



Chapter 1

Managing the Digital Firm



Management Information Systems

Chapter 1 Managing the Digital Firm

OBJECTIVES

- **Explain why information systems are so important today for business and management**
- **Evaluate the role of information systems in today's competitive business environment**
- **Assess the impact of the Internet and Internet technology on business and government**



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OBJECTIVES (Continued)

- **Define an information system from both a technical and business perspective and distinguish between computer literacy and information systems literacy**
- **Identify the major management challenges to building and using information systems**



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DaimlerChrysler Case

- **Challenge:** 104 plants, 37 countries, 14,000 suppliers
- **Solutions:** **Integrated Volume Planning System** connects demand side of business with suppliers, reducing inventories.
- **Powerway** helps 3,400 suppliers track parts and quality, reducing errors.
- Demonstrates IT's role in operational excellence, better quality products, and agility—time to market
- Illustrates the emerging digital firm landscape where information can flow seamlessly among business partners to create a superior customer experience



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WHY INFORMATION SYSTEMS?

Why Information Systems Matter

There are four reasons why IT makes a difference to the success of a business:

- **Capital management**
- **Foundation of doing business**
- **Productivity**
- **Strategic opportunity and advantage**



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WHY INFORMATION SYSTEMS?

Capital Management:

- **IT is the largest single component of capital investment in the United States.**
- **About \$1.8 trillion is spent each year by American businesses.**
- **Managers and business students need to know how to invest this capital wisely.**
- **The success of your business in the future may well depend on how you make IT investment decisions.**

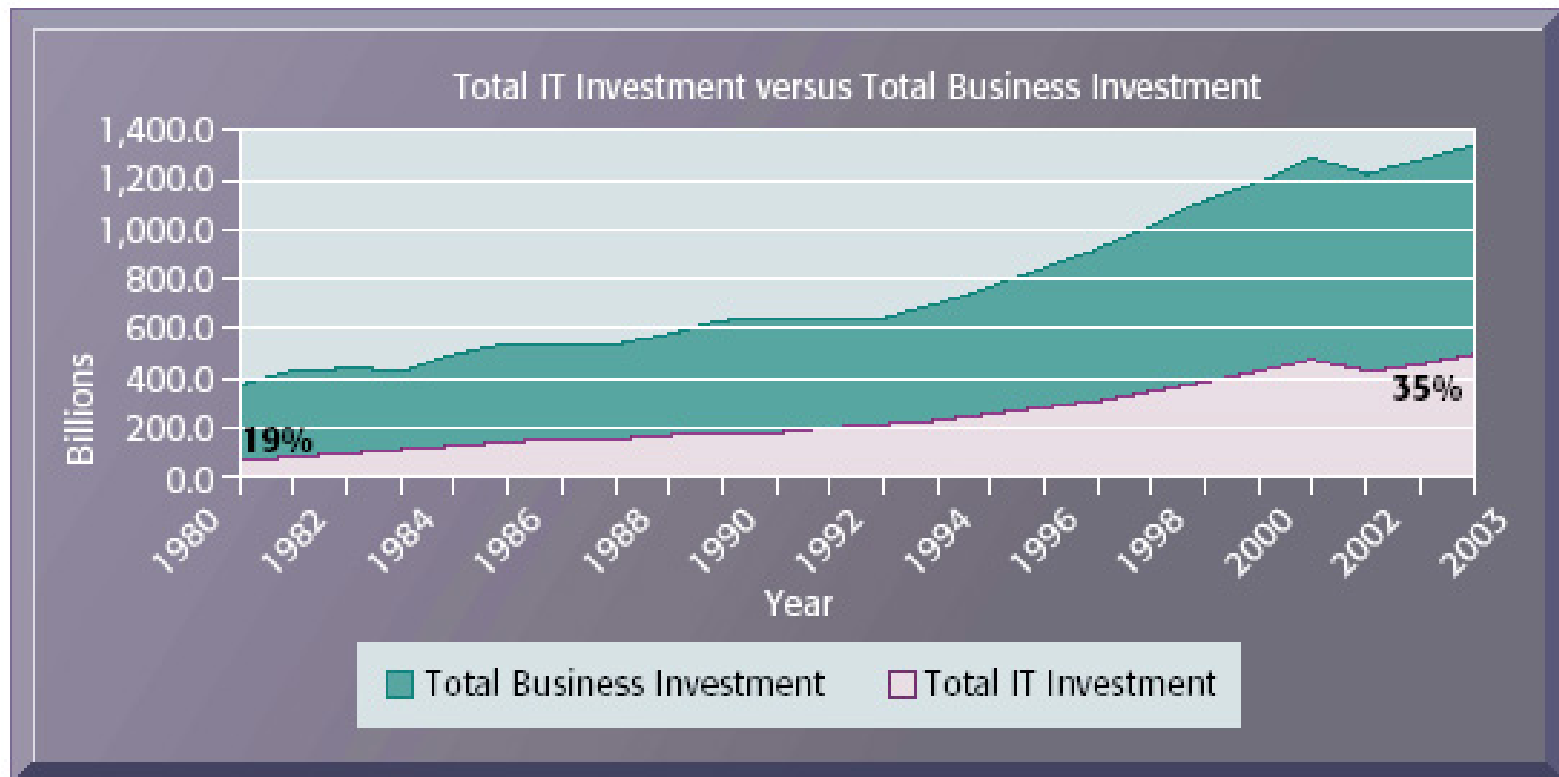


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WHY INFORMATION SYSTEMS?

Information Technology Capital Investment



Source: Based on the data in U.S. Department of Commerce, Bureau of Economic Analysis, *National Income and Product Accounts*, Tables 5.2 and 5.8, 2004.

Figure 1-1



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WHY INFORMATION SYSTEMS?

Foundation of doing business:

- **Most businesses today could not operate without extensive use of information systems and technologies.**
- **IT can increase market share.**
- **IT can help a business become a high-quality, low-cost producer.**
- **IT is vital to the development of new products.**



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WHY INFORMATION SYSTEMS?

The Interdependence between Organizations and Information Systems

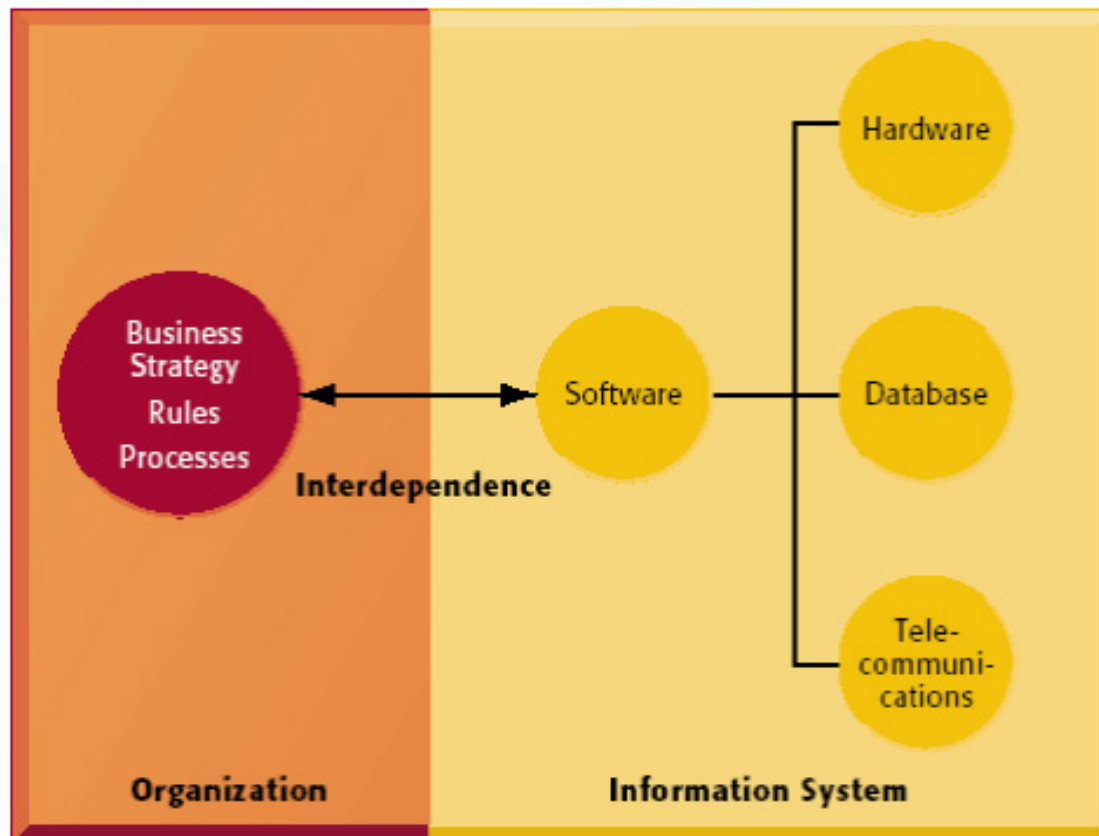


Figure 1-2



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WHY INFORMATION SYSTEMS?

Productivity:

- **IT is one of the most important tools managers have to increase productivity and efficiency of businesses.**
- **According to the Federal Reserve Bank, IT has reduced the rate of inflation by 0.5 to 1% in the last decade. For firms this means IT is a major factor in reducing costs.**
- **It is estimated that IT has increased productivity in the economy by about 1% in the last decade. For firms this means IT is a major source of labor and capital efficiency.**



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WHY INFORMATION SYSTEMS?

Strategic Opportunity and Advantage:

- **Create competitive advantage:** IT makes it possible to develop competitive advantages.
- **New Business Models:** Dell Computer has built its competitive advantage on an IT enabled build-to-order business model that other firms have not been able to imitate.



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WHY INFORMATION SYSTEMS?

Strategic Opportunity and Advantage:

- **Create new services:** eBay has developed the largest auction trading platform for millions of individuals and businesses. Competitors have not been able to imitate its success.
- **Differentiate yourself from your competitors:** Amazon has become the largest book retailer in the United States on the strength of its huge online inventory and recommender system. It has no rivals in size and scope.



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WHY INFORMATION SYSTEMS?

How Much Does IT Matter?

- Carr has written that whatever advantages firms build using IT can be easily copied by competitors.
- This view is not supported by the evidence: Amazon, eBay, Dell, Wal-Mart and Apple's iTunes are just a few firms that have built and maintained technology-based advantages.



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WHY INFORMATION SYSTEMS?

How Much Does IT Matter?

- **Commoditization of technology is typically a spur to innovation and new business models, products and services.**
- **Competitive advantage derives not from the technology, but on how businesses use the technology.**
- **Innovations in business processes, management and organization are not easily copied from one firm to another.**



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WHY INFORMATION SYSTEMS?

Why IT Now? Digital Convergence and the Changing Business Environment

Growing impact of IT in business firms can be assessed from the following five factors:

- **Internet growth and technology convergence**
- **Transformation of the business enterprise**



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WHY INFORMATION SYSTEMS?

Why IT Now? Digital Convergence and the Changing Business Environment (Continued)

- **Growth of a globally connected economy**
- **Growth of knowledge and information-based economies**
- **Emergence of the digital firm**



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WHY INFORMATION SYSTEMS?

The Internet and Technology Convergence:

- **Growth of the Internet: 120 million online in the United States, 500 million global users**
- **The Internet is bringing about a convergence of telecommunications and computing: VoIP telephones.**



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WHY INFORMATION SYSTEMS?

The Internet and Technology Convergence:

- **Growth in e-business, e-commerce, and e-government**
- **Internet is bringing about rapid changes in markets and market structure: financial services and banking such as eTrade.com.**
- **The Internet is making many traditional business models obsolete: the corner music store and video store.**



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WHY INFORMATION SYSTEMS?

Transformation of the Business Enterprise:

- **Flattening**
- **Decentralization**
- **Flexibility**





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WHY INFORMATION SYSTEMS?

Transformation of the Business Enterprise (Continued):

- **Location independence**
- **Low transaction and coordination costs**
- **Empowerment**
- **Collaborative work and teamwork**



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WHY INFORMATION SYSTEMS?

Globalization:

- **Management and control in a global marketplace**
- **Competition in world markets**
- **Global workgroups**
- **Global delivery systems**



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WHY INFORMATION SYSTEMS?

Rise of the Information Economy:

- **Knowledge and information-based economies**
- **New products and services**
- **Knowledge as a central productive and strategic asset**



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WHY INFORMATION SYSTEMS?

Rise of the Information Economy (Continued):

- **Time-based competition**
- **Shorter product life**
- **Turbulent environment**
- **Limited employee knowledge base**

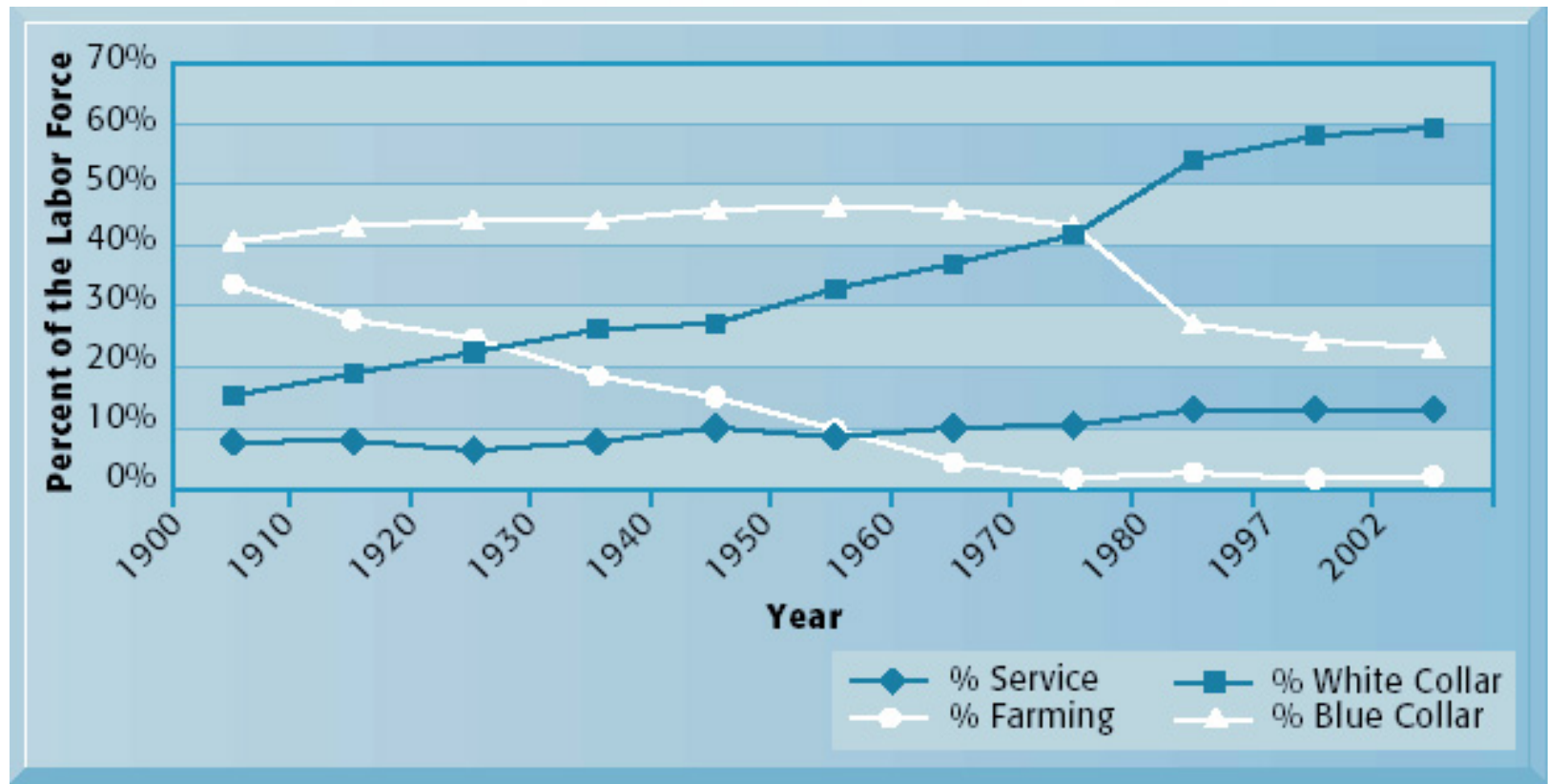


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WHY INFORMATION SYSTEMS?

The Growth of the Information Economy



Source: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States*, 2003, Table 615; and *Historical Statistics of the United States, Colonial Times to 1970*, Vol. 1, Series D, pp. 182-232.

Figure 1-3



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WHY INFORMATION SYSTEMS?

Emergence of the Digital Firm:

- **Digitally enabled relationships with customers, suppliers, and employees**
- **Core business processes accomplished using digital networks**
- **Digital management of key corporate assets**



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WHY INFORMATION SYSTEMS?

Emergence of the Digital Firm (Continued):

- **Agile sensing and responding to environmental changes**
- **Seamless flow of information within the firm, and with strategic partners**



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WHY INFORMATION SYSTEMS?

The Emerging Digital Firm

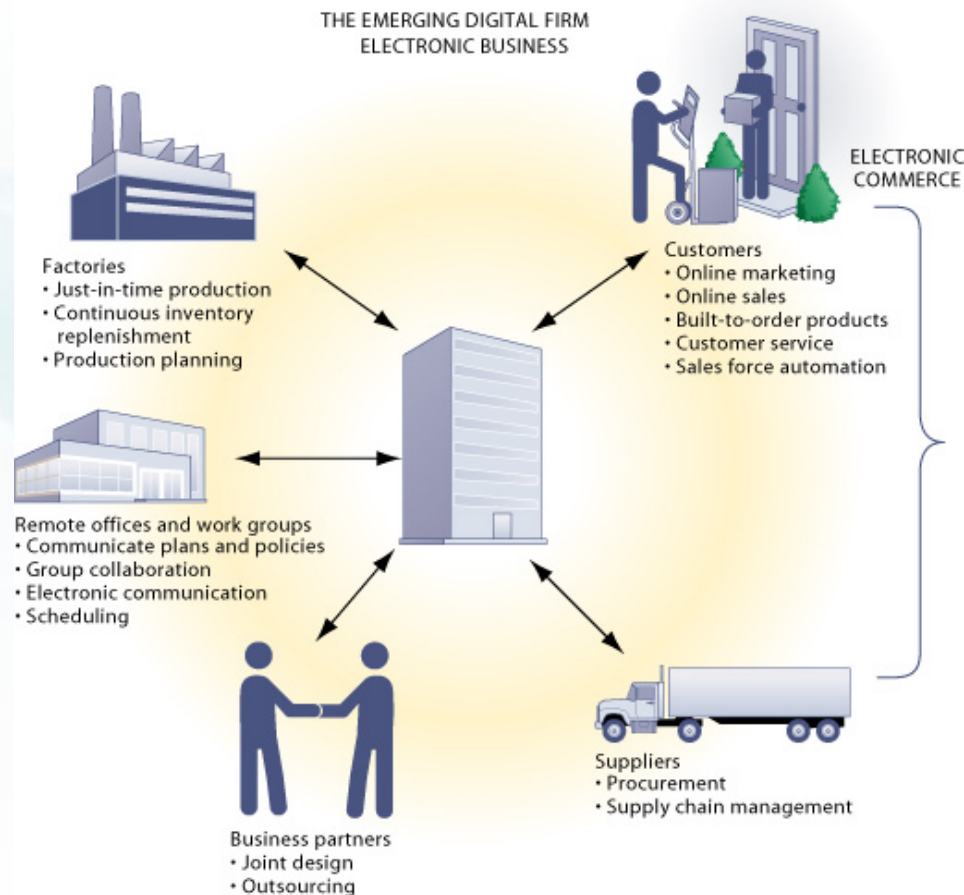


Figure 1-4



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PERSPECTIVES ON INFORMATION SYSTEMS

What Is an Information System?

Technology perspective: A set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization



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PERSPECTIVES ON INFORMATION SYSTEMS

What is an Information System? (Continued)

- **Data:** Streams of raw facts representing events such as business transactions
- **Information:** Clusters of facts meaningful and useful to human beings in the processes such as making decisions



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PERSPECTIVES ON INFORMATION SYSTEMS

Data and Information

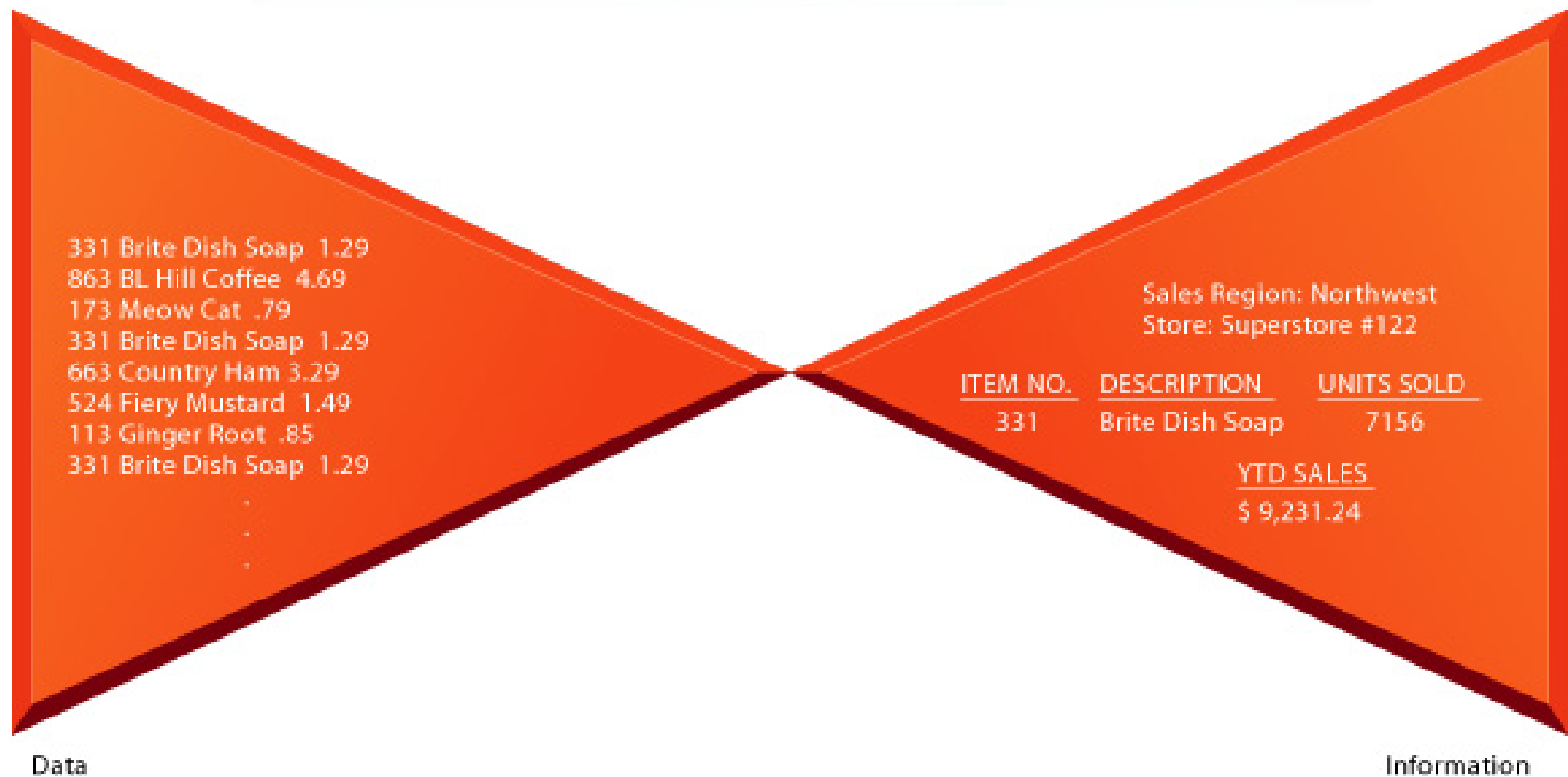


Figure 1-5



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PERSPECTIVES ON INFORMATION SYSTEMS

Functions of an Information System

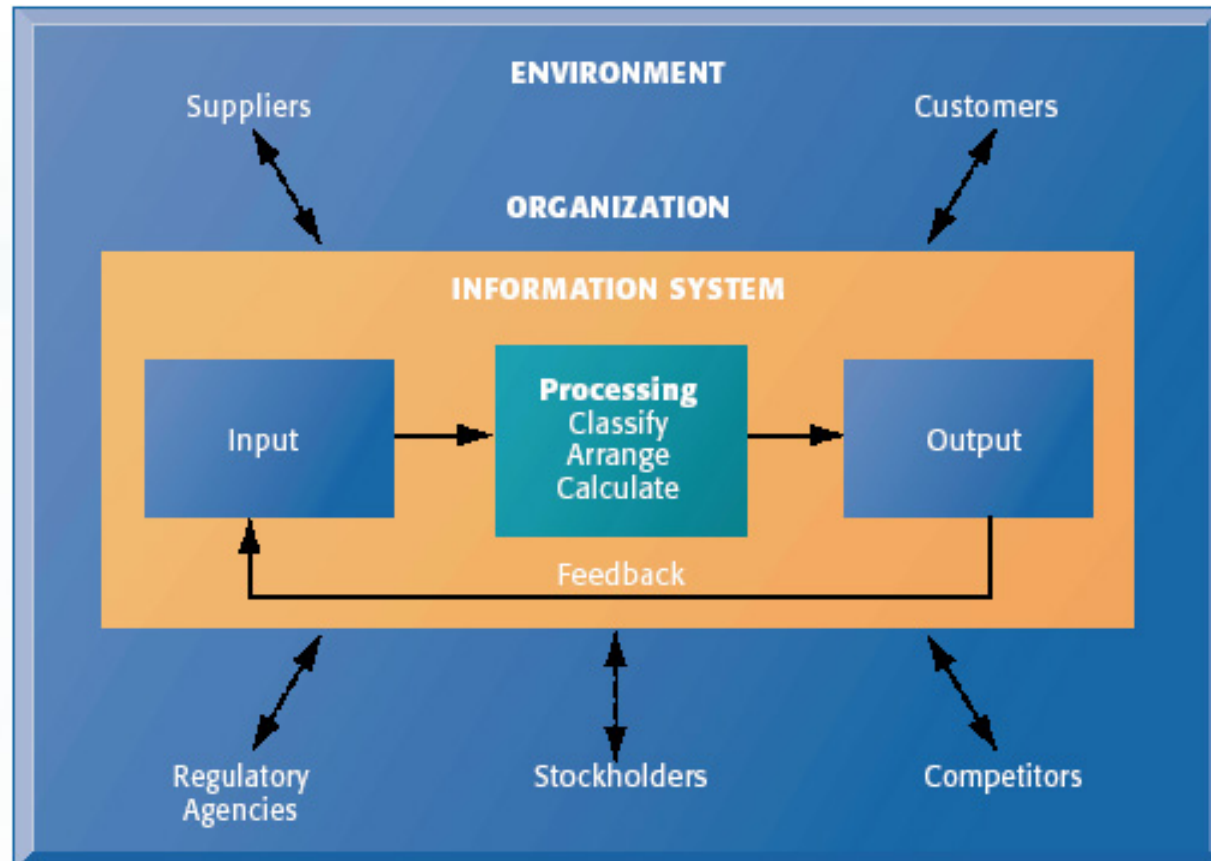


Figure 1-6



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PERSPECTIVES ON INFORMATION SYSTEMS

Computer-Based Information System (CBIS)

- **Rely on computer hardware and software**
- **Processing and disseminating information**
- **Fixed definitions of data and procedures**
- **Collecting, storing, and using information**



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PERSPECTIVES ON INFORMATION SYSTEMS

A Business Perspective on Information Systems

Information systems are more than just technology. Businesses invest in IS in order to create value and increase profitability.

- **Information systems are an organizational and management solution to business challenges that arise from the business environment.**



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PERSPECTIVES ON INFORMATION SYSTEMS

A Business Perspective on Information Systems (Continued)

- **Based on information technology but also require significant investment in organizational and management changes and innovations**
- **IS create value primarily by changing business processes and management decision making.**



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PERSPECTIVES ON INFORMATION SYSTEMS

The Business Information Value Chain

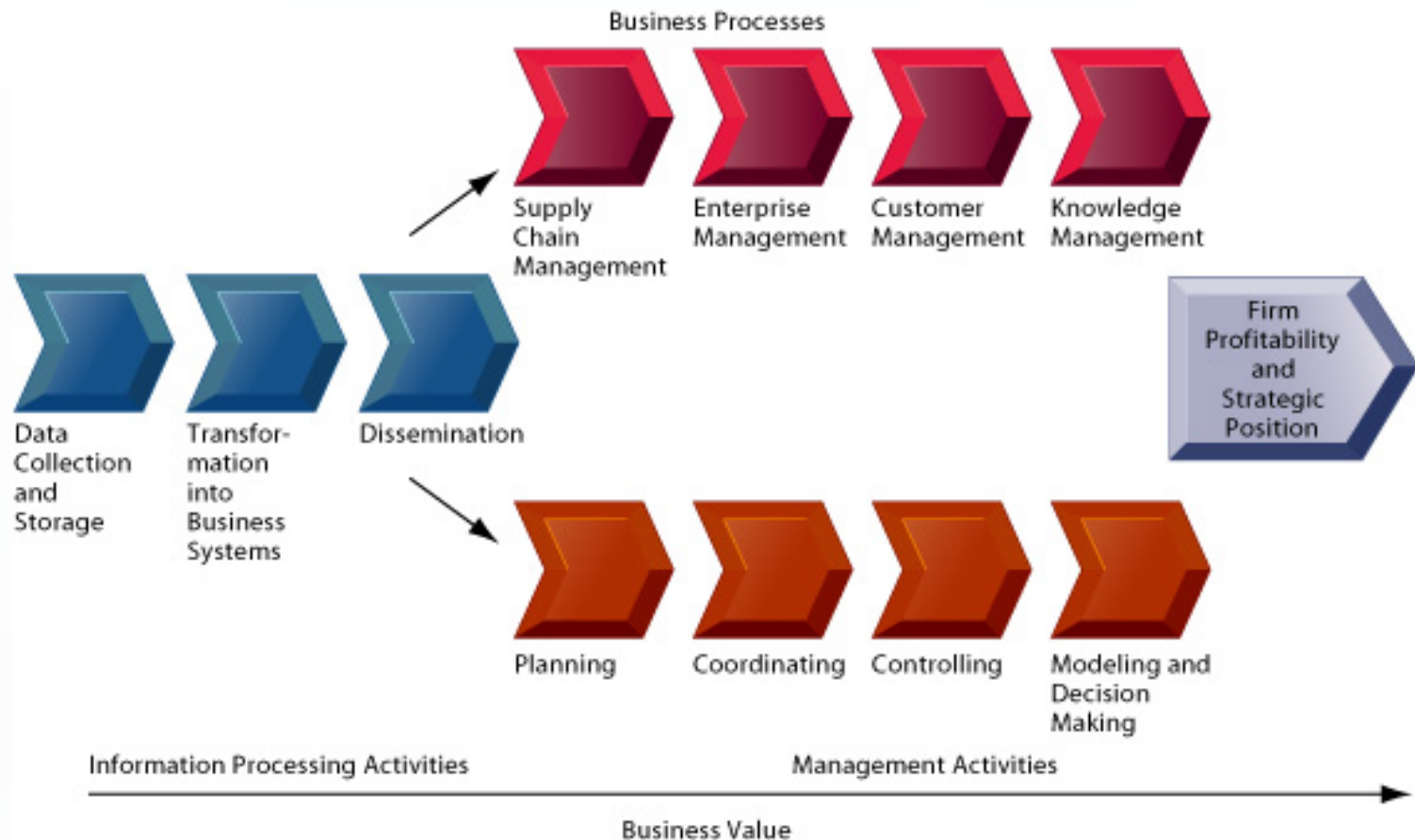


Figure 1-7



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PERSPECTIVES ON INFORMATION SYSTEMS

Information Systems Are More than Computers



Figure 1-8



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PERSPECTIVES ON INFORMATION SYSTEMS

- **Information systems literacy:** Broad-based understanding of information systems that includes behavioral knowledge about organizations, management and individuals using information systems as well as technical knowledge about computers
- **Computer literacy:** Knowledge about information technology, focusing on understanding how computer technologies work



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PERSPECTIVES ON INFORMATION SYSTEMS

Major Business Functions Rely on Information Systems

- Sales and marketing
- Manufacturing
- Finance
- Accounting
- Human resources



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PERSPECTIVES ON INFORMATION SYSTEMS

Dimensions of Information Systems

Three Important Dimensions of Information Systems

- **Organizations**
- **Managers**
- **Technology**

You will need to understand and balance these dimensions of information systems in order to create business value.



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PERSPECTIVES ON INFORMATION SYSTEMS

The Organizational Dimension of Information Systems

- **People**
- **Structure**
- **Business processes**
- **Culture**
- **Politics**





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PERSPECTIVES ON INFORMATION SYSTEMS

The Management Dimension of Information Systems

Managers are:

- **Sense makers**
- **Decision makers**
- **Planners**
- **Innovators of new processes**
- **Leaders: set agendas**



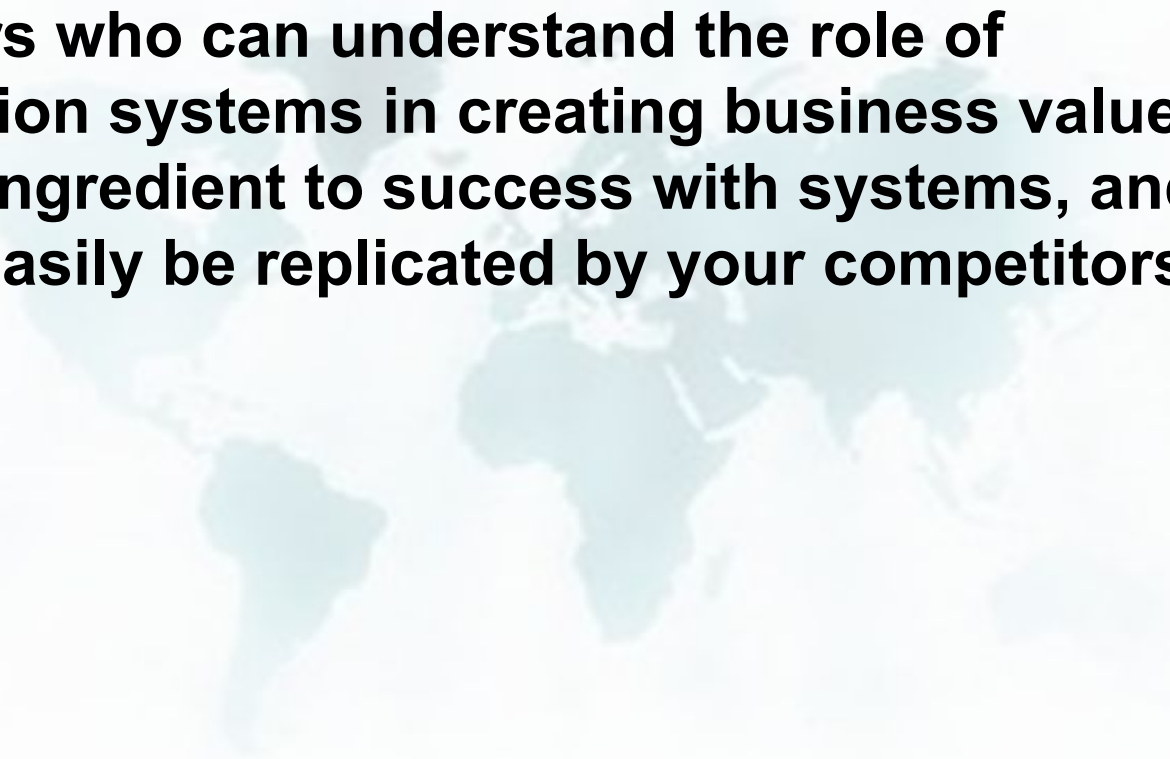
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PERSPECTIVES ON INFORMATION SYSTEMS

The Management Dimension of Information Systems (Continued)

Managers who can understand the role of information systems in creating business value are the key ingredient to success with systems, and cannot easily be replicated by your competitors.





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PERSPECTIVES ON INFORMATION SYSTEMS

The Technology Dimension of Information Systems

Information technology is one of the tools managers use to cope with change:

- **Hardware:** Physical equipment
- **Software:** Detailed preprogrammed instructions
- **Storage:** Physical media for storing data and the software



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PERSPECTIVES ON INFORMATION SYSTEMS

The Technology Dimension of Information Systems (Continued)

- **Communications technology:** Transfers data from one physical location to another
- **Networks:** Links computers to share data or resources

Managers need to know enough about information technology to make intelligent decisions about how to use it for creating business value.



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PERSPECTIVES ON INFORMATION SYSTEMS

Complementary Assets and Organizational Capital

Complementary assets:

- New business processes
- Management behavior
- Organizational culture
- Training



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PERSPECTIVES ON INFORMATION SYSTEMS

Organizational capital:

- **Supportive business culture that values efficiency and effectiveness**
- **Efficient business processes, decentralization of authority**
- **Highly distributed decision rights**
- **A strong information system (IS) development team**

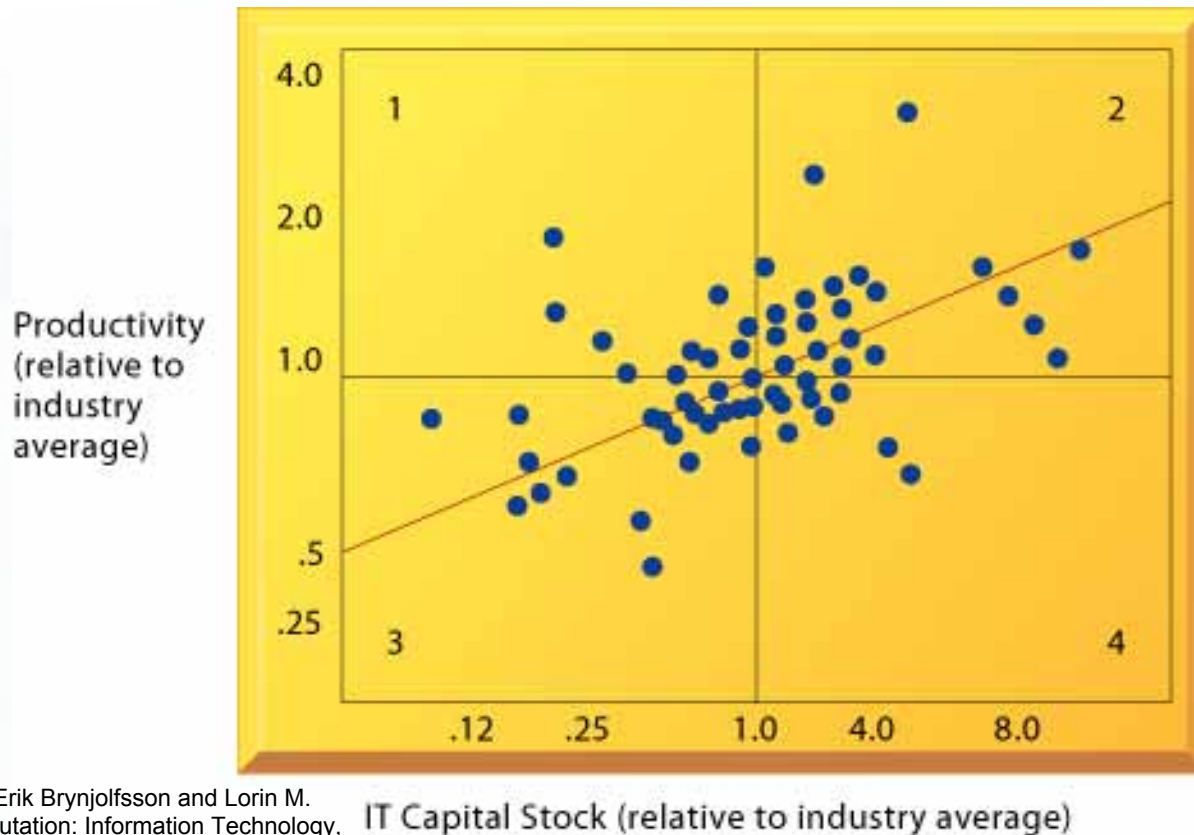


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PERSPECTIVES ON INFORMATION SYSTEMS

Variation in Returns on Information Technology Investment



Source: Based on Erik Brynjolfsson and Lorin M. Hitt, "Beyond Computation: Information Technology, Organizational Transformation and Business Performance," *Journal of Economic Perspectives* 14, no. 4 (Fall 2000). Used with permission of the American Economic Association.

Figure 1-9



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CONTEMPORARY APPROACHES TO INFORMATION SYSTEMS

Sociotechnical Systems

Optimize systems performance:

- **Technology and organization**
- **Organizations mutually adjust to one another until fit is satisfactory**



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CONTEMPORARY APPROACHES TO INFORMATION SYSTEMS

A Sociotechnical Perspective on Information Systems

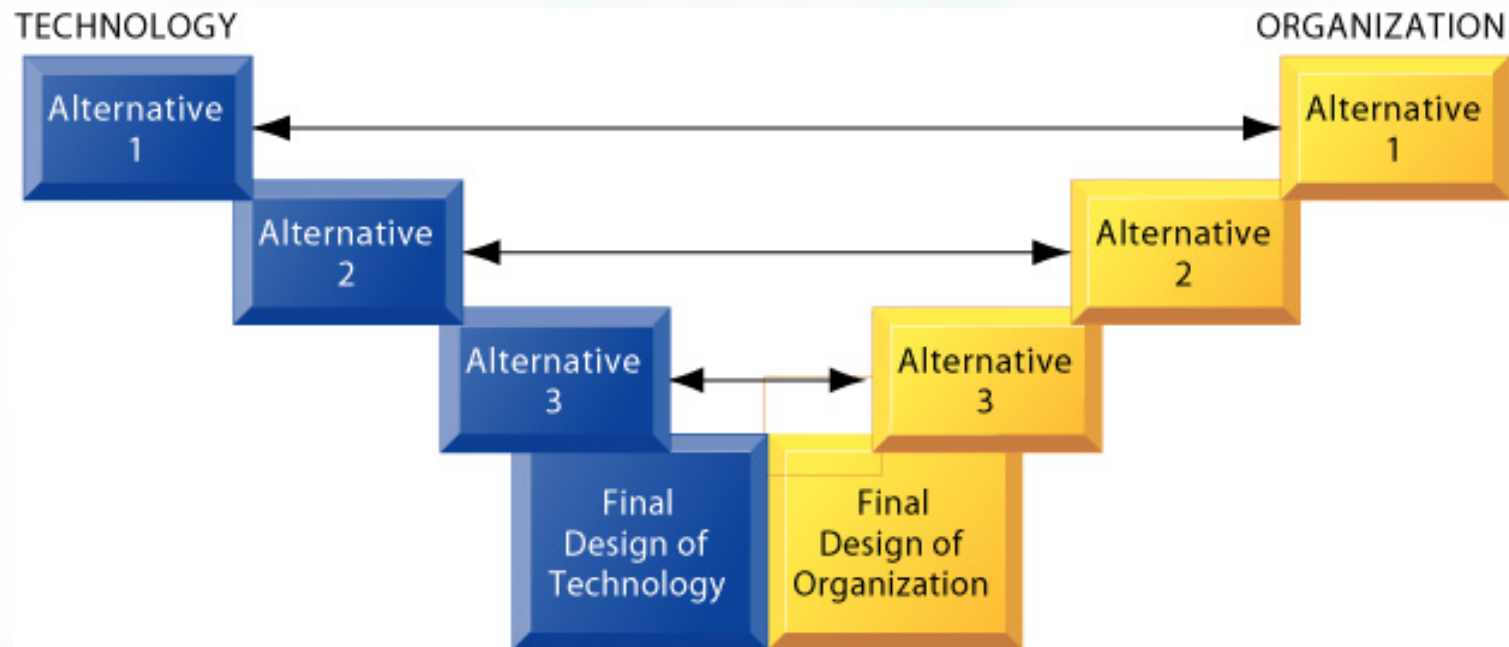


Figure 1-11