Enterprise and Global Management of Information Technology

I. CHAPTER OVERVIEW

This chapter emphasizes the impact of business applications of information technology on management and organizations, the components of information systems management, and the managerial implications of the use of information technology in global business.

Section I: Managing Information Technology
Section II: Managing Global IT

II. LEARNING OBJECTIVES

Learning Objectives
1. Identify each of the three components of information technology management and use examples to illustrate how they might be implemented in a business.
2. Explain how failures in IT management can be reduced by the involvement of business managers in IT planning and management.
3. Identify several cultural, political, and geoeconomic challenges that confront managers in the management of global information technologies.
4. Explain the effect of global business/IT strategy of the trend toward a transnational business strategy by international business organizations.
5. Identify several considerations that affect the choice of IT applications, IT platforms, data access policies, and systems development methods by a global business enterprise.
III. TEACHING SUGGESTIONS

The purpose of this chapter is to analyze the managerial challenges presented by information technology. A slide has been prepared for instructors to use to discuss the complexities of managing e-business technologies. This slide should provoke discussion on why information technology must be managed in order to meet the challenges of today’s internetworked e-business and technology environment, and the customer value and business value which is imperative for success in the new economy.

Figure 14.2 discusses the major components of information technology management. Figure 14.4 illustrates the e-business planning process, which focuses on discovering innovative approaches to satisfying a company’s customer value and business value goals. This planning process leads to development of strategies and business models for new e-business and e-commerce platforms, processes, products, and services. Then a company can develop IT strategies and an IT architecture that supports building and implementing their newly planned e-business applications.

Figure 14.11 illustrates that many firms are moving toward transnational strategies in which they integrate their business/IT activities through close cooperation and interdependence among their international subsidiaries and their corporate headquarters. Figure 14.13 outlines some of the business reasons driving global e-business applications. Figure 14.14 describes the top ten issues in managing international data communications. Figure 14.15 describes key considerations for companies establishing global Internet websites.
Business and IT

The strategic and operational importance of information technology in business is no longer a question. As the 21st century unfolds, many companies throughout the world are intent on transforming themselves into global business powerhouses via major investments in global e-business, e-commerce, and other IT initiatives. Thus, there is a real need for business managers and professionals to understand how to manage this vital organizational function.

Analyzing the Chicago Board of Trade

We can learn a lot about the challenges of successfully managing information technology in business. Take a few minutes to read it, and we will discuss it (See Chicago Board of Trade: From Failure to Success in Managing Information Technology in Section IX).

Managing Information Technology

Information technology is an essential component of business success for companies today. But information technology is also a vital business resource that must be properly managed. Managing the information systems and technologies that support modern business processes of companies today is a major challenge for both business and IT managers and professionals.

● Managing the joint development and implementation of business/IT strategies. Led by the CEO and CIO, proposals are developed by business and IT managers and professionals for using IT to support the strategic business priorities of the company. This business/IT planning process aligns IT with strategic business goals.

● Managing the development and implementation of new business/IT applications and technologies. This is the primary responsibility of the CIO and CTO. This area of IT management involves managing the processes for information systems development and implementation, as well as the responsibility for research into the strategic business uses of new information technologies.

● Managing the IT organization and the IT infrastructure. The CIO and IT managers share responsibility for managing the work of IT professionals who are typically organized into a variety of project teams and other organizational subunits. In addition, they are responsible for managing the IT infrastructure of hardware, software, databases, telecommunications networks, and other IT resources, which must be acquired, operated, monitored, and maintained.

Business/IT Planning [Figure 14.4]:

This figure illustrates the business/IT planning process, which focuses on discovering innovative approaches to satisfying a company’s customer value and business value goals. This planning process leads to development of strategies and business models for new business applications, processes, products, and services. Then a company can develop IT strategies and an IT architecture that supports building and implementing their newly planning business applications.

Both the CEO and the CIO of a company must manage the development of complementary business and IT strategies to meet its customer value and business value vision. This co-adaptation process is necessary because as we have seen so often in this text, information technologies are a fast changing, but vital component in many strategic business
The business/IT planning process has three major components:

- **Strategy Development** – Developing e-business and e-commerce strategies that support a company’s e-business vision, use information technology to create innovative e-business systems that focus on customer and business value.

- **Resource Management** – Developing strategic plans for managing or outsourcing a company’s IT resources, including IS personnel, hardware, software, data, and network resources.

- **Technology Architecture** – Making strategic IT choices that reflect an information technology architecture designed to support a company’s business/IT initiatives.

**Information Technology Architecture:**

Note to students that the *IT architecture* that is created by the strategic e-business planning process is a conceptual design, or blueprint, that includes the following major components:

- **Technology Platform**: - The Internet, intranets, extranets, and other networks, computer systems, system software, and integrated enterprise application software provide a computing and communications infrastructure, or platform, that supports the strategic use of information technology for e-business and e-commerce.

- **Data Resources**: Many types of operational and specialized databases, including data warehouses and Internet/intranet databases store and provide data and information for business processes and decision support.

- **Applications Portfolio**: Business applications of information technology are designed as an integrated portfolio of information systems that support strategic e-business initiatives, as well as cross-functional business processes.

**IT Organization**: The organizational structure of the IS function within a company and the distribution of IS specialists is designed to meet the changing strategies of a business. The form of the IT organization depends on the managerial philosophy, e-business vision, and business/IT strategies formulated during the strategic planning process.

**Managing the IS Function:**

Managing the IS function in organizations has become a very complex task. Organizations have moved from the having a centralized structure towards a decentralized structure, back towards more centralization control over the management of the IS resources of a company.

Three things have influenced these shifts in structure:

- The Internet boom
- Development of company intranets
- Maintaining PC’s on a network is very expensive.

**Organizing IT:**

Modern computer-based information systems can support either the *centralization* or *decentralization* of information systems operations and decision-making within computer-using organizations.
Managing Application Development:

Application development management involves managing activities such as systems analysis and design, prototyping, applications programming, project management, quality assurance, and system maintenance for all major e-business/IT development projects. Managing application development requires managing the activities of teams of systems analysts, software developers, and other IS professionals working on a variety of information systems development projects. In addition, some systems development groups have established development centers, staffed with IS professionals.

Managing IS Operations:

IS operations management is concerned with the use of hardware, software, network, and personnel resources in the corporate or business unit data centers (computer centers) of an organization. Operational activities that must be managed include computer system operations, network management, production control, and production support.

Many operations management activities are being automated by the use of software packages for computer system performance management.

These system performance monitors:
- Monitor the process of computer jobs.
- Help develop a planned schedule of computer operations that can optimize computer system performance.
- Produce detailed statistics that are invaluable for effective planning and control of computer capacity.
- Supply information needed by chargeback systems that allocate costs to users based on the information services rendered.
- Process control capabilities which monitor and control computer operations at large data centers.

Technology Management

Changes in information technology, like the rise of the PC, client/server networks, and the Internet and intranets, have come swiftly and dramatically and are expected to continue into the future. Developments in information technology have had, and will continue to have, a major impact on the operations, costs, management work environment and competitive position of many organizations. All information technologies must be managed as a technology platform for integrated e-business and e-commerce systems.

Such technologies include:
- Internet
- Intranets
- Variety of electronic commerce and collaboration technologies
- Integrated enterprise software for customer relationship management, enterprise resource planning, and supply chain management.

Managing User Services

The number of end users in organizations who use computers to help them do their jobs has outstripped the capacity of many information services departments. As a result, teams and workgroups of end users must use PC workstations, software packages, and the Internet, intranets, and other networks to develop and apply information technology to their work activities. Organizations have responded by:
- Creating user services, or client services, functions to support and manage end users and workgroup computing.
- Establishing information centers staffed with user liaison specialists, or web-enabled intranet “help desks,” with user “hot-lines”.

O’Brien, Management Information Systems, 7/e
IM - Chapter 14   pg. 5
Establishing and enforcing policies concerning the acquisition of hardware and software by end-users and business units. This ensures their compatibility with company standards for hardware, software, and network connectivity. Policies ensure that proper controls are enforced to correct performance and safeguard the integrity of corporate and departmental networks and databases.

**Failures in IT Management**

Managing information technology is not an easy task. The information systems function has performance problems in many organizations. The promised benefits of information technology have not occurred in many documented cases. Studies by management consulting firms and university researchers have shown that many businesses have not been successful in managing their use of information technology.

**Management Involvement and Governance**

What is the solution to failures in the information systems function? There are no quick and easy answers. However, the experiences of successful organizations reveal that extensive and meaningful **managerial and end user involvement** is the key ingredient of high-quality information systems performance.

Involving managers in the management of IT requires the development of **governance structures** that encourage their active participation in planning and controlling the business uses of IT. Thus, many organizations have policies that require managers to be involves in IT decision that affect their business units. This helps managers avoid IS performance problems in their business units and development projects. With this high degree of involvement, managers can improve the strategic business value of information technology.
IV. LECTURE NOTES (con’t)

Section II: Managing Global IT

The International Dimension:

International dimensions have become a vital part of managing a business enterprise in the internetworked global economies and markets of today. Properly designed and managed information systems using appropriate information technologies are a key ingredient in international business, providing vital information resources needed to support business activities in global markets.

Analyzing Global Exchange Services and Allstate

We can learn a lot about the benefits and challenges of offshore systems development from this case. Take a few minutes to read it, and we will discuss it (See Global Exchange Services and Allstate: Challenges and Solutions in Offshore Systems Development in Section IX).

Global IT Management [Figure 14.10]:

The major dimensions of the job of managing global information technology include:

- e-Business/IT strategies
- e-Business application portfolios
- Internet-based technology platforms
- Data resource management
- Systems development

Stress to the students that “all” global IT activities must be adjusted to take into account the cultural, political, and geoeconomic challenges that exist in the international business community. Developing appropriate e-business and IT strategies for the global marketplace should be the first step in global e-business technology management.

Once that is done, end user and IS managers can move on to developing:

- The portfolio of applications needed to support e-business/IT strategies;
- The hardware, software, and Internet-based technology platforms to support those applications
- The data resource management methods to provide necessary databases
- The systems development projects that will produce the global information systems required.

Cultural, Political, and Geoeconomic Challenges:

Global IT management does not exist in a vacuum. Global IT management must focus on developing global e-business IT strategies and managing global e-business application portfolios, Internet technologies, platforms, databases, and systems development projects. Managers must also take into account the cultural, political, and geographic differences that exist when doing business internationally.

- Political Challenge: - Political challenges facing global business and IT managers include:
  1. Many countries have rules regulating or prohibiting transfer of data across their national boundaries (transborder data flows), especially information such as personnel records.
  2. Restrict, tax, or prohibit imports of hardware and software.
  3. Local content laws that specify the portion of the value of a product that must be added in that country if it is to be sold there.
  4. Reciprocal trade agreements that require a business to spend part of the revenue they earn in the country in
that nation’s economy.

- **Geoeconomic Challenges:** Geoeconomic challenges in global business and IT refer to the effects of geography on the economic realities of international business activities. These challenges include:
  1. Physical distances involved are still a major problem
  2. World’s 24 time zones contribute to communications problems
  3. Lack of telecommunications capabilities in some countries
  4. Lack of specialized job skills in some countries, or enticing specialists from other countries to live and work there
  5. Cost of living and labor costs in various countries.

- **Cultural Challenges:** Cultural challenges facing global business and IT managers include:
  1. Differences in languages, cultural interests, religions, customs, social attitudes, and political philosophies.
  2. Differences in work styles and business relationships.

**Global Business/IT Strategies [Figure 14.11]:**

Many firms are moving toward transnational strategies in which they integrate their global e-business activities through close cooperation and interdependence between their international subsidiaries and their corporate headquarters.

Businesses are moving away from:
- Multinational strategies where foreign subsidiaries operate autonomously.
- International strategies in which foreign subsidiaries are autonomous but are dependent on headquarters for new processes, products, and ideas.
- Global strategies, where a company’s worldwide operations are closely managed by corporate headquarters.

In a transnational approach, a business depends heavily on its information systems and appropriate information technologies to help it integrate its global business activities. A transnational business tries to develop an integrated and cooperative worldwide hardware, software, and telecommunications architecture for its IT platform.

**Global Business/IT Applications: [Figure 14.13]**

The applications of information technology developed by global companies depend on their e-business and IT strategies and their expertise and experience in IT. However, their IT applications also depend on a variety of global business drivers, that is, business requirements (business drivers) caused by the nature of the industry and its competitive or environmental forces. Examples include airlines and hotel chains with global customers, that is, customers who travel widely or have global operations. Such companies will need global e-business capabilities for online transaction processing so they can provide fast, convenient service to their customers or face losing them to their competitors. The economies of scale provided by global e-business operations are another business driver that requires the support of global IT applications.

**Global IT Platforms:**

The management of technology platforms (also called the technology infrastructure) is another major dimension of global IT management.

Technology platforms required to support a global business operation must consider:
Hardware
Software
Data resources
Internet, intranet, extranet sites
Computing facilities that support global e-business operations

The Internet as a Global IT Platform:

The Internet and the World Wide Web are both vital components in international business and commerce. The Internet, with its interconnected network of thousands of networks of computers and databases, has established itself as a technology platform free of many traditional international boundaries and limits.

By connecting their businesses to this online global infrastructure, companies can:

- Expand their markets
- Reduce communications and distribution costs
- Improve their profit margins without massive cost outlays for new telecommunication facilities.

The Internet, along with its related intranet and extranet technologies, provides a low-cost interactive channel for communications and data exchange with:

- Employees
- Customers
- Suppliers
- Distributors
- Manufacturers
- Product developers
- Financial backers
- Information providers, and so on.

Global Data Access Issues:

Global data access issues have been a subject of political controversy and technology barriers in global business operations for many years. Important global data issues involve:

- **Transborder data flows** (TDF), in which business data flows across international borders over the telecommunications networks of global information systems.
- Many countries view transborder data flows as violating their national sovereignty because TDF avoids custom duties and regulations for the import and export of goods and services.
- Other countries may view TDF as a violation of privacy legislation when data about individuals is moved out of a country without stringent privacy safeguards.
- Others view TDF as violating local laws made to protect local IT industry from competition, or labor regulations for protecting local jobs.
- Other important data issues are concerned with global data management and standardization of data. Common data definitions are necessary for sharing data among the parts of an international business. Differences in language, culture, and technology platforms can make global data standardization quite difficult.

Internet Access Issues:
The Internet has become a global battleground over public access to data and information at business and private sites on the World Wide Web. This has become a business issue because restrictive access policies severely inhibit the growth of e-commerce with countries that restrict or forbid Internet access by their citizens. Most countries of the world have decided that restricting Internet access is not a viable policy, and in fact, would hurt their countries’ opportunities for economic growth and prosperity.

**Global Systems Development:**

Reaching agreement on systems requirements is always difficult, but becomes many times more difficult when the users and developers are in different countries.

Some of these issues involve:

- Conflicts over local versus global system requirements, and difficulties in agreeing on common features such as multilingual user interfaces and flexible design standards.
- Agreements on global systems must take place in an environment that promotes involvement and “ownership” of a system by local end users.
- Disturbances can arise from systems implementation and maintenance activities.
- Trade-offs must be made between developing one system that can run on multiple computer and operating platforms, by letting each local site customize the software for its own platform.

**Systems Development Strategies**

Strategies to solve some of the problems of global systems development include:

- Transforming an application used by the home office into a global application.
- Setting up a *multinational development team* with key people from several subsidiaries to ensure that the system design meets the needs of the local sites as well as corporate headquarters.
- *Parallel development.* Parts of a system are assigned to different subsidiaries and the home office to develop at the same time, based on the expertise and experiences at each site.
- *Centers of excellence.* An entire system may be assigned for development to a particular subsidiary based on their expertise in the business or technical dimensions needed for successful development.
IV. LECTURE NOTES (con’t)

Summary

● Managing Information Technology. Managing IT can be viewed as having three major components: (1) managing the joint development and implementation of e-business and IT strategies, (2) managing the development of e-business applications and the research and implementation of new information technologies, and (3) managing IT processes, professionals, and subunits within a company’s IT organization and IS function.

● Failures in IT Management. Information systems are not being used effectively or efficiently by many organizations. The experiences of successful organization reveal that the basic ingredient of high-quality information system performance is extensive and meaningful management and user involvement in the governance and development of IT applications. Thus, managers may serve on executive IT groups and create IS management functions within their business units.

● Managing Global IT. The international dimensions of managing global information technologies include dealing with cultural, political, and geoeconomic challenges posed by various countries; developing appropriate business and IT strategies for the global marketplace; and developing a portfolio of global e-business and e-commerce applications and an Internet-based technology platform to support them. In addition, data access methods have to be developed and systems development projects managed to produce the global e-business applications that are required to compete successfully in the global marketplace.

● Global Business and IT Strategies and Issues. Many businesses are becoming global companies and moving toward trans-national business strategies in which they integrate the global business activities of their subsidiaries and headquarters. This requires that they develop a global IT platform, that is, an integrated worldwide hardware, software, and Internet-based network architecture. Global companies are increasingly using the Internet and related technologies as a major component of this IT platform to develop and deliver global IT applications that meet their unique global business requirements. Global IT and end user managers must deal with limitations on the availability of hardware and software, restrictions on trans-border data flows, Internet access, and movement of personal data, and difficulties with developing common data definitions and system requirements.
V. KEY TERMS AND CONCEPTS - DEFINED

**Application Development Management (483):**
Application development management involves managing activities such as systems analysis and design, prototyping, applications programming, project management, quality assurance, and system maintenance for all major e-business/IT development projects.

**Centralization or Decentralization of IT (481):**
Modern computer-based information systems can support either the centralization or decentralization of information systems operations and decision-making within computer-using organizations.

**Chargeback Systems (483):**
Methods of allocating costs to end user departments based on the information services rendered and information system resources utilized.

**Chief Information Officer (484):**
A senior management position that oversees all information technology for a firm, concentrating on long-range information systems planning and strategy.

**Chief Technology Officer (485):**
A chief technology officer (CTO) is an individual in an organization who is in charge of all information technology planning and deployment.

**Cultural, Political, and Geoeconomic Challenges (491):**
Differences in customs, governmental, regulations, and the cost of living in different countries.

**Data Center (483):**
An organizational unit, which uses centralized computing resources to perform information processing activities for an organization. Also known as a computer center.

**Downsizing (481):**
Many organizations are downsizing from the use of large computer systems to networks of small computers.

**Failures in IT Management (486):**
Information technology is not being used effectively by companies that use IT primarily to computerize traditional business processes, instead of developing innovative e-business processes involving customers, suppliers, and other business partners, electronic commerce, and Web-enabled decision support. Information technology is not being used efficiently by information systems that provide poor response times and frequent downtimes, or IS professionals and consultants who do not properly manage application development projects.

**Global Business Drivers (494):**
These include global customers, products, operations, resources, and collaboration.

**Global Information Technology Management (489):**
Managing information technologies in an e-business enterprise by (1) the joint development and implementation of e-business and IT strategies by business and IT executives, (2) managing the research and implementation of new information technologies and the development of e-business applications, and (3) managing IT processes, professionals, and subunits within a company’s IT organization and IS function.

**Global Information Technology Management – Business/IT Applications (494):**
Managing information technologies in an e-business enterprise by managing the research and implementation of new information technologies and the development of e-business applications.
Global Information Technology Management - Business/IT Strategies (493):
Many firms are moving toward transnational business strategies in which they integrate their global business activities through close cooperation and interdependence between their international subsidiaries and their corporate headquarters.

Global Information Technology Management - Data Access Issues (498):
Global IT and end user managers must deal with restrictions on the availability of hardware and software, restrictions on transborder data flows (TDF) and movement of personal data and difficulties with developing common data definitions and system requirements.

Global Information Technology Management - IT Platforms (495):
The choice of technology platforms (also called the technology infrastructure) is a major dimension of global IT management. Technology platforms required to support a global business operation must consider: 1) Hardware choices, 2) Software choices, 3) Telecommunications networks, and 4) Computing facilities.

Global Information Technology Management - Systems Development Issues (500):
Database management methods have to be developed and systems development projects have to be managed in order to produce the global information systems that are required to compete successfully in the global marketplace.

Human Resource Management of IT (484):
Reaching agreement on systems requirements is always difficult, but becomes many times more difficult when the users and developers are in different countries. Strategies must be developed in order to solve some of the problems of global systems development.

Internet Access Issues (499):
The Internet has become a global battleground over public access to data and information at business and private sites on the World Wide Web. This has become a business issue because restrictive access policies severely inhibit the growth of e-commerce with countries that restrict or forbid Internet access by their citizens.

Internet as a Global IT Platform (497):
The Internet and the World Wide Web are both vital components in international business and commerce. The Internet, with its interconnected network of thousands of networks of computers and databases, has established itself as a technology platform free of many traditional international boundaries and limits.

Management Involvement in IT (487):
The experiences of successful organizations reveal that the basic ingredient of high-quality information systems performance is extensive and meaningful management involvement.

Managing Information Technology (478):
Organizations must be able to manage e-business/IT planning and the IS function within a company.

Managing the IS Function (481):
Managers within organizations are responsible for managing application development, data center operations, and user services.

Operations Management (483):
Includes the management of activities such as data entry, equipment operations, production control, and production support.

Outsourcing IS Operations (482):
Turning over all or part of an organization’s information systems operation to outside contractors, known as systems integrators or facilities management companies.

Systems Performance Monitor (483):
A software package that automates many of the operations management activities.
Technology Management (485):
The establishment of organizational groups to identify, introduce, and monitor the assimilation of new information system technologies into organizations.

Transborder Data Flows (498):
The flow of business data over telecommunications networks across international borders.

Transnational Strategy (493):
A management approach in which an organization integrates its global business activities through close cooperation and interdependence among its headquarters operations and international subsidiaries, and its use of appropriate global information technologies.

User Services (486):
End users need liaison, consulting, and training services.
### VI. REVIEW QUIZ - Match one of the key terms and concepts

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VII. ANSWERS TO DISCUSSION QUESTIONS

1. What has been the impact of e-business technologies on the work relationships, activities, and resources of managers?

Information technology is a major force for organizational and managerial change. Due to telecommunications networks and personal computers, computing power and information resources are now more readily available to more managers than ever before. Managing the information systems resources of a business is no longer the sole province of information systems specialists. Instead, information resource management has become a major responsibility of managers.

2. What can business unit managers do about performance problems in the use of information technology and the development and operation of information systems in a business units?

Extensive and meaningful management involvement in information systems is important. Management can get involved through executive information services committees, management steering committees, and through end user management of IT.

3. Refer to the Real World Case on The Chicago Board of Trade in the chapter. What role should a company’s executives and business unit managers play in managing the IT function in a business? Why?

The type roles would include:
- Managing the joint development and implementation of business/IT strategies. This aligns IT with strategic business goals.
- Managing the development and implementation of new business/IT applications and technologies. This allows for effective management of the processes for IS development and implementation, and for research related to the strategic business use of new information technologies.
- Managing the IT organization and the IT infrastructure. This provides management over the IT professionals organized into a variety of project teams and other organizational subunits and management over the IT infrastructure.

4. How are Internet technologies affecting the structure and work roles of modern organizations? For example, will middle management wither away? Will companies consist primarily of self-directed project teams of knowledge workers? Explain your answer.

Computer-based information systems can encourage either centralization or decentralization. The philosophy of top management, the culture of the organization, the need to reengineer its operations, and its use of aggressive or conservative competitive strategies all play major roles with IT in shaping the firm’s organizational structure.

5. Should the IS function in a business be centralized or decentralized? What recent developments support your answer?

The development of minicomputers and microcomputers accelerated a trend back toward decentralization. Distributed processing networks and the creation of information centers to support end user computing came about. Lately, the trend has been to establish tighter control over the information resources of an organization, which has resulted in a re-centralizing trend at some organizations, and the development of hybrid structures at others. Some organizations have spun off their IS functions into IS subsidiaries, and some organizations have resorted to outsourcing, i.e. have turned over their IS operations to outside system integrators.

6. Refer to the Real World Case on Global Exchange Services and Allstate in the chapter. What ethical and
societal issues should the management of companies consider when making offshore outsourcing or insourcing decisions? Give several examples to illustrate your answer.

Issues to consider would include:

- **Political challenge** – many countries have rules regulating or prohibiting transfer of data across their national boundaries (transborder data flows), especially personal information such as personnel records. Others severely restrict, tax, or prohibit imports of hardware and software. Still others have local content laws that specify the portion of the value of a product that must be added in that country if it is to be sold there. Other countries have reciprocal trade agreements that require a business to spend part of the revenue they earn in a country in that nation’s economy.

- **Geoeconomic challenges** – the sheer physical distances involves are still a major problem, even in the day of the Internet, telecommunications and jet travel. It may take too long to fly in specialists when IT problems occur in a remote site. It is still difficult to get good-quality telephone and telecommunications services in some countries, or enticing specialists from other countries to live and work there. There are still problems (and opportunities) in the great differences in the cost of living and labor costs in various countries. Labor costs in India, the Philippines and elsewhere are as much as 70% lower than those in the U.S. However, a U.S. company must also address the issue of potentially losing control foreign technology workers and the quality of IT projects based thousands of miles away.

- **Cultural challenges** – differences in languages, cultural interests, religions, customs, social attitudes, and political philosophies. There are differences in work styles and business relationships. Should one take one’s time to avoid mistakes, or hurry to get something done early. Should one go it alone or work cooperatively. Should the most experienced person lead, or should leadership be shared? Should a U.S. company place a U.S. employee in charge of the on-site management in the foreign country or should it be a citizen of that country? GXS’s Bangalore facility is managed locally in an effort to mesh the local culture with the U.S. culture.

7. **How will the Internet, intranets, and extranets affect each of the components of global e-business technology management as illustrated in Figure 14.10? Give several examples.**

The Internet, intranets, and extranets will certainly affect each of the components of global e-business technology management as illustrated in Figure 14.10. As organizations move rapidly towards the use of these types of technologies, they must ensure that their business strategy coincides with their IT strategy. Businesses are no longer restricted to their local markets, or even their national markets. Global markets are unfolding, and competition is heating up. Only by developing effective and appropriate e-business and IT strategies, which will allow companies to compete on the global markets, will business survive in the long run. Competing in the international business communities offer major challenges, and as such challenges as cultural, political, and geoeconomic issues must be recognized and dealt with. Once a company recognizes these challenges, they can develop strategies to deal with the other strategies as outlined in Figure 14.10.

8. **How might cultural, political, or geoeconomic challenges affect a global company’s use of the Internet? Give several examples.**

Through the use of the Internet, companies are now able to offer their goods and services throughout the world. The traditional methods of doing business at home in domestic markets has changed dramatically. Not only has the Internet opened up the floodgates of International marketing, it has also brought with it many other challenges such as cultural, political, and geoeconomic challenges. In order to be successful in these global markets, companies must be very diligent in ensuring that they take note of the many aspects involved in these three challenges. They must be able to develop global e-business IT strategies and mange global e-business application portfolios, Internet technologies, platforms, databases, and systems development projects.

Political challenges involve rules regulating or prohibiting transfer of data across national boundaries; restrictions laws restrict, tax, or prohibit imports of hardware and software; local content laws; and reciprocal trade agreements.

Geoeconomic challenges involve dealing with physical distances; 24 time zones; telephone and telecommunications
services; job skills; and differences in the cost of living and labor costs.

Cultural challenges include differences in languages, cultural interests, religions, customs, social attitudes, and political philosophies, differences in work styles and business relationships.

9. Will the increasing use of the Internet by firms with global e-business operations change their move toward a transnational business strategy? Explain.

There appears to be no doubt that the increasing use of the Internet by firms with global operations will result in changing their move toward a transnational business strategy. As firms increasingly extend their product offerings into the global marketplace in order to compete, they will have little choice but to develop a transnational business strategy in order to survive.

10. How might the Internet, intranets, and extranets affect the business drivers or requirements responsible for a company’s use of global IT, as shown in Figure 14.13? Give several examples to illustrate your answer.

Business drivers include global customers, products, operations, resources, and collaboration. IT applications may depend on such drivers. For example, airlines and hotel chains with global customers need global IT capabilities for online transaction processing. Other examples include companies who have products that are available worldwide, and that require telecommunications capabilities to coordinate global marketing campaigns.
VIII. ANSWERS TO ANALYSIS EXERCISES

1. CEO Express: Top-Rated Website for Executives

   a. Evaluate the CEO Express website as a source of useful links to business and technology news, analysis, and research sources for business executives and professionals.

      Students’ answers will vary with this question. Certainly, one thing is evident – the CEO Express website is a one-stop source for online media, which many busy executives would find useful. The site is easy to navigate, and it offers a massive array of information.

   b. Compare CEO Express with Google News (news.google.com). What advantages does CEO Express provide?

      Google News presents information by topic and region. CEO Express presents links to business related news sources. Users who favor specific editorial views and policies can focus their attentions accordingly. Google News, on the other hand, may direct a reader to a publication with which the reader has no familiarity.

   c. Report on one item of business or IT news, analysis, or research that might have value for your present or future career in business.

      Students' answers will vary.
2. **The Worldly Investor: Global Business Issues**

   a. Explore the World Bank's GICT website at [www.worldbank.org/ict](http://www.worldbank.org/ict) and investigate several of their projects to help countries participate in the global information economy.

   b. Evaluate the effectiveness of two of the GICT's projects. Explain the reasons for your evaluations.

      Students' answers will vary.
3. **U.S. Electronic Shopping and Mail-Order Houses**

   a. Using the spreadsheet and data provided calculate the growth rates for e-commerce based trade and trade not based on e-commerce.

   [See Spreadsheets for Problem Data *Ch 14 - Problem_3.xls*, and Problem Solution *Ch 14 - Solution_3.xls*]

   b. Prepare a one page paper analyzing e-commerce trends. In your paper, identify the merchandise line that is experiencing the largest growth in e-commerce sales. Using your own experience or additional research, speculate on what makes this merchandise line so different from the three merchandise lines experiencing the least growth.

   The *Furniture and home furnishings* merchandise line leads the e-commerce growth pack. Why?

   Student's answers may vary. Consider that we are measuring rates of change rather than overall market size (measured in millions of dollars). Market segments, represented by early, middle, and late technology adopters, will influence their associated merchandise line's e-commerce growth rates. For example, computer users who would make computer purchases were obviously the first market segments to join the Internet community. As a result, by the 1999 to 2001 time frame, the computer market had significant opportunity to mature. With this in mind, it isn't surprising to find both hardware and software merchandise lines among the bottom three merchandise lines in terms of growth. The other "bottom three" member, *Books and magazines* may have earned their place because the Internet serves as a substitute good, and the overall marketing for this product line has fallen into decline as more people switch to the Internet as their information and entertainment source.

   The *Furniture and home furnishings* merchandise line e-commerce growth, and indeed the other high performing lines, appear to simply reflect recent Internet adoption by mainstream consumers. These growth rates will likely drop significantly as the bulk of this line's market completes their adoption of the Internet.
4. **Quarterly Retail and e-Commerce Sales**

[See Problem Data *Ch 14 - Problem 4.xls*]

**a.** Using spreadsheet software, plot the data sets for e-commerce sales and non e-commerce retail sales. Make a line graph presenting both data sets together. Be sure to subtract the e-commerce data from the retail sales data in order to calculate non e-commerce sales amounts for each quarter. Briefly summarize what you notice just from looking at a graphical representation of this data.

[See Solution *Ch 14 - Solution 4a.xls*]

Observations should include that non e-commerce retail sales significantly outweigh e-commerce retail sales, both types of commerce are rising, and yearly sales peak during the winter holidays.

**b.** Create linear regression models for both e-commerce and for non e-commerce data sets. The function LINEST in MS Excel will provide the appropriate results. Using your models, create matching data sets and graph these together with your original data sets. Briefly summarize insights these tools helped you gain about the data.

[See Solution *Ch 14 - Solution 4b.xls*]

If students graph e-commerce and non e-commerce sales separately, they may conclude that e-commerce sales are increasing faster than non e-commerce sales and that e-commerce sales have greater variability. This results from viewing data graphed with different y-scales. By comparing the slopes of the model's lines, one can see that non e-commerce sales are growing faster than e-commerce sales. While this is accurate in so far as the models are concerned, the results seem counterintuitive. After all, e-commerce sales just about double over time.

**c.** Create exponential regression models for both e-commerce and for non e-commerce data sets. The function LOGEST in MS Excel will provide the appropriate results. Using your models, create matching data sets and graph these together with your original data sets. Calculate the standard deviations for your original data sets. Briefly summarize insights these tools helped you gain about the data.

[See Solution *Ch 14 - Solution 4c.xls*]

Using this model, students will more accurately conclude that e-commerce sales do indeed have a faster growth rate than non e-commerce sales over the data range provided. The problem in a nutshell:

Using only the raw data, students may initially guess that e-commerce sales have a faster growth rate than non e-commerce sales. The raw data make this readily apparent. E-commerce sales nearly double from 4th quarter to 4th quarter. However, a simple linear regression model produces a counter-intuitive growth rate. A lineal model shows that non e-commerce sales are growing faster. By using the better fitting exponential model, students can see that e-commerce sales do indeed have a faster growth rate than non e-commerce sales during the relevant data range.

While an exponential model fits better than a linear model, is an exponential model the best model to use? That is, does it model reality, or is the fit merely a coincidence. In this case, it's more coincidence. An exponential model has no upper limit, and that isn't very realistic. A logistic growth curve (which includes an upper limit) would probably fit this data over the long run much more closely. Economists may debate the upper limit, but it wouldn't exceed total retail sales, and that figure is likely a function of income. Not coincidently, the bottom portion of a logistic growth curve looks a lot like an exponential growth curve over the relevant range, and so both models would fit the current dataset well.
The graphs produced in questions b and c look very similar and are therefore difficult to interpret. Students must rely on logic (to select the correct model) and on the actual statistics themselves in order to correctly interpret the data.
IX. ANSWERS TO REAL WORLD CASES

RWC 1: Chicago Board of Trade: From Failure to Success in Managing Information Technology

1. What were several major reasons the IT organization had failed at the Chicago Board of Trade? Explain the impact of each on CBOT.

   Discussion points would include:
   - Lack of leadership.
   - Infrastructure was ancient, unreliable and undocumented.
   - Nearly every key process was routed through a group of old, midrange Tandem computers in an environment so complex that developing a new process took more than 90 steps.
   - Project and budget controls were lacking.
   - Quality control was substandard.
   - IT was full of silos and fiefdoms, so there were no economies of scale.
   - IT hadn’t completed a single project in four years.
   - Technology did not have to provide a return for investing the money in it.

2. What were several key management changes and initiatives that Bill Farrow implemented to make IT successful at CBOT? Explain the impact of each on CBOT.

   Discussion points would include:
   - New senior vice president of technology solutions.
   - Inventory of IT was taken by documenting systems and technical architecture.
   - Nailed down vendor relationships and service-level agreements, and evaluated security systems.
   - Built new relationships with skeptical business managers by assigning IT managers to specific business sections, and establishing brainstorming sessions on a regular basis regarding how technology could support business goals.
   - Replaced ancient Tandem systems with Sun Unix servers and Oracle databases.
   - Improved quality assurance by putting IT troubleshooters on the trading floor every day.
   - Established a project management office to centralize the project portfolio and the IT skills pool.
   - Brought ROI to project agendas.
   - Replaced IT personnel with professionals having the skills needed at the CBOT.
3. Does the experience of CBOT prove that “IT is a business function that needs to be managed like any other business function?” Why or why not?

Discussion points by the student should include:

- Their recognition of business skills from this course and text plus what they have gained from other courses and/or work experience.
- Their discussion about what business skills would fit this organization in this industry.
- Encourage the students to develop pros and cons about applying business skills to IT.
- Inadequate planning for improving security features of their system.
RWC 2: Global Exchange Services and Allstate: Challenges and Solutions in Offshore Systems Development

1. What are the business benefits and limitations of sending software development offshore? Use the companies in this case as examples.

Discussion points would include:

- Cost pressures. GXS estimates a savings of $16 million over a three year period.
- Potential for losing control over foreign technology workers.
- Potential for losing control over the quality of IT projects based thousands of miles away.
- Using the “offshore-insourcing” model in which foreign IT workers aren’t contractors but employees of the U.S.-based companies.
- Allstate started using centers overseas due to shortages caused by Y2K and the then-thriving dot-com economy to manage their workforce needs, retained valued employees and reduce costs.

2. What is the business value and limitations of the insourcing model of offshore software development? Use GSX and Allstate as examples.

Discussion points would include:

- Foreign workers receive the same training.
- Use the same software development tools.
- Adhere to the same business processes.
- Employee cost savings.
- Retaining critical business knowledge and intellectual capital.
- Informing U.S.-based workers of plans for distributing various IT projects is critical.
- Making sure that the economics of the local environment are sustainable, that there’s talent, that there’s a quality workforce and that those things aren’t going to change.

3. Should U.S companies send their software development and other IT functions offshore? Why or why not?

Students should be able to develop a list of pros and cons of software development and other IT functions being sent offshore, and would include:

- Cost savings
- Quality assurance
- Stability of the foreign economy
- Retaining critical business knowledge and intellectual capital.
- Employee relations.
RWC 3: Bio-ERA and Burlington Northern Santa Fe: The Business Case for Global Collaborative Development

1. **How is the open source model affecting the development of application software for business?**

   Discussion points would include:
   - Permits the use of a radically different way to build software.
   - Foreshadows the future of a distributed global collaborative model of software development.
   - Results in companies, such as Bio-ERA and Burlington Northern Santa Fe, being able to avoid the complex tasks of software development.
   - Companies can concentrate of running their core business by forming just-in-time teams using outsourced talent for software development.

2. **What are the business benefits of the global or collaborative approach to software development? Use the companies in this case as examples.**

   Discussion points would include:
   - Companies can avoid the complex tasks of software development by creating just-in-time teams using outsourced talent and then spend their time on running their core business.
   - The ability for a company using the global-collaborative approach to get software development done “fast and cheap.”

3. **What are several potential challenges or limitations that might arise when using a global collaborative approach to software development? How can companies address such challenges?**

   Discussion points would include:
   - Companies must have an IT manager who understands software development and has experience managing a distributed team and a platform.
   - Companies must ensure there is sufficient U.S.-based talent for any ad-hoc jobs that may arise.
   - The ability of the company to create an “executive dashboard” for monitoring the software development activities.
RWC 4: Avon Products and Guardian Life Insurance: Successful Management of IT Projects

1. **What are several possible solutions to the failures in IT project management at many companies described at the start of this case? Defend your proposals.**

Discussion points by the students may include:

- Good business-case methodology leads to good project management.
- Use of all of the analytical rigor and financial ROI tools against each of the IT projects.
- Use of “governance” or hard-dollar and metrics-oriented processes for incorporating “soft” costs and benefits into decisions.

2. **What are several key ways that Avon and Guardian assure that their IT projects are completed successfully and support the goals of the business?**

Discussion points would include:

- Avon applies all of the analytical rigor and financial ROI tools against each of their IT projects as well as other business projects including payback, NPV, IRR calculations, and risk analyses.
- Avon uses an investment-tracking database for every IT project to monitor projects costs on a rolling basis to assist management in determining whether a project should be accelerated, delayed or canceled and to assist the organization in forecasting requirements.
- Guardian places emphasis on “governance” by applying NPV and IRR calculations to all IT projects with a five-year cash flow.
- Guardian uses a process for incorporating “soft” costs and benefits into their calculations.
- Guardian monitors IT projects to permit timely modifications.

3. **If you were the manager of a business unit at Avon or Guardian, what are several other things you would like to see their IT group do to assure the success of an IT project for your business unit? Defend your suggestions.**

The discussion by the student could include many concepts drawn from the text and from other business courses. Allowed the students to draw upon other classes and perhaps from work experiences will encourage them to integrate their learning experiences through this case.