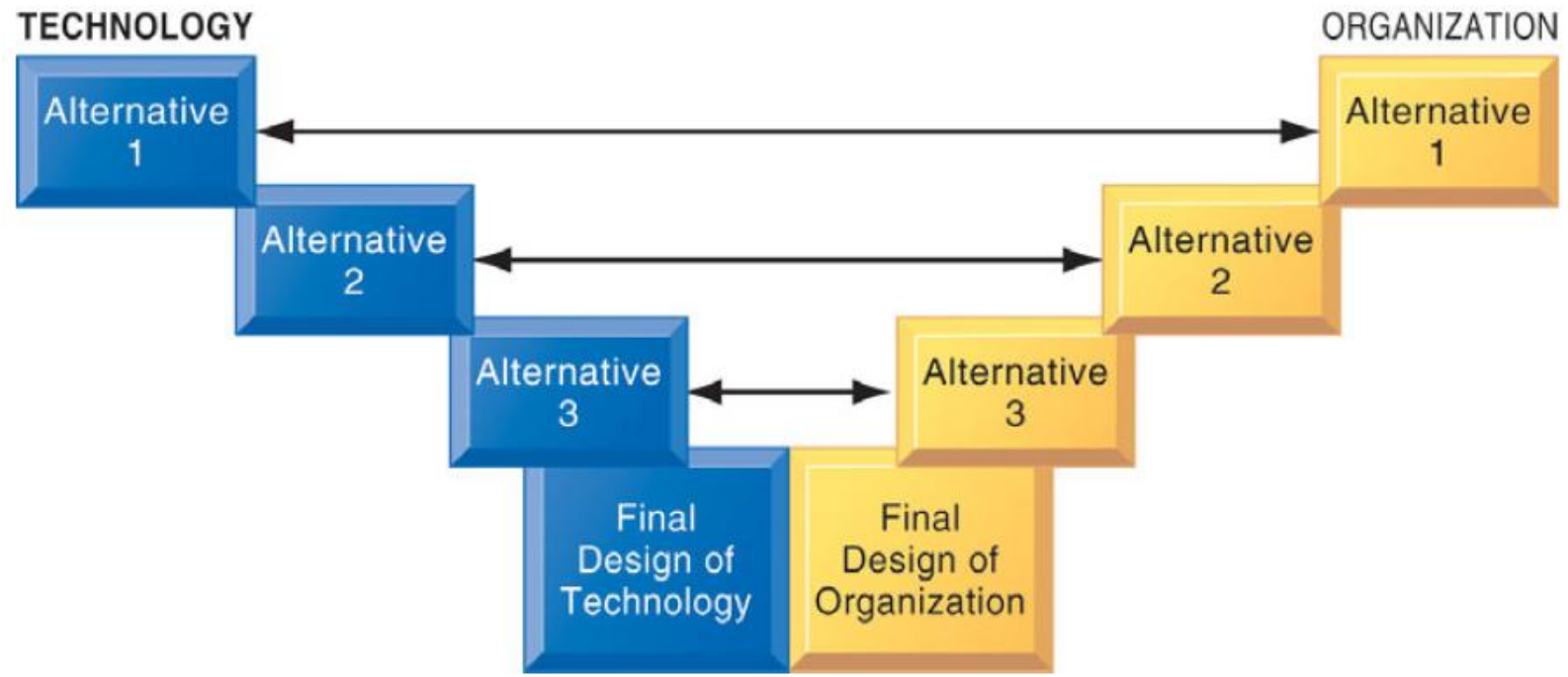
# Complementary Assets (contd.)

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- Social assets (Investments made by the society at large, other firms, governments, and other key market actors):
  - The Internet and telecommunications infrastructure
  - IT-enriched educational programs raising labour force computer literacy
  - Technology standards
  - Laws and regulations creating fair, stable market environments
  - Technology and service firms in adjacent markets to assist implementation

# A Sociotechnical Perspective on Information Systems

- In a sociotechnical perspective, the performance of a system is optimized when both the technology and the organization mutually adjust to each other until a satisfactory fit is obtained.



# Summary

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- Organizations are evolving into digital firms by digitally enabling their core business processes.
- Globalization has increased due to reduced costs of producing, buying and selling goods on a global scale.
- Survival and strategic goal achievement of firms in many industries is difficult without the use of information technology.

# Summary (contd.)

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- Information systems collect, process, store and distribute information to support organizational functions, decision making, communication, control, etc.
- An information system provides a solution to a problem or challenge facing a firm, and represents a combination of management, organization and technology elements.
- Organizations must invest in complementary assets to obtain meaningful value from information systems.



**Thank you**

