



Information Systems in Business Today

VIDEO CASES

- Case 1: UPS Global Operations with the DIAD IV*
- Case 2: Google Data Center Efficiency Best Practices*
- Instructional Video 1: Green Energy Efficiency in a Data Center Using Tivoli Architecture*
- Instructional Video 2: Tour IBM's Raleigh Data Center*

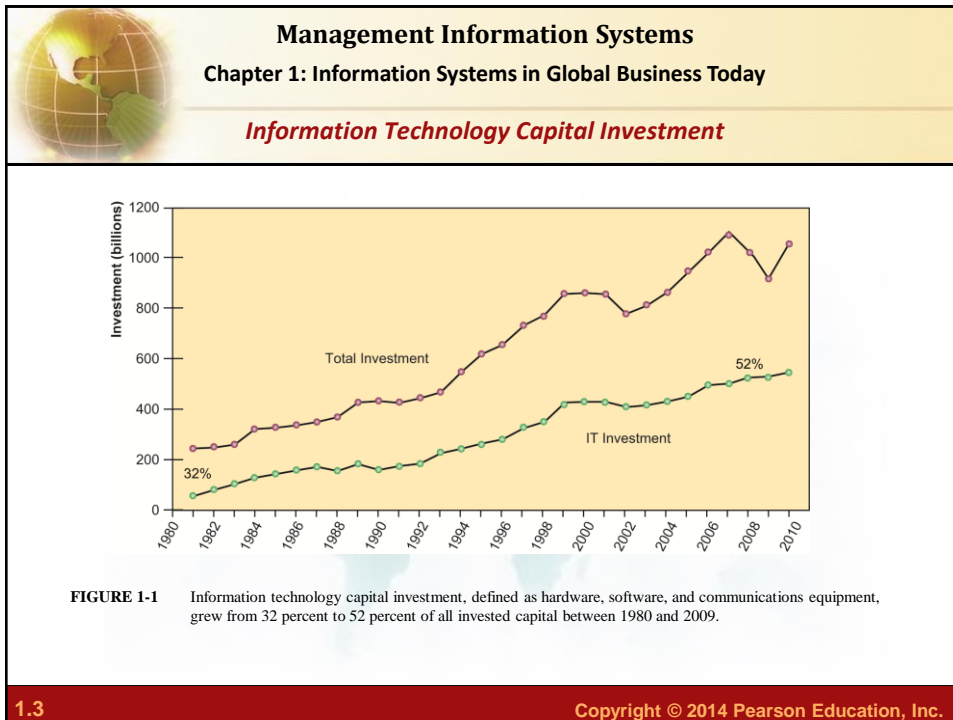



Management Information Systems

Chapter 1: Information Systems in Global Business Today

The Role of Information Systems in Business Today

- **How information systems are transforming business**
 - Emerging mobile digital platform
 - Growing business use of “big data”
 - Growth in cloud computing
- **Globalization opportunities**
 - Internet has drastically reduced costs of operating on global scale
 - Increases in foreign trade, outsourcing
 - Presents both challenges and opportunities






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- **Growing interdependence between ability to use information technology and ability to implement corporate strategies and achieve corporate goals**
- **Business firms invest heavily in information systems to achieve six strategic business objectives:**
 1. **Operational excellence**
 2. **New products, services, and business models**
 3. **Customer and supplier intimacy**
 4. **Improved decision making**
 5. **Competitive advantage**
 6. **Survival**


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- **Operational excellence:**
 - Improvement of efficiency to attain higher profitability
 - Information systems, technology an important tool in achieving greater efficiency and productivity
 - Walmart's Retail Link system links suppliers to stores for superior replenishment system


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


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- **Customer and supplier intimacy:**
 - **Serving customers well leads to customers returning, which raises revenues and profits.**
 - Example: High-end hotels that use computers to track customer preferences and used to monitor and customize environment
 - **Intimacy with suppliers allows them to provide vital inputs, which lowers costs.**
 - Example: JCPenney's information system which links sales records to contract manufacturer


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- **Improved decision making**
 - **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
 - **Example: Verizon's Web-based digital dashboard to provide managers with real-time data on customer complaints, network performance, line outages, and so on**


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- **Competitive advantage**
 - Delivering better performance
 - Charging less for superior products
 - Responding to customers and suppliers in real time
 - Examples: Apple, Walmart, UPS


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- **Survival**
 - Information technologies as necessity of business
 - Industry-level changes
 - Example: Citibank' s introduction of ATMs
 - Governmental regulations requiring record-keeping
 - Examples: Toxic Substances Control Act, Sarbanes-Oxley Act
 - HIPPA Health Insurance Portability and Accountability Act

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Perspectives on Information Systems

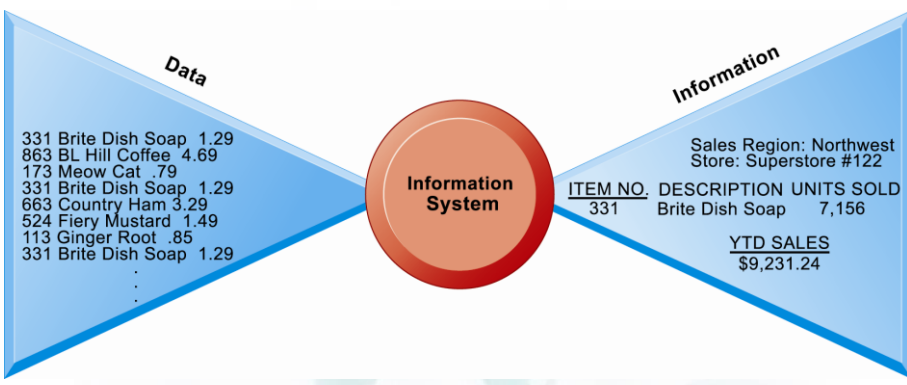
- **Information system:**
 - Set of interrelated components
 - Collect, process, store, and distribute information
 - Support decision making, coordination, and control
- **Information vs. data**
 - Data are streams of raw facts.
 - Information is data shaped into meaningful form.

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Data and Information



Data

331 Brite Dish Soap 1.29
863 BL Hill Coffee 4.69
173 Meow Cat .79
331 Brite Dish Soap 1.29
663 Country Ham 3.29
524 Fiery Mustard 1.49
113 Ginger Root .85
331 Brite Dish Soap 1.29
...

Information System

Information

Sales Region: Northwest
Store: Superstore #122

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNITS SOLD</u>
331	Brite Dish Soap	7,156


YTD SALES
\$9,231.24

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Figure 1.3

Raw data from a supermarket checkout counter can be processed and organized to produce meaningful information, such as the total unit sales of dish detergent or the total sales revenue from dish detergent for a specific store or sales territory.

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- **Three activities of information systems produce information organizations need**
 - **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

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- **Feedback:**
 - **Output is returned to appropriate members of organization to help evaluate or correct input stage.**
- **Computer/Computer program vs. information system**
 - **Computers and software are technical foundation and tools, similar to the material and tools used to build a house.**

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Functions of an Information System

An information system contains information about an organization and its surrounding environment. Three basic activities—input, processing, and output—produce the information organizations need. Feedback is output returned to appropriate people or activities in the organization to evaluate and refine the input. Environmental actors, such as customers, suppliers, competitors, stockholders, and regulatory agencies, interact with the organization and its information systems.

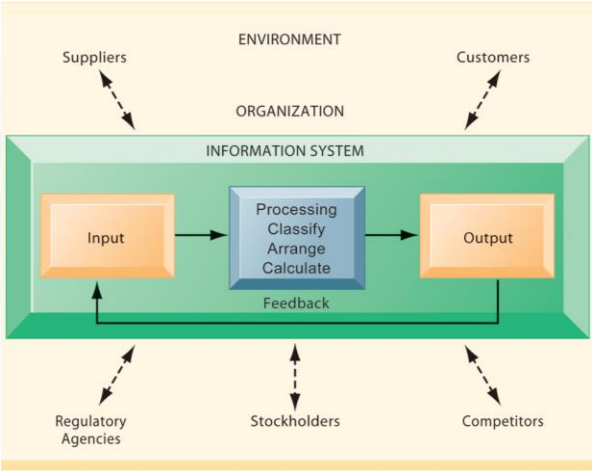


Figure 1.4

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Information Systems Are More Than Computers

Using information systems effectively requires an understanding of the organization, management, and information technology shaping the systems. An information system creates value for the firm as an organizational and management solution to challenges posed by the environment.




Figure 1.5

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Levels in a Firm

Business organizations are hierarchies consisting of three principal levels: senior management, middle management, and operational management. Information systems serve each of these levels. Scientists and knowledge workers often work with middle management.



Figure 1.6

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- **Organizational dimension of information systems (cont.)**
 - **Separation of business functions**
 - Sales and marketing
 - Human resources
 - Finance and accounting
 - Manufacturing and production
 - **Unique business processes**
 - **Unique business culture**
 - **Organizational politics**

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- **Management dimension of information systems**
 - **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

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- **Technology dimension of information systems**
 - **Computer hardware and software**
 - **Data management technology**
 - **Networking and telecommunications technology**
 - Networks, the Internet, intranets and extranets, World Wide Web
 - **IT infrastructure: provides platform that system is built on**

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- **Dimensions of UPS tracking system**
 - **Organizational:**
 - Procedures for tracking packages and managing inventory and provide information
 - **Management:**
 - Monitor service levels and costs
 - **Technology:**
 - Handheld computers, bar-code scanners, networks, desktop computers, and so on

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- **Business perspective on information systems:**
 - **Information system is instrument for creating value**
 - **Investments in information technology will result in superior returns:**
 - Productivity increases
 - Revenue increases
 - Superior long-term strategic positioning

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- **Investing in information technology does not guarantee good returns.**
- **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)**

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Variation in Returns on Information Technology Investment

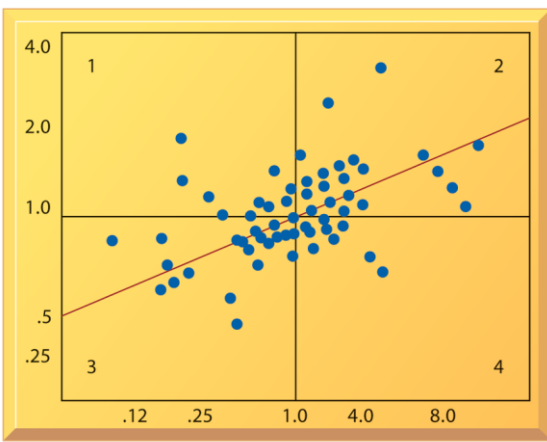
Although, on average, investments in information technology produce returns far above those returned by other investments, there is considerable variation across firms.

Quadrant 1 represents firms that invest much less in IT but still receive strong returns.

Quadrant 2 represents firms that invest a great deal in IT and receive a great deal in returns.


Quadrant 3 represents firms that invest much less in IT and receive poor returns.

Quadrant 4 represents firms that invest a great deal in IT but receive poor returns.



IT Capital Stock (relative to industry average)

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- **Complementary assets:**
 - Assets required to derive value from a primary investment
 - Firms supporting technology investments with investment in complementary assets receive superior returns
 - Example: Invest in technology and the people to make it work properly

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- **Complementary assets include:**
 - **Organizational assets, for example:**
 - Appropriate business model
 - Efficient business processes
 - **Managerial assets, for example:**
 - Incentives for management innovation
 - Teamwork and collaborative work environments
 - **Social assets, for example:**
 - The Internet and telecommunications infrastructure
 - Technology standards

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Contemporary Approaches to Information Systems

The study of information systems deals with issues and insights contributed from technical and behavioral disciplines.

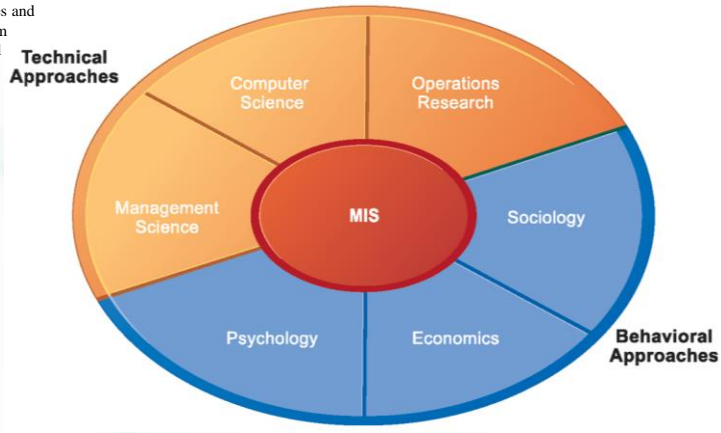



Figure 1.9

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Contemporary Approaches to Information Systems

- **Technical approach**
 - Emphasizes mathematically based models
 - Computer science, management science, operations research
- **Behavioral approach**
 - Behavioral issues (strategic business integration, implementation, etc.)
 - Psychology, economics, sociology

Is it possible to adopt only one of the two approaches to information systems and be successful?

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Contemporary Approaches to Information Systems

- **Management Information Systems**
 - **Combines computer science, management science, operations research and practical orientation with behavioral issues**
- **Four main actors**
 - Suppliers of hardware and software
 - Business firms
 - Managers and employees
 - Firm's environment (legal, social, cultural context)