Chapter 15
Managing Global Systems

LEARNING OBJECTIVES

After reading this chapter, you will be able to:

1. Identify the major factors driving the internationalization of business.
2. Compare strategies for developing global businesses.
3. Demonstrate how information systems can support different global business strategies.
4. Identify the challenges posed by global information systems and management solutions.
5. Evaluate the issues and technical alternatives to be considered when developing international information systems.

CHAPTER OUTLINE

15.1 THE GROWTH OF INTERNATIONAL INFORMATION SYSTEMS
- Developing an International Information Systems Architecture
- The Global Environment: Business Drivers and Challenges
- State of the Art

15.2 ORGANIZING INTERNATIONAL INFORMATION SYSTEMS
- Global Strategies and Business Organization
- Global Systems to Fit the Strategy
- Reorganizing the Business

15.3 MANAGING GLOBAL SYSTEMS
- A Typical Scenario: Disorganization on a Global Scale
- Global Systems Strategy
- The Management Solution

15.4 TECHNOLOGY ISSUES AND OPPORTUNITIES FOR GLOBAL VALUE CHAINS
- Technology Challenges of Global Systems
- Managing Global Software Development

15.5 HANDS-ON MIS
- Achieving Operational Excellence: Expanding International Sales: Dirt Bikes USA
- Achieving Operational Excellence: Building a Job Database and Web Page for an International Consulting Firm
- Improving Decision Making: Conducting International Marketing and Pricing Research

Interactive Sessions:
Avnet: Developing Systems to Support Global Strategy
Offshore Outsourcing: Good, Bad, or Does Not Make a Difference?
SERVICING OVER 140,000 DESTINATIONS IN OVER 220 COUNTRIES WITH OVERNIGHT AND EXPRESS PACKAGE DELIVERIES POSES A UNIQUE PROBLEM: HOW DO YOU WORK IN VERY UNIQUE LOCAL ENVIRONMENTS, WITH DIFFERENT LANGUAGES, CULTURES, AND LOCAL KNOWLEDGE, WHILE AT THE SAME TIME DELIVER THIS SERVICE ON A GLOBAL, TIME-INTENSE PLATFORM? THIS IS THE QUESTION FACING DHL, A LOGISTICS AND PARCEL DELIVERY BUSINESS WITH WORLDWIDE OPERATIONS. FOUNDED IN 1969 BY ADRIAN DALSEY, LARRY HILLBLOM, AND ROBERT LYNN (THE SOURCE OF D, H, AND L), DHL BEGAN AS A SERVICE SHUTTLING BILLS OF LADING BETWEEN SAN FRANCISCO AND HONOLULU. NOW OWNED BY DEUTSCHE POST WORLD NET, DHL OPERATES A GLOBAL SYSTEM OF 4,400 LOCAL OFFICES, 238 GATEWAYS, AND MORE THAN 450 HUBS, WAREHOUSES, AND Terminals. THE COMPANY EMPLOYS OVER 170,000 PEOPLE. THE COMPANY OFFERS 4.2 MILLION CUSTOMERS WORLDWIDE FAST, RELIABLE, AND COST-EFFICIENT PACKAGE DELIVERY SERVICE AROUND THE WORLD. MORE THAN 400 AIRCRAFT OPERATE FOR OR ON BEHALF OF DHL. KEEPING TRACK OF ITS OWN OPERATIONS, IN ADDITION TO CUSTOMER PACKAGES, IS A MAJOR CHALLENGE FOR DHL.

For DHL, acting locally means that customers and employees would see on their computer screens information on their packages in their local language, databases would contain important country regulations, and local information would be current. Acting globally means that DHL computer systems around the world can check on the status and location of any DHL package, and have that information be current, and accurate within minutes of an event happening. If the information is delayed even more than a few seconds, or wrong, scanners can't operate, planes fly empty, and packages remain in warehouses.

Originally, DHL solved this problem by building over 50 different data centers in each of the major countries where it operated and coordinating these loosely with a common set of core database applications that were installed in each of the countries. The core applications sat on top of a messaging and communications network so information could transfer from one country to another. The core applications included a master common shipment database that kept the tracking information, as well as e-mail programs, customer shipment, transit times, and billing details. The global databases allowed local countries' units to see only the data needed locally, and required them to store only local data.

This arrangement of common global core systems that could be customized to local needs was adequate until traffic volume expanded rapidly in the last decade as global trade pushed the existing system to the limits. With 50 decentralized data centers running supposedly common programs, the risks that any one center or several centers would fail might jeopardize shipments in several countries. Through painful experience, DHL learned that maintaining 50 different IS centers to a single global standard was
difficult in many countries. The company also learned that “the information is more important than the package.” Customers might understand and be sympathetic when hurricanes or tsunamis lead to lost packages, but they are intolerant to the idea that the DHL system failed and cannot tell them where their package is—even if it's at the bottom of the ocean.

In addition, the highly decentralized IS structure raised costs and slowed down change. Upgrades to software programs would have to be deployed in 50 different countries, taking over 18 months. Costs rose because instead of maintaining the computers and programmers in one location, they had to be maintained in 50 locations.

When Managing Director of IT services, Stephen McGuckin, took over the Asian and Middle Eastern operation beginning in the late 1990s, management was increasingly strained by the existing organization of IT. Country managers were flying far too often to regional meetings with one another trying to coordinate policies, and McGuckin estimated that managers lost 20 percent of their productivity. The IT coordinating centers were headquartered in four different, expensive locations: London, Singapore, Hong Kong, and Bahrain. The software was all being developed in the United States which also was very costly. A new set of management processes needed to be built.

McGuckin started moving DHL toward a more centralized arrangement of systems to reduce its risks, decrease its costs, increase the speed with which it could deploy new applications, and raise the reliability of its systems. Beginning in 2000, DHL began concentrating its global computing infrastructure into three low-cost, regional global centers: Cyberjaya (Malaysia), Prague, and Scottsdale, Arizona, in the United States. Each of these regional centers handles the information processing for a group of countries in the region.

In the process of consolidating, McGuckin also changed the management of software production. Initially outsourcing all software development to Infosys, a large Indian-based outsourcing firm, DHL learned how to separate the design work (now done in the U.S.) from the implementation and execution work (now done in India). Costs declined, and quality was enhanced despite an early period of misunderstandings with their outsourcing firm.
By 2006, the consolidation was completed. So far the move seems to have been a success. Costs of maintaining the IT infrastructure have fallen by 40 percent; the time to deploy new applications has fallen to a matter of hours from months. New applications are built in Arizona, deployed to the other two global centers, and in a matter of hours can be deployed to customers and employees who access these centers for all their information needs.


DHL’s transition from a highly decentralized global logistics company towards a more regional global structure illustrates how global firms are adjusting their systems to support the rapid growth in world trade. This case also illustrates the tensions between the need to be locally responsive, and achieve a seamless flow of information across national boundaries in a truly global system.

The chapter-opening diagram calls attention to important points raised by this case and this chapter. DHL’s original solution to building a global logistics support system including package delivery was costly, slow, and difficult to manage. The solution consisted of three parts. DHL changed the organization of its systems by consolidating into three low-cost centers. It changed the management of its systems by also centralizing management in three centers, simplifying management communication, and changed how it managed software development by outsourcing implementation of software designs built in the United States. The technology change involved moving core applications from 50 local servers onto three regional server centers, and strengthening communication links with the local offices to ensure connectivity.

**HEADS UP**

During your career, you may work in a company that operates internationally. To be effective, you will need a global perspective on business and an understanding of the information systems needed to conduct business on an international scale. Special issues must be addressed when developing and managing global information systems. This chapter shows you how to organize, manage, and control the development of global systems.

- If your career is in finance or accounting, you will be using international systems to enable the flow of funds between corporate headquarters and operating units and to facilitate purchases in different countries.
- If your career is in human resources, you will be advising system builders about how to deal with language and cultural differences affecting implementation and use of international systems.
- If your career is in information systems, you will be developing connectivity solutions to link disparate local systems with different technology platforms and working with management to develop standard data definitions and business processes to integrate these systems.
- If your career is in manufacturing, production, or operations management, you will be helping to implement standard supply chain management software or enterprise software to coordinate global manufacturing processes and supply chains.
- If your career is in sales and marketing, you will be setting up Web sites designed for global sales and marketing.
15.1 The Growth of International Information Systems

In earlier chapters, we describe the emergence of a global economic system and global world order driven by advanced networks and information systems. The new world order is sweeping away many national corporations, national industries, and national economies controlled by domestic politicians. Many localized firms will be replaced by fast-moving networked corporations that transcend national boundaries. The growth of international trade has radically altered domestic economies around the globe. Today, the combined value of imports and exports from all nations is about $20 trillion dollars annually, a little less than one-third of the world's total GDP (Gross Domestic Product) of $67 trillion. The United States exports about $1 trillion annually, while importing $1.7 trillion, for a combined $2.7 trillion in trade, or about 22 percent of the U.S. economy. While the world GDP is growing at about 4.7 percent a year, international trade is growing at about 5.6 percent annually (CIA, 2006).

Today, the production and design of many high-end electronic products is parceled out to a number of different countries. Consider the path to market for Hewlett-Packard's ProLiant ML150 server, which is illustrated in Figure 15-1. The idea for the product was hatched in Singapore, which did the initial design work. HP headquarters in Houston approved the concept. Contractors in Taiwan did the machine's engineering design and initial manufacture. Final assembly of the server takes place in Singapore, China, India, and Australia (Buckman, 2004). None of this would be possible without powerful international information and communication systems.

FIGURE 15-1 Global Product Development and Production

A new HP server's path to market:
1. Idea for product hatched in Singapore.
2. Concept approved in Houston.
3. Concept design done in Singapore.
4. Engineering design in Taiwan, where many computer components are made; initial manufacture by a Taiwanese contractor.
5. Final assembly in Singapore, Australia, China, and India. Products made in Australia, China, and India are primarily for those markets; machines made in Singapore go to all of Southeast Asia.

Hewlett-Packard and other electronics companies assign distribution and production of high-end products to a number of different countries.

DEVELOPING AN INTERNATIONAL INFORMATION SYSTEMS ARCHITECTURE

This chapter describes how to go about building an international information systems architecture suitable for your international strategy. An international information systems architecture consists of the basic information systems required by organizations to coordinate worldwide trade and other activities. Figure 15-2 illustrates the reasoning we follow throughout the chapter and depicts the major dimensions of an international information systems portfolio.

The basic strategy to follow when building an international system is to understand the global environment in which your firm is operating. This means understanding the overall market forces, or business drivers, that are pushing your industry toward global competition. A business driver is a force in the environment to which businesses must respond and that influences the direction of the business. Likewise, examine carefully the inhibitors or negative factors that create management challenges—factors that could scuttle the development of a global business. Once you have examined the global environment, you will need to consider a corporate strategy for competing in that environment. How will your firm respond? You could ignore the global market and focus on domestic competition only, sell to the globe from a domestic base, or organize production and distribution around the globe. There are many in-between choices.

After you have developed a strategy, it is time to consider how to structure your organization so it can pursue the strategy. How will you accomplish a division of labor across a global environment? Where will production, administration, accounting, marketing, and human resource functions be located? Who will handle the systems function?

Next, you must consider the management issues in implementing your strategy and making the organization design come alive. Key here will be the

FIGURE 15-2 INTERNATIONAL INFORMATION SYSTEMS ARCHITECTURE

The major dimensions for developing an international information systems architecture are the global environment, the corporate global strategies, the structure of the organization, the management and business processes, and the technology platform.
design of business procedures. How can you discover and manage user requirements? How can you induce change in local units to conform to international requirements? How can you reengineer on a global scale, and how can you coordinate systems development?

The last issue to consider is the technology platform. Although changing technology is a key driving factor leading toward global markets, you need to have a corporate strategy and structure before you can rationally choose the right technology.

After you have completed this process of reasoning, you will be well on your way toward an appropriate international information systems architecture capable of achieving your corporate goals. Let’s begin by looking at the overall global environment.

**THE GLOBAL ENVIRONMENT: BUSINESS DRIVERS AND CHALLENGES**

Table 15-1 lists the business drivers in the global environment that are leading all industries toward global markets and competition.

The global business drivers can be divided into two groups: general cultural factors and specific business factors. Easily recognized general cultural factors have driven internationalization since World War II. Information, communication, and transportation technologies have created a *global village* in which communication (by telephone, television, radio, or computer network) around the globe is no more difficult and not much more expensive than communication down the block. The cost of moving goods and services to and from geographically dispersed locations has fallen dramatically.

The development of global communications has created a global village in a second sense: A *global culture* created by television, the Internet, and other globally shared media such as movies now permits different cultures and peoples to develop common expectations about right and wrong, desirable and undesirable, heroic and cowardly. The collapse of the Eastern bloc has speeded the growth of a world culture enormously, increased support for capitalism and business, and reduced the level of cultural conflict considerably.

A last factor to consider is the growth of a global knowledge base. At the end of World War II, knowledge, education, science, and industrial skills were highly concentrated in North America, Western Europe, and Japan, with the rest of the world euphemistically called the *Third World*. This is no longer true. Latin America, China, India, Southern Asia, and Eastern Europe have

<table>
<thead>
<tr>
<th>TABLE 15-1 GLOBAL BUSINESS DRIVERS</th>
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<tr>
<td><strong>GENERAL CULTURAL FACTORS</strong></td>
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<tr>
<td>Global communication and transportation technologies</td>
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<tr>
<td>Development of global culture</td>
</tr>
<tr>
<td>Emergence of global social norms</td>
</tr>
<tr>
<td>Political stability</td>
</tr>
<tr>
<td>Global knowledge base</td>
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</table>
developed powerful educational, industrial, and scientific centers, resulting in a much more democratically and widely dispersed knowledge base.

These general cultural factors leading toward internationalization result in specific business globalization factors that affect most industries. The growth of powerful communications technologies and the emergence of world cultures create the condition for global markets—global consumers interested in consuming similar products that are culturally approved. Coca-Cola, American sneakers (made in Korea but designed in Los Angeles), and Cable News Network (CNN) programming can now be sold in Latin America, Africa, and Asia.

Responding to this demand, global production and operations have emerged with precise online coordination between far-flung production facilities and central headquarters thousands of miles away. At Sealand Transportation, a major global shipping company based in Newark, New Jersey, shipping managers in Newark can watch the loading of ships in Rotterdam online, check trim and ballast, and trace packages to specific ship locations as the activity proceeds. This is all possible through an international satellite link.

The new global markets and pressure toward global production and operation have called forth whole new capabilities for global coordination of all factors of production. Not only production but also accounting, marketing and sales, human resources, and systems development (all the major business functions) can be coordinated on a global scale.

Frito-Lay, for instance, can develop a marketing sales-force automation system in the United States and, once provided, may try the same techniques and technologies in Spain. Micromarketing—marketing to very small geographic and social units—no longer means marketing to neighborhoods in the United States, but to neighborhoods throughout the world! These new levels of global coordination permit for the first time in history the location of business activity according to comparative advantage. Design should be located where it is best accomplished, as should marketing, production, and finance.

Finally, global markets, production, and administration create the conditions for powerful, sustained global economies of scale. Production driven by worldwide global demand can be concentrated where it can best be accomplished, fixed resources can be allocated over larger production runs, and production runs in larger plants can be scheduled more efficiently and precisely estimated. Lower cost factors of production can be exploited wherever they emerge. The result is a powerful strategic advantage to firms that can organize globally. These general and specific business drivers have greatly enlarged world trade and commerce.

Not all industries are similarly affected by these trends. Clearly, manufacturing has been much more affected than services that still tend to be domestic and highly inefficient. However, the localism of services is breaking down in telecommunications, entertainment, transportation, financial services, and general business services including law. Clearly, those firms within an industry that can understand the internationalization of the industry and respond appropriately will reap enormous gains in productivity and stability.

**Business Challenges**

Although the possibilities of globalization for business success are significant, fundamental forces are operating to inhibit a global economy and to disrupt international business. Table 15-2 lists the most common and powerful challenges to the development of global systems.
At a cultural level, particularism, making judgments and taking action on the basis of narrow or personal characteristics, in all its forms (religious, nationalistic, ethnic, regionalism, geopolitical position) rejects the very concept of a shared global culture and rejects the penetration of domestic markets by foreign goods and services. Differences among cultures produce differences in social expectations, politics, and ultimately legal rules. In certain countries, such as the United States, consumers expect domestic name-brand products to be built domestically and are disappointed to learn that much of what they thought of as domestically produced is in fact foreign made.

Different cultures produce different political regimes. Among the many different countries of the world are different laws governing the movement of information, information privacy of their citizens, origins of software and hardware in systems, and radio and satellite telecommunications. Even the hours of business and the terms of business trade vary greatly across political cultures. These different legal regimes complicate global business and must be considered when building global systems.

For instance, European countries have very strict laws concerning transborder data flow and privacy. Transborder data flow is defined as the movement of information across international boundaries in any form. Some European countries prohibit the processing of financial information outside their boundaries or the movement of personal information to foreign countries. The European Union Data Protection Directive, which went into effect in October 1998, restricts the flow of any information to countries (such as the United States) that do not meet strict European information laws on personal information. Financial services, travel, and health care companies could be directly affected. In response, most multinational firms develop information systems within each European country to avoid the cost and uncertainty of moving information across national boundaries.

Cultural and political differences profoundly affect organizations’ business processes and applications of information technology. A host of specific barriers arise from the general cultural differences, everything from different reliability of phone networks to the shortage of skilled consultants.

National laws and traditions have created disparate accounting practices in various countries, which impact the ways profits and losses are analyzed. German companies generally do not recognize the profit from a venture until the project is completely finished and they have been paid. Conversely, British firms begin posting profits before a project is completed, when they are reasonably certain they will get the money.
These accounting practices are tightly intertwined with each country’s legal system, business philosophy, and tax code. British, U.S., and Dutch firms share a predominantly Anglo-Saxon outlook that separates tax calculations from reports to shareholders to focus on showing shareholders how fast profits are growing. Continental European accounting practices are less oriented toward impressing investors, focusing rather on demonstrating compliance with strict rules and minimizing tax liabilities. These diverging accounting practices make it difficult for large international companies with units in different countries to evaluate their performance.

Language remains a significant barrier. Although English has become a kind of standard business language, this is truer at higher levels of companies and not throughout the middle and lower ranks. Software may have to be built with local language interfaces before a new information system can be successfully implemented.

Currency fluctuations can play havoc with planning models and projections. A product that appears profitable in Mexico or Japan may actually produce a loss because of changes in foreign exchange rates.

These inhibiting factors must be taken into account when you are designing and building international systems for your business. For example, companies trying to implement “lean production” systems spanning national boundaries typically underestimate the time, expense, and logistical difficulties of making goods and information flow freely across different countries.

**STATE OF THE ART**

One might think, given the opportunities for achieving competitive advantages as outlined previously and the interest in future applications, that most international companies have rationally developed marvelous international systems architectures. Nothing could be further from the truth. Most companies have inherited patchwork international systems from the distant past, often based on concepts of information processing developed in the 1960s—batch-oriented reporting from independent foreign divisions to corporate headquarters, manual entry of data from one legacy system to another, with little online control and communication. Corporations in this situation increasingly face powerful competitive challenges in the marketplace from firms that have rationally designed truly international systems. Still other companies have recently built technology platforms for international systems but have nowhere to go because they lack global strategy.

As it turns out, there are significant difficulties in building appropriate international architectures. The difficulties involve planning a system appropriate to the firm’s global strategy, structuring the organization of systems and business units, solving implementation issues, and choosing the right technical platform. Let’s examine these problems in greater detail.

**15.2 ORGANIZING INTERNATIONAL INFORMATION SYSTEMS**

Three organizational issues face corporations seeking a global position: choosing a strategy, organizing the business, and organizing the systems management area. The first two are closely connected, so we discuss them together.
Four main global strategies form the basis for global firms' organizational structure. These are domestic exporter, multinational, franchiser, and transnational. Each of these strategies is pursued with a specific business organizational structure (see Table 15-3). For simplicity's sake, we describe three kinds of organizational structure or governance: centralized (in the home country), decentralized (to local foreign units), and coordinated (all units participate as equals). Other types of governance patterns can be observed in specific companies (e.g., authoritarian dominance by one unit, a confederacy of equals, a federal structure balancing power among strategic units, and so forth).

The **domestic exporter** strategy is characterized by heavy centralization of corporate activities in the home country of origin. Nearly all international companies begin this way, and some move on to other forms. Production, finance/accounting, sales/marketing, human resources, and strategic management are set up to optimize resources in the home country. International sales are sometimes dispersed using agency agreements or subsidiaries, but even here foreign marketing is totally reliant on the domestic home base for marketing themes and strategies. Caterpillar Corporation and other heavy capital-equipment manufacturers fall into this category of firm.

The **multinational** strategy concentrates financial management and control out of a central home base while decentralizing production, sales, and marketing operations to units in other countries. The products and services on sale in different countries are adapted to suit local market conditions. The organization becomes a far-flung confederation of production and marketing facilities in different countries. Many financial service firms, along with a host of manufacturers, such as General Motors, Chrysler, and Intel, fit this pattern.

Franchisers are an interesting mix of old and new. On the one hand, the product is created, designed, financed, and initially produced in the home country, but for product-specific reasons must rely heavily on foreign personnel for further production, marketing, and human resources. Food franchisers such as McDonald's, Mrs. Fields Cookies, and KFC fit this pattern. McDonald's created a new form of fast-food chain in the United States and continues to rely largely on the United States for inspiration of new products, strategic management, and financing. Nevertheless, because the product must be produced locally—it is perishable—extensive coordination and dispersal of production, local marketing, and local recruitment of personnel are required.

### Table 15-3 Global Business Strategy and Structure

<table>
<thead>
<tr>
<th>BUSINESS FUNCTION</th>
<th>DOMESTIC EXPORTER</th>
<th>MULTINATIONAL</th>
<th>FRANCHISER</th>
<th>TRANSNATIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>Centralized</td>
<td>Dispersed</td>
<td>Coordinated</td>
<td>Coordinated</td>
</tr>
<tr>
<td>Finance/Accounting</td>
<td>Centralized</td>
<td>Centralized</td>
<td>Centralized</td>
<td>Coordinated</td>
</tr>
<tr>
<td>Sales/Marketing</td>
<td>Mixed</td>
<td>Dispersed</td>
<td>Coordinated</td>
<td>Coordinated</td>
</tr>
<tr>
<td>Human Resources</td>
<td>Centralized</td>
<td>Centralized</td>
<td>Coordinated</td>
<td>Coordinated</td>
</tr>
<tr>
<td>Strategic Management</td>
<td>Centralized</td>
<td>Centralized</td>
<td>Centralized</td>
<td>Coordinated</td>
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Generally, foreign franchisees are clones of the mother country units, but fully coordinated worldwide production that could optimize factors of production is not possible. For instance, potatoes and beef can generally not be bought where they are cheapest on world markets but must be produced reasonably close to the area of consumption.

Transnational firms are the stateless, truly globally managed firms that may represent a larger part of international business in the future. Transnational firms have no single national headquarters but instead have many regional headquarters and perhaps a world headquarters. In a **transnational** strategy, nearly all the value-adding activities are managed from a global perspective without reference to national borders, optimizing sources of supply and demand wherever they appear, and taking advantage of any local competitive advantages. Transnational firms take the globe, not the home country, as their management frame of reference. The governance of these firms has been likened to a federal structure in which there is a strong central management core of decision making, but considerable dispersal of power and financial muscle throughout the global divisions. Few companies have actually attained transnational status, but Citicorp, Sony, Ford, and others are attempting this transition.

Information technology and improvements in global telecommunications are giving international firms more flexibility to shape their global strategies. Protectionism and a need to serve local markets better encourage companies to disperse production facilities and at least become multinational. At the same time, the drive to achieve economies of scale and take advantage of short-term local advantage moves transnationals toward a global management perspective and a concentration of power and authority. Hence, there are forces of decentralization and dispersal, as well as forces of centralization and global coordination.

### GLOBAL SYSTEMS TO FIT THE STRATEGY

Information technology and improvements in global telecommunications are giving international firms more flexibility to shape their global strategies. The configuration, management, and development of systems tend to follow the global strategy chosen (Ives, et al., 1993; Roche, 1992; Ives and Jarvenpaa, 1991). Figure 15-3 depicts the typical arrangements. By **systems** we mean the

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**FIGURE 15-3 GLOBAL STRATEGY AND SYSTEMS CONFIGURATIONS**

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<thead>
<tr>
<th>SYSTEM CONFIGURATION</th>
<th>Strategy</th>
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<tbody>
<tr>
<td></td>
<td>Domestic Exporter</td>
</tr>
<tr>
<td>Centralized</td>
<td>X</td>
</tr>
<tr>
<td>Duplicated</td>
<td></td>
</tr>
<tr>
<td>Decentralized</td>
<td>X</td>
</tr>
<tr>
<td>Networked</td>
<td></td>
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The large Xs show the dominant patterns, and the small Xs show the emerging patterns. For instance, domestic exporters rely predominantly on centralized systems, but there is continual pressure and some development of decentralized systems in local marketing regions.
full range of activities involved in building and operating information systems: conception and alignment with the strategic business plan, systems development, and ongoing operation and maintenance. For the sake of simplicity, we consider four types of systems configuration. Centralized systems are those in which systems development and operation occur totally at the domestic home base. Duplicated systems are those in which development occurs at the home base but operations are handed over to autonomous units in foreign locations. Decentralized systems are those in which each foreign unit designs its own unique solutions and systems. Networked systems are those in which systems development and operations occur in an integrated and coordinated fashion across all units.

As can be seen in Figure 15-3, domestic exporters tend to have highly centralized systems in which a single domestic systems development staff develops worldwide applications. Multinationals offer a direct and striking contrast: Here, foreign units devise their own systems solutions based on local needs with few if any applications in common with headquarters (the exceptions being financial reporting and some telecommunications applications). Franchisers have the simplest systems structure: Like the products they sell, franchisers develop a single system usually at the home base and then replicate it around the world. Each unit, no matter where it is located, has identical applications. Last, the most ambitious form of systems development is found in the transnational: Networked systems are those in which there is a solid, singular global environment for developing and operating systems. This usually presupposes a powerful telecommunications backbone, a culture of shared applications development, and a shared management culture that crosses cultural barriers. The networked systems structure is the most visible in financial services where the homogeneity of the product—money and money instruments—seems to overcome cultural barriers.

REORGANIZING THE BUSINESS

How should a firm organize itself for doing business on an international scale? To develop a global company and information systems support structure, a firm needs to follow these principles:

1. Organize value-adding activities along lines of comparative advantage. For instance, marketing/sales functions should be located where they can best be performed, for least cost and maximum impact; likewise with production, finance, human resources, and information systems.

2. Develop and operate systems units at each level of corporate activity—regional, national, and international. To serve local needs, there should be host country systems units of some magnitude. Regional systems units should handle telecommunications and systems development across national boundaries that take place within major geographic regions (European, Asian, American). Transnational systems units should be established to create the linkages across major regional areas and coordinate the development and operation of international telecommunications and systems development (Roche, 1992).

3. Establish at world headquarters a single office responsible for development of international systems, a global chief information officer (CIO) position.
You probably have not heard of Avnet Inc.—or its leading competitor Arrow Electronics—but chances are the computer you are using these days has components purchased from one of these distributors, if not the entire computer. Avnet is number 212 on the list of Fortune 500 firms, and number three on InformationWeek’s list of most innovative users of information systems. Avnet and Arrow are two American-based firms that together dominate the world market for electronic parts, connectors, components, and computers, with a 60-percent global market share. While locked in competition for the remaining 40 percent of the world market, Avnet and Arrow have each adopted different business strategies for future growth, and each has a different idea about how to use information systems to support corporate growth.

Beginning as a radio-parts distributor started by Charles Avnet in 1921 in New York City, the company went public in 1959 and was managed by his sons. Since 1991, the company has been on a growth tear, purchasing 43 companies including British semiconductor distributor Access Group. About 60 percent of its business involves component distribution, and the rest distributing computers which it purchases from computer manufacturers and resells to corporations and large retail outlets. Avnet, like Arrow, is a middleman between manufacturers and ultimate end users. It’s also a key supplier of industrial electronic components to the computer industries.

In 2001, Avnet had completed its expansion in Europe, and began moving into China and Asian markets by purchasing China’s Sunrise Technology. In 2005, it purchased Memec Group Holdings, a $2 billion purchase of China’s largest electronic components distributor.

Because it was so dependent on acquisitions and rapid integration of newly purchased companies, Avnet developed what it calls its “Cookbook” for acquisitions. Composed of more than 1,000 pages stored on Avnet servers, the Cookbook contains Avnet’s accumulated wisdom on how to integrate new companies into Avnet’s business process and information systems. It has chapters on human resources, finances, IT/IS, logistics, materials, sales, and marketing. You can think of the Cookbook as an encyclopedia of business processes for Avnet.

Rather than force all its acquisitions to adopt Avnet’s American systems, Avnet has divided the world into three regions, each with its own regional enterprise resource planning (ERP) and related systems. The goal was—for the sake of speed of integration of newly acquired companies—to integrate new acquisitions tightly and smoothly within each region, and allow regional managers a certain degree of freedom in choosing how they organized their business within the region. When acquiring new companies, it tries to use the best systems from each company and not always its own. In the case of Memec, it chose to use the Avnet regional Asian system rather than Memec’s own global system because it would lower the costs of training Avnet employees who otherwise would have to learn an entirely new system.

Avnet successfully integrated the Memec business and employees into its Asian system. Avnet now runs two regional ERP systems: SAP in Asia, and a custom-built mainframe system called Genesis in the United States. In Europe, Avnet runs 10 different SAP systems, nearly one for each European country where it does business, but it is attempting to consolidate them into a single European SAP system in the future.

The Cookbook has been very useful for ensuring commonality of business processes around the world despite different ERP systems in major regions and countries. The Cookbook goes into considerable detail on how to set up and process financial transactions, coordinate orders, pay accounts, and assign responsibility for transactions.

Arrow too has begun making acquisitions in Asia, most notably, purchasing a large Taiwanese distributor, Ultra Source Technology. Using a similar collection of best business practices it calls “the Playbook,” Arrow once integrated a newly acquired company into the Arrow global systems in a single weekend. But Arrow, according to its executives, may rely less on acquisitions in Asia than on trading relationships with existing Asian distributors. They want to focus not just on revenue growth, but profit growth. They believe the costs of acquisitions may outweigh the profit benefits. Unlike Avnet, Arrow is pursuing a one-world, one system, strategy. In 2007, Arrow plans to be using a single Oracle financial system, and is working on plans for a single, global
ERP system to replace a hodgepodge of ERP systems that have sprung up around its global operations. “We want to move towards more conformity,” explained one Arrow executive, “while trying to recognize the uniqueness of each market, we want to have a global view of the whole company when it makes sense for us.” Without a single global system, they believe, it’s difficult to view the company as a truly global entity.


### CASE STUDY QUESTIONS

1. Review Table 15-3 and then contrast and compare the global strategies of Avnet and Arrow. Are they the same or different?

2. Review Figure 15-3 and compare and contrast the Avnet system building strategy with that of Arrow. Has each company made the “correct” choice given their strategies?

3. Identify the risks which Avnet incurs by pursuing its regional strategy. What are the off-setting benefits?

4. Do you believe for this product and market that a multinational strategy is superior to a transnational strategy? Why or why not?

### MIS IN ACTION

1. Go to the Avnet Web site (www.avnet.com) and identify (a) how many countries it operates in, and (b) how its revenues are divided among the major regions of North America, Europe, and Asia.

2. At the Avnet Web site, explore the sections on Avnet's Management Technologies and their logistics services. These are quite separate businesses from operating a global parts distribution system. Or are they? How is Avnet leveraging its investment in distribution systems?

3. Visit Avnet's largest competitor, Arrow Electronics Inc. (www.arrow.com). Compare Avnet's financial performance (revenue growth, operating margins, and net income) with that of Arrow over the last three years. Include their three-year stock price performance. Which of these companies has an edge in financial performance? How do their different global strategies, and systems, contribute to differences in their financial performance?

Many successful companies have devised organizational systems structures along these principles. The success of these companies relies not only on the proper organization of activities, but also on a key ingredient—a management team that can understand the risks and benefits of international systems and that can devise strategies for overcoming the risks. We turn to these management topics next.

### 15.3 MANAGING GLOBAL SYSTEMS

Table 15-4 lists the principal management problems posed by developing international systems. It is interesting to note that these problems are the chief difficulties managers experience in developing ordinary domestic systems as well. But these are enormously complicated in the international environment.
A TYPICAL SCENARIO: DISORGANIZATION ON A GLOBAL SCALE

Let’s look at a common scenario. A traditional multinational consumer-goods company based in the United States and operating in Europe would like to expand into Asian markets and knows that it must develop a transnational strategy and a supportive information systems structure. Like most multinationals, it has dispersed production and marketing to regional and national centers while maintaining a world headquarters and strategic management in the United States. Historically, it has allowed each of the subsidiary foreign divisions to develop its own systems. The only centrally coordinated system is financial controls and reporting. The central systems group in the United States focuses only on domestic functions and production.

The result is a hodgepodge of hardware, software, and telecommunications. The e-mail systems between Europe and the United States are incompatible. Each production facility uses a different manufacturing resources planning system (or a different version of the same ERP system), and different marketing, sales, and human resource systems. Hardware and database platforms are wildly different. Communications between different sites are poor, given the high-cost European intercountry communications. The central systems group at headquarters in the United States recently was decimated and dispersed to the U.S. local sites in the hope of serving local needs better and reducing costs.

What do you recommend to the senior management leaders of this company, who now want to pursue a transnational strategy and develop an information systems architecture to support a highly coordinated global systems environment? Consider the problems you face by reexamining Table 15-4. The foreign divisions will resist efforts to agree on common user requirements; they have never thought about much other than their own units’ needs. The systems groups in American local sites, which have been enlarged recently and told to focus on local needs, will not easily accept guidance from anyone recommending a transnational strategy. It will be difficult to convince local managers anywhere in the world that they should change their business procedures to align with other units in the world, especially if this might interfere with their local performance. After all, local managers are rewarded in this company for meeting local objectives of their division or plant. Finally, it will be difficult to coordinate development of projects around the world in the absence of a powerful telecommunications network and, therefore, difficult to encourage local users to take on ownership in the systems developed.

<table>
<thead>
<tr>
<th>TABLE 15-4</th>
<th>MANAGEMENT CHALLENGES IN DEVELOPING GLOBAL SYSTEMS</th>
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<tbody>
<tr>
<td>Agreeing on common user requirements</td>
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<td>Introducing changes in business processes</td>
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<td>Coordinating applications development</td>
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<td>Coordinating software releases</td>
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<tr>
<td>Encouraging local users to support global systems</td>
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GLOBAL SYSTEMS STRATEGY

Figure 15-4 lays out the main dimensions of a solution. First, consider that not all systems should be coordinated on a transnational basis; only some core systems are truly worth sharing from a cost and feasibility point of view. Core systems are systems that support functions that are absolutely critical to the organization. Other systems should be partially coordinated because they share key elements, but they do not have to be totally common across national boundaries. For such systems, a good deal of local variation is possible and desirable. A final group of systems is peripheral, truly provincial, and needed to suit local requirements only.

Define the Core Business Processes

How do you identify core systems? The first step is to define a short list of critical core business processes. Business processes are defined and described in Chapter 2, which you should review. Briefly, business processes are sets of logically related tasks to produce specific business results, such as shipping out correct orders to customers or delivering innovative products to the market. Each business process typically involves many functional areas, communicating and coordinating work, information, and knowledge.

The way to identify these core business processes is to conduct a business process analysis. How are customer orders taken, what happens to them once they are taken, who fills the orders, how are they shipped to the customers?
What about suppliers? Do they have access to manufacturing resource planning systems so that supply is automatic? You should be able to identify and set priorities in a short list of 10 business processes that are absolutely critical for the firm.

Next, can you identify centers of excellence for these processes? Is the customer order fulfillment superior in the United States, manufacturing process control superior in Germany, and human resources superior in Asia? You should be able to identify some areas of the company, for some lines of business, where a division or unit stands out in the performance of one or several business functions.

When you understand the business processes of a firm, you can rank-order them. You then can decide which processes should be core applications, centrally coordinated, designed, and implemented around the globe, and which should be regional and local. At the same time, by identifying the critical business processes, the really important ones, you have gone a long way to defining a vision of the future that you should be working toward.

**Identify the Core Systems to Coordinate Centrally**

By identifying the critical core business processes, you begin to see opportunities for transnational systems. The second strategic step is to conquer the core systems and define these systems as truly transnational. The financial and political costs of defining and implementing transnational systems are extremely high. Therefore, keep the list to an absolute minimum, letting experience be the guide and erring on the side of minimalism. By dividing off a small group of systems as absolutely critical, you divide opposition to a transnational strategy. At the same time, you can appease those who oppose the central worldwide coordination implied by transnational systems by permitting peripheral systems development to progress unabated, with the exception of some technical platform requirements.

**Choose an Approach: Incremental, Grand Design, Evolutionary**

A third step is to choose an approach. Avoid piecemeal approaches. These surely will fail for lack of visibility, opposition from all who stand to lose from transnational development, and lack of power to convince senior management that the transnational systems are worth it. Likewise, avoid grand design approaches that try to do everything at once. These also tend to fail, because of an inability to focus resources. Nothing gets done properly, and opposition to organizational change is needlessly strengthened because the effort requires huge resources. An alternative approach is to evolve transnational applications incrementally from existing applications with a precise and clear vision of the transnational capabilities the organization should have in five years. This is sometimes referred to as the “salami strategy,” or one slice at a time.

**Make the Benefits Clear**

What is in it for the company? One of the worst situations to avoid is to build global systems for the sake of building global systems. From the beginning, it is crucial that senior management at headquarters and foreign division managers clearly understand the benefits that will come to the company as well as to individual units. Although each system offers unique benefits to a particular budget, the overall contribution of global systems lies in four areas.
Global systems—truly integrated, distributed, and transnational systems—contribute to superior management and coordination. A simple price tag cannot be put on the value of this contribution, and the benefit will not show up in any capital budgeting model. It is the ability to switch suppliers on a moment’s notice from one region to another in a crisis, the ability to move production in response to natural disasters, and the ability to use excess capacity in one region to meet raging demand in another.

A second major contribution is vast improvement in production, operation, and supply and distribution. Imagine a global value chain, with global suppliers and a global distribution network. For the first time, senior managers can locate value-adding activities in regions where they are most economically performed.

Third, global systems mean global customers and global marketing. Fixed costs around the world can be amortized over a much larger customer base. This will unleash new economies of scale at production facilities.

Last, global systems mean the ability to optimize the use of corporate funds over a much larger capital base. This means, for instance, that capital in a surplus region can be moved efficiently to expand production of capital—starved regions; that cash can be managed more effectively within the company and put to use more effectively.

These strategies will not by themselves create global systems. You will have to implement what you strategize.

THE MANAGEMENT SOLUTION

We now can reconsider how to handle the most vexing problems facing managers developing the global information systems architectures that were described in Table 15-4.

Agreeing on Common User Requirements
Establishing a short list of the core business processes and core support systems will begin a process of rational comparison across the many divisions of the company, develop a common language for discussing the business, and naturally lead to an understanding of common elements (as well as the unique qualities that must remain local).

Introducing Changes in Business Processes
Your success as a change agent will depend on your legitimacy, your actual raw power, and your ability to involve users in the change design process. Legitimacy is defined as the extent to which your authority is accepted on grounds of competence, vision, or other qualities. The selection of a viable change strategy, which we have defined as evolutionary but with a vision, should assist you in convincing others that change is feasible and desirable. Involving people in change, and assuring them that change is in the best interests of the company and their local units, is a key tactic.

Coordinating Applications Development
Choice of change strategy is critical for this problem. At the global level, there is far too much complexity to attempt a grand design strategy of change. It is far easier to coordinate change by making small incremental steps toward a larger vision. Imagine a five-year plan of action rather than a two-year plan of action, and reduce the set of transnational systems to a bare minimum to reduce coordination costs.
Coordinating Software Releases
Firms can institute procedures to ensure that all operating units convert to new software updates at the same time so that everyone’s software is compatible.

Encouraging Local Users to Support Global Systems
The key to this problem is to involve users in the creation of the design without giving up control over the development of the project to parochial interests. The overall tactic for dealing with resistant local units in a transnational company is cooptation. Cooptation is defined as bringing the opposition into the process of designing and implementing the solution without giving up control over the direction and nature of the change. As much as possible, raw power should be avoided. Minimally, however, local units must agree on a short list of transnational systems, and raw power may be required to solidify the idea that transnational systems of some sort are truly required.

How should cooptation proceed? Several alternatives are possible. One alternative is to permit each country unit the opportunity to develop one transnational application first in its home territory, and then throughout the world. In this manner, each major country systems group is given a piece of the action in developing a transnational system, and local units feel a sense of ownership in the transnational effort. On the downside, this assumes the ability to develop high-quality systems is widely distributed, and that, a German team, for example, can successfully implement systems in France and Italy. This will not always be the case.

A second tactic is to develop new transnational centers of excellence, or a single center of excellence. There may be several centers around the globe that focus on specific business processes. These centers draw heavily from local national units, are based on multinational teams, and must report to worldwide management. Centers of excellence perform the initial identification and specification of business processes, define the information requirements, perform the business and systems analysis, and accomplish all design and testing. Implementation, however, and pilot testing are rolled out to other parts of the globe. Recruiting a wide range of local groups to transnational centers of excellence helps send the message that all significant groups are involved in the design and will have an influence.

Even with the proper organizational structure and appropriate management choices, it is still possible to stumble over technology issues. Choices of technology platforms, networks, hardware, and software are the final element in building transnational information system architectures.

15.4 Technology Issues and Opportunities for Global Value Chains
Once firms have defined a global business model and systems strategy, they must select hardware, software, and networking standards along with key system applications to support global business processes. Many companies today are using teams in other countries to develop and run their software and hardware, so they’ll need to address the challenges of managing global teams and global technology services as well.
TECHNOLOGY CHALLENGES OF GLOBAL SYSTEMS

Hardware, software, and networking pose special technical challenges in an international setting. One major challenge is finding some way to standardize a global computing platform when there is so much variation from operating unit to operating unit and from country to country. Another major challenge is finding specific software applications that are user friendly and that truly enhance the productivity of international work teams. The universal acceptance of the Internet around the globe has greatly reduced networking problems. But the mere presence of the Internet does not guarantee that information will flow seamlessly throughout the global organization because not all business units use the same applications, and the quality of Internet service can be highly variable (just as with the telephone service). For instance, German business units may use a Linux-based collaboration tool to share documents and communicate, which is incompatible with American headquarters teams which use Lotus Notes. Overcoming these challenges requires systems integration and connectivity on a global basis.

Computing Platforms and Systems Integration

The development of a transnational information systems architecture based on the concept of core systems raises questions about how the new core systems will fit in with the existing suite of applications developed around the globe by different divisions, different people, and for different kinds of computing hardware. The goal is to develop global, distributed, and integrated systems to support digital business processes spanning national boundaries. Briefly, these are the same problems faced by any large domestic systems development effort. However, the problems are magnified in an international environment. Just imagine the challenge of integrating systems based on the Windows, Linux, Unix, or proprietary operating systems running on IBM, Sun, Hewlett-Packard, and other hardware in many different operating units in many different countries!

Moreover, having all sites use the same hardware and operating system does not guarantee integration. Some central authority in the firm must establish data, as well as other technical standards, with which sites are to comply. For instance, technical accounting terms, such as the beginning and end of the fiscal year, must be standardized (review the earlier discussion of the cultural challenges to building global businesses), as well as the acceptable interfaces between systems, communication speeds and architectures, and network software.

Connectivity

Truly integrated global systems must have connectivity—the ability to link together the systems and people of a global firm into a single integrated network just like the phone system but capable of voice, data, and image transmissions. The Internet has provided an enormously powerful foundation for providing connectivity among the dispersed units of global firms. However, many issues remain. The public Internet does not guarantee any level of service (even in the U.S.) Few global corporations trust the security of the Internet and generally use private networks to communicate sensitive data, and Internet-based virtual private networks (VPNs) for communications that require less security. Not all countries support even basic Internet service, which requires obtaining reliable circuits, coordinating among different carriers and the regional telecommunications authority, obtaining bills in a common currency standard, and obtaining standard agreements for the level of telecommunications service provided. Table 15-5 lists the major challenges posed by international networks.
An increasingly attractive alternative is to create global networks based on the Internet and Internet technology. Companies can create global intranets for internal communication or extranets to exchange information more rapidly with business partners in their supply chains. They can use the public Internet to create global networks using VPNs from Internet service providers, which provide many features of a private network using the public Internet (see Chapter 7). However, VPNs may not provide the same level of quick and predictable response as private networks, especially during times of the day when Internet traffic is very congested, and they may not be able to support large numbers of remote users.

Low penetration of PCs and widespread illiteracy limit demand for Internet service in many developing countries (see Figure 15-5). Where an infrastructure exists in less-developed countries, it is often outdated, lacks digital circuits, and has very noisy lines. The purchasing power of most people in developing countries makes access to Internet services very expensive. Many countries monitor transmissions. Governments in China, Singapore, Iran, and Saudi

### TABLE 15-5 PROBLEMS OF INTERNATIONAL NETWORKS

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<th>Problem</th>
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<tr>
<td>Quality of Service</td>
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<tr>
<td>Security</td>
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<tr>
<td>Costs and tariffs</td>
</tr>
<tr>
<td>Network management</td>
</tr>
<tr>
<td>Installation delays</td>
</tr>
<tr>
<td>Poor quality of international service</td>
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<tr>
<td>Regulatory constraints</td>
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<td>Network capacity</td>
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### FIGURE 15-5 INTERNET POPULATION IN SELECTED COUNTRIES

The percentage of the total population using the Internet in developing countries is much smaller than in the United States and Europe.

*Source: CIA World Factbook, 2005.*
Arabia monitor Internet traffic and block access to Web sites considered morally or politically offensive.

Software
The development of core systems poses unique challenges for application software: How will the old systems interface with the new? Entirely new interfaces must be built and tested if old systems are kept in local areas (which is common). These interfaces can be costly and messy to build. If new software must be created, another challenge is to build software that can be realistically used by multiple business units from different countries given these business units are accustomed to their unique business processes and definitions of data.

Aside from integrating the new with the old systems, there are problems of human interface design and functionality of systems. For instance, to be truly useful for enhancing productivity of a global workforce, software interfaces must be easily understood and mastered quickly. Graphical user interfaces are ideal for this but presuppose a common language—often English. When international systems involve knowledge workers only, English may be the assumed international standard. But as international systems penetrate deeper into management and clerical groups, a common language may not be assumed and human interfaces must be built to accommodate different languages and even conventions.

What are the most important software applications? Many international systems focus on basic transaction and management reporting systems. Increasingly, firms are turning to supply chain management and enterprise systems to standardize their business processes on a global basis and to create coordinated global supply chains. However, these cross-functional systems are not always compatible with differences in languages, cultural heritages, and business processes in other countries (Martinons, 2004; Liang et al., 2004; Davison, 2002). Company units in countries that are not technically sophisticated may also encounter problems trying to manage the technical complexities of enterprise applications.

Electronic Data Interchange (EDI) systems and supply chain management systems are widely used by manufacturing and distribution firms to connect to suppliers on a global basis. Groupware systems, e-mail, and videoconferencing are especially important worldwide collaboration tools for knowledge- and data-based firms, such as advertising firms, research-based firms in medicine and engineering, and graphics and publishing firms. Internet-based tools will be increasingly employed for such purposes.

MANAGING GLOBAL SOFTWARE DEVELOPMENT
Both global and domestic firms increasingly are managing their hardware and software resources using global teams. Sometimes these teams work for the firm at offshore locations, and in some instances, these teams are working for external vendors in offshore locations. This practice is called offshore software outsourcing and it’s becoming wildly popular. In 2007, Forrester Research Group predicts U.S. firms will spend $95 billion on offshore outsourcing to India (the largest recipient of outsourced jobs) of approximately 200,000 IT jobs. (Forrester Research, 2004; eMarketer, 2004). According to Gartner and other consulting groups, CIOs of major U.S. corporations are under considerable pressure to outsource as much of their non-strategic systems development work as feasible in order to reduce the cost of IS operations (McCue, 2006). The
reasons for offshore outsourcing are very compelling: A skilled programmer in India or Russia earns about US$10,000 per year, compared to $70,000 per year for a comparable programmer in the United States. The Internet has drastically lowered the cost of communicating with and coordinating offshore development teams. In addition to cost savings, outsourcing provides firms with access to world-class complementary technology assets and skills.

There is a very strong chance that at some point in your career, you will be working with offshore outsourcers or global teams. Thus, it is very important to understand how offshore resources can best be managed. Not all work can be exported, special managerial and organizational issues must be addressed, and the savings are not as great as simple wage comparisons suggest (Krishna, Sahay and Walsham, 2004).

Your firm is most likely to benefit from outsourcing if it takes the time to evaluate all the risks and to make sure outsourcing is appropriate for its particular needs. Any company that outsources its applications must thoroughly understand the project, including requirements, method of implementation, source of expected benefits, cost components, and metrics for measuring performance.

Offshore outsourcing can reduce software development costs, but companies will not save as much as they initially think. There are hidden costs to offshore outsourcing, and these costs can increase the total cost of ownership (TCO) of offshore-developed software by over 50 percent. Here are the major cost components of offshore software development:

- **Contract cost.** Most of this cost is for labor required by the project—programmers, software engineers, systems analysts, network specialists, project team managers.

- **Vendor selection costs.** With any outsourced service, the expense of selecting a service provider can run from 0.1 percent to 10 percent in addition to the cost of the contract. Companies will need to allocate resources for documenting requirements, sending out requests for proposal (RFPs), travel expenses, negotiating contracts, legal fees, and project management. A project leader may be assigned to work full-time on this, with others contributing, and these are lost labor costs. The entire process can take three to six months to a year.

- **Transition management and knowledge transfer costs.** It takes from three months to a full year to completely transfer work to an offshore partner and make sure the vendor thoroughly understands your business. Users should be prepared to spend even more time with the offshore team than an in-house group to make sure the team fully understands their requirements. A certain number of outsourcer staff have to travel to the client company to analyze the client’s technology and applications before they can begin the actual work. The client company’s systems and specifications have to be thoroughly documented. The offshore employees have to work in parallel with costly in-house employees, and neither can produce very much during the training period. If not included in the outsourcing contract, additional travel costs and visa costs must be figured in. Companies should expect to spend an additional 2 to 3 percent of their contracts on transition costs.

- **Domestic human resources costs.** If your company has to lay off domestic employees as a result of the offshore outsourcing, you may have to pay laid-off workers severance pay and retention bonuses to keep them working long enough to share their knowledge with their offshore replacements. Layoffs can also adversely impact employee morale and productivity. The firm’s staff may resist working with the outsourcer and resign, taking valuable knowledge with them. Layoffs and related costs can add an extra 3 to 5 percent.
• Costs of improving software development processes. If a company doesn’t have solid in-house processes for software development, it will take much longer to coordinate work with the vendor.

Both parties should agree on the processes to be used. If the outsourcer has to follow your standards, make sure the offshore team thoroughly understands them.

U.S. firms often use rather informal methods for documenting and analyzing software projects. They may need to formalize their software development processes and adopt the methodology used by the offshore vendor. (Many Indian companies use the Capability Maturity Model [CMM] developed by Carnegie-Mellon as their software development methodology, and their clients may need to come up to speed in CMM to work effectively with them.) Ability to write clear specifications is critical as well, and creating a good set of specifications is very time-consuming.

Quality assurance testing also must be beefed-up in an offshore arrangement. There must be a dedicated group of people in the client organization who are always available to develop test plans and review results as they are generated by the offshore team. Companies outsourcing software development to external vendors should anticipate spending an additional 1 to 10 percent on improving software development processes.

• Costs of adjusting to cultural differences. Cultural differences can drain productivity. A seasoned U.S. employee cannot automatically be replaced by an offshore worker. Their values and attitudes are different. American workers tend to feel much more comfortable about speaking up and making suggestions. If something doesn’t make sense or does not appear workable, they’ll voice concerns. But offshore programmers may keep these feelings to themselves, believing that their aim is to please and this is what the client wants. The work then may take more time and money to complete and require extensive rework. Likewise, an application that makes sense to a U.S. worker, such as automatically logging all customer calls, may be a foreign concept offshore. Lags in productivity caused by the need to adjust to cultural differences can add as much as 20 percent of additional costs to the offshore contract during the first two years. There will probably be a need for more face-to-face interaction, or more time spent on Internet teleconferencing, or Skyping at odd hours, than originally anticipated because offshore workers don’t interpret things the same way.

• Cost of managing an offshore contract. Managing the offshore relationship requires additional work—invoicing, auditing, additional telecommunications costs, ensuring work is billed correctly, making sure time is properly recorded. Maintaining security merits special attention. Offshoring partners must agree on common procedures for data security, data recovery, protection of intellectual property rights, network security, and access control. The EU Data Privacy Directive could prohibit an outsourcing agreement from transferring personal data to non-EU countries unless both parties satisfy EU data protection standards. Companies should expect to pay an additional 6 to 10 percent on managing the offshore contract.

Figure 15-6 shows best- and worst-case scenarios for the total cost of ownership of an outsourcing project. It shows how much hidden costs can affect the total cost of an outsourcing project. The best case reflects the lowest estimates for additional costs, and the worst case reflects the highest estimates for these costs. As you can see, hidden costs will increase the total cost of an outsourcing project by an extra 15 to 57 percent.

Even with these extra costs, many firms will benefit from offshore outsourcing if they manage the work well. The total cost of doing the software work in-house might run to $18 million, so even under the worse-case scenario, the firm would still save about 15 percent.
Although offshore software outsourcing might benefit individual firms, its broader social impact is less clear and much more controversial in the countries that are shipping jobs to low-wage countries. Of course, in the countries which are the recipients of these outsourced jobs, the practice is celebrated not only as a powerful tool for economic development, but as a reflection of the natural order of international trade and comparative advantage. They argue that the United States benefits from outsourcing because the cost of building systems falls, and hence more systems can be built. The fear in developed countries like the United States, which are creating tens of thousands of IT jobs in India and other low-wage countries, is that this practice lowers wages paid to U.S. technical and managerial workers in the IS area, and worse, potentially permanently damages the system-building capabilities of American workers. The Interactive Session on Management looks at both sides of the debate.

### 15.5 Hands-on MIS

The projects in this section give you hands-on experience conducting international market research and in building a job posting database and Web page for an international company.

**Achieving Operational Excellence: Expanding International Sales**

In this project, you will use the Web to research international markets for a small manufacturing company.

- **Software skills**: Web browser and electronic presentation software
- **Business skills**: Identifying international markets
INTERACTIVE SESSION: MANAGEMENT

OFFSHORE OUTSOURCING: GOOD, BAD, OR DOES NOT MAKE A DIFFERENCE?

When truck rental giant Penske buys a new truck and leases it out to commercial trucking companies, its Indian vendor Genpact remotely arranges for state titles, registrations, and permits electronically from Hyderabad, India. When the truck is rented and returned, the driver’s log and taxes, fuel, and toll documents are sent to Genpact. The paperwork is sent to Genpact’s office in Juarez, Mexico, where the information is entered into Penske’s computer system. Other workers in Hyderabad complete entering data for tax filings and accounting purposes. Penske’s practice of componentizing its business processes, and sending out large chunks of business processes, including data entry and routine administration, is becoming standard practice in American service and manufacturing firms. It is part of a swelling movement toward offshore outsourcing, a term designating the movement of white-collar jobs abroad. Many other companies, including Delta Air Lines and American Express, have moved their call centers to India or the Philippines. The consulting firm Accenture doubled its staff in India to 10,000. Procter & Gamble has 7,000 workers handling payroll, travel, benefits administration, accounts payable, and invoice processing in offices in Costa Rica, the Philippines, and the United Kingdom. Mindcrest Incorporated of Chicago maintains a staff of 15 in Bombay to provide legal research for companies and law firms.

An estimated 1.4 million call center jobs, telemarketing jobs, financial analysts, and jobs in banking and insurance have been steadily moving offshore. Also threatened are jobs in medical transcription, insurance applications and claims processing, and typesetting, as well as some jobs in accounting and tax preparation. Low-cost telecommunications networks and the Internet make it possible to communicate and exchange documents with people many thousands of miles away as inexpensively as if they were in the next town. Estimates differ greatly, but arguably there are over 200,000 IT-related jobs from low-level programming to system administration, management, and design that used to be performed in the United States but are now performed in India.

Forrester Research estimated that 3.3 million white-collar jobs will be transferred from the United States abroad by 2015. The impact of offshore outsourcing in the information technology industry could be especially severe: According to the Gartner Group, one out of 10 jobs in U.S. computer services may have already shifted to lower-cost countries such as Russia or India.

In mid-July 2003, IBM set off a firestorm when news of its plans to move more white-collar and programming jobs overseas was leaked to the press. By 2006, IBM was employing over 40,000 people in India. Hewlett-Packard has 5,000 Indian employees in research, software development, and customer support. Many non-technology companies now use offshore programmers for much of their routine programming work, as well as low-level clerical jobs and some management jobs in human services, engineering, logistics, and procurement.

Critics claim that offshore outsourcing shifts jobs from high-wage countries to low-wage countries, taking jobs away from U.S. workers or pressuring them to take lower pay to remain working. These critics fear that highly trained and educated workers will be ground down by globalization, just as blue-collar workers were in the 1970s and 1980s. Several state legislatures in the United States are considering bills requiring state agencies and contractors to use employees based in the United States, and U.S. job losses to overseas companies became a hot button during the 2004 presidential campaign.

But other experts point out that offshore outsourcers often provide better quality work at lower costs. Domestic firms also have a better chance of long-term survival if they can keep their costs low, and prices more competitive. Companies can pass these saving from outsourcing on to consumers or use them to expand the business and create new jobs that provide more value than those replaced. A study by the McKinsey Global Institute estimated that every dollar of costs moved from the U.S. to offshore yields a benefit of $1.12 to $1.14 to the U.S. economy.

Another study by economics consulting firm Global Insight commissioned by the pro-outsourcing Information Technology Association of America found that the productivity generated by U.S. companies sending computer services work abroad boosted domestic employment by 257,000 new jobs in 2005. This study claimed that outsourcing created twice as many U.S. jobs as it displaced and would
CASE STUDY QUESTIONS

1. Does offshore outsourcing create an ethical dilemma? Why or why not?
2. Should offshore outsourcing be restricted? How? Why or why not?
3. How could the outsourcing of jobs lead to the creation of new jobs in the United States? Explain.

MIS IN ACTION

1. WIPRO is one of India's largest outsourcing firms. Visit the www.wipro.com, click on “Investor,” and read their current annual report. On a spreadsheet, chart their revenue, operating margin, and profit growth for the years reported. How fast did WIPRO grow in the last year? What are some of the limitations on this growth in the next five years?

2. There are many other countries where outsourcing is growing very rapidly. Why is this so? Read the article by Pete Engardio, “The Future of Outsourcing,” BusinessWeek, January 30, 2006. Make a table containing two columns. In the left column, create a list of the top ten outsourcing countries, and in the right column, briefly explain the advantages of outsourcing to these countries. What are the risks?

3. CIO Magazine publishes an annual outsourcing guide. Go to the CIO.com Web site and read the “2006 Global Outsourcing Guide.” You can search the site for this guide, or go to http://www.cio.com/archive/071506/global_outsourcing.html. What is the “cost versus risk” equation discussed in this report? After reading this report, describe how you would balance the cost versus risk when choosing an offshore outsourcing firm.

lead, by 2010, to the creation of 337,000 new jobs in construction, education, health care, and financial services (Global Insight, 2005). Other studies point out that while lower-level programming jobs are moving offshore to low-wage countries, higher-level design, managerial, and project management jobs are created in the United States.

But what gets lost in this debate often is that the U.S. labor force is now about 145 million people. Employment is growing as the labor force grows. About 2 million net new jobs are created each year just to keep unemployment from rising. About 14 million new jobs are created each year, and 12 million are destroyed. Given the huge labor market, the number of jobs being outsourced to India is a drop in the bucket with respect to overall levels of employment, even though certain occupations (generally those requiring less education and lower pay) are hit particularly hard.

In the IT sector, the bureau of labor statistics predicts that by 2012, the United States will need to employ 1.5 million technical IS workers, and over 400,000 managerial personnel. About 750,000 net new IT jobs will be added from 2005 to 2012. Without help from India in the form of outsourcing, there would be a severe IT labor shortage in the United States, the cost of systems would rise, and firms would reduce spending on systems. With outsourcing, the cost of system development and operation might just stabilize, and relative to other capital goods, fall in price. This could result in more system-building activity and growing demand for many higher-level IT employees.

Management would like to expand international sales for Dirt Bikes. You have been asked to analyze opportunities for global business expansion of the company, using the Web to find the information you need. Prepare a report for management that answers the following questions:

- Which countries would provide the best markets for Dirt Bikes's products? Your analysis should consider factors such: in which countries are dirt bikes popular and the per capita income of these countries.
- How could Dirt Bikes use the Web to increase international sales? What features should it place on its Web site to attract buyers from the countries it targets?
- (Optional) If possible, use electronic presentation software to summarize your findings for management.

**Achieving Operational Excellence: Building a Job Database and Web Page for an International Consulting Firm**

**Software skills:** Database and Web page design  
**Business skills:** Human resources internal job postings

Companies with many overseas locations need a way to inform employees about available job openings in these locations. In this project, you will use database software to design a database for posting internal job openings and a Web page for displaying this information.

KTP Consulting operates in various locations around the world. KTP specializes in designing, developing, and implementing enterprise systems for medium- to large-size companies. KTP offers its employees opportunities to travel, live, and work in various locations throughout the United States, Europe, and Asia. The firm's human resources department has a simple database that enables its staff to track job vacancies. When an employee is interested in relocating, she or he contacts the human resources department for a list of KTP job vacancies. KTP also posts its employment opportunities on the company Web site.

What type of data should be included in the KTP job vacancies database? What information should not be included in this database? Based on your answers to these questions, build a job vacancies database for KTP. Populate the database with at least 20 records. You should also build a simple Web page that incorporates job vacancy data from your newly created database. Submit a copy of the KTP database and Web page to your professor.

**Improving Decision Making: Conducting International Marketing and Pricing Research**

**Software skills:** Internet-based software  
**Business skills:** International pricing and marketing

When companies sell overseas, it is important to determine whether their products are priced properly for non-domestic markets. In this project, you will use the Web to research overseas distributors and customs regulations and use Internet-based software to calculate prices in foreign currencies.

You are in charge of marketing for a U.S. manufacturer of office furniture that has decided to enter the international market. You have been given the name of Sorin SRL, a major Italian office furniture retailer, but your source
had no other information. You want to test the market by contacting this firm to offer it a specific desk chair that you have to sell at about $125. Using the Web, locate the information needed to contact this firm and to find out how many European euros you would need to get for the chair in the current market. One source for locating European companies is the Europages Business Directory (www.europages.com). In addition, consider using the Universal Currency Converter Web site (www.xe.net/ucc/), which determines the value of one currency expressed in other currencies. Obtain both the information needed to contact the firm and the price of your chair in their local currency. Then locate and obtain customs and legal restrictions on the products you will export from the United States and import into Italy. Finally, locate a company that will represent you as a customs agent and gather information on shipping costs.
Summary

1. **Identify the major factors driving the internationalization of business.**
   
   There are general cultural factors and specific business factors to consider. The growth of cheap international communication and transportation has created a world culture with stable expectations or norms. Political stability and a growing global knowledge base that is widely shared contribute also to the world culture. These general factors create the conditions for global markets, global production, coordination, distribution, and global economies of scale.

2. **Compare strategies for developing global businesses.**
   
   There are four basic international strategies: domestic exporter, multinational, franchiser, and transnational. In a transnational strategy, all factors of production are coordinated on a global scale. However, the choice of strategy is a function of the type of business and product.

3. **Demonstrate how information systems can support different global business strategies.**
   
   There is a connection between firm strategy and information systems design. Transnational firms must develop networked system configurations and permit considerable decentralization of development and operations. Franchisers almost always duplicate systems across many countries and use centralized financial controls. Multinationals typically rely on decentralized independence among foreign units with some movement toward development of networks. Domestic exporters typically are centralized in domestic headquarters with some decentralized operations permitted.

4. **Identify the challenges posed by global information systems and management solutions.**
   
   Global information systems pose challenges because cultural, political, and language diversity magnifies differences in organizational culture and business processes and encourages proliferation of disparate local information systems that are difficult to integrate. Typically, international systems have evolved without a conscious plan. The remedy is to define a small subset of core business processes and focus on building systems to support these processes. Tactically, managers will have to co-opt widely dispersed foreign units to participate in the development and operation of these systems, being careful to maintain overall control.

5. **Evaluate the issues and technical alternatives to be considered when developing international information systems.**
   
   Implementing a global system requires an implementation strategy that considers both business design and technology platforms. Typically, global systems have evolved without a conscious plan. The remedy is to define a small subset of core business processes and focus on building systems that could support these processes. Tactically, you will have to co-opt widely dispersed foreign units to participate in the development and operation of these systems, being careful to maintain overall control.

   The main hardware and telecommunications issues are systems integration and connectivity. The choices for integration are to go either with a proprietary architecture or with open systems technology. Global networks are extremely difficult to build and operate. Firms can build their own global networks or they can create global networks based on the Internet (intranets or virtual private networks). The main software issue concerns building interfaces to existing systems and selecting applications that can work with multiple cultural, language, and organizational frameworks.
Key Terms

Business driver, 597
Cooptation, 611
Core systems, 608
Domestic exporter, 602
Franchisers, 602
Global culture, 598
International information systems architecture, 597

Review Questions

1. What are the five major factors to consider when building an international information systems portfolio?
2. Describe the five general cultural factors leading toward growth in global business and the four specific business factors. Describe the interconnection among these factors.
3. What is meant by a global culture?
4. What are the major challenges to the development of global systems?
5. Why have firms not planned for the development of international systems?
6. Describe the four main strategies for global business and organizational structure.
7. Describe the four different system configurations that can be used to support different global strategies.
8. What are the major management issues in developing international systems?
9. What are three principles to follow when organizing the firm for global business?
10. What are three steps of a management strategy for developing and implementing global systems?
11. What is meant by cooptation, and how can it be used in building global systems?
12. Describe the main technical issues facing global systems.
13. Describe some new technologies to help firms develop global systems.
14. What is offshore software outsourcing? What challenges does it pose? What are the cost components of offshore software development?

Discussion Questions

1. If you were a manager in a company that operates in many countries, what criteria would you use to determine whether an application should be developed as a global application or as a local application?
2. Describe ways the Internet can be used in international information systems.

Teamwork: Identifying Technologies for Global Business Strategies

With a group of students, identify an area of information technology and explore how this technology might be useful for supporting global business strategies. For instance, you might choose an area such as digital telecommunications (e.g., e-mail, wireless communications, value-added networks), enterprise systems, collaborative work group software, or the Internet. It will be necessary to choose a business scenario to discuss the technology.

Video Case

You will find a video case illustrating some of the concepts in this chapter on the Student CD-ROM and the Laudon Web site along with questions to help you analyze the case.

You might choose, for instance, an automobile parts franchise or a clothing franchise, such as Limited Express, as example businesses. Which applications would you make global, which core business processes would you choose, and how would the technology be helpful? If possible, use electronic presentation software to present your findings to the class.
Nestlé Tries for an All-for-One Global Strategy

CASE STUDY

Nestlé is the largest food and beverage company in the world. Headquartered in Vevey, Switzerland, the company has annual revenues in excess of $70 billion and nearly 250,000 employees at 500 facilities in 200 countries. Best known for its chocolate, coffee (it invented instant coffee), and milk products, Nestlé sells hundreds of thousands of other items, most of which are adapted to fit local markets and cultures.

Traditionally, this huge firm allowed each local organization to conduct business as it saw fit, taking into account the local conditions and business cultures. To support this decentralized strategy, it had 80 different information technology units that ran nearly 900 IBM AS/400 midrange computers, 15 mainframes, and 200 Unix systems, enabling observers to describe its infrastructure as a veritable Tower of Babel.

However, Nestlé’s management found that allowing these local differences created inefficiencies and extra costs that could prevent the company from competing effectively in electronic commerce. The lack of standard business processes prevented Nestlé from, for example, leveraging its worldwide buying power to obtain lower prices for its raw materials. Even though each factory used the same global suppliers, each negotiated its own deals and prices.

Several years ago, Nestlé embarked on a program to standardize and coordinate its information systems and business processes. The company initially installed SAP’s R/3 enterprise resource planning (ERP) software to integrate material, distribution, and accounting applications in the United States, Europe, and Canada.

Nestlé then extended its enterprise systems strategy to all of its facilities to make them act as a single-minded e-business. Once this project is completed, Nestlé will able to use sales information from retailers on a global basis to measure the effectiveness of its promotional activities and reduce overstocking and spoilage caused by having products sit around too long on grocery shelves.

Achieving global standardization of operational processes has been a complex task. None of Nestlé’s products is considered a truly global brand, with perhaps the exception of Nescafé, of which 100 million cups are served around the world each year. But even Nescafé is rebranded, repackaged, and reformulated to create over 200 product versions for different regional preferences. This is just a small representation of the complexity that CEO Peter Brabeck wanted to address when he decided to bring a sense of order to the company’s business operations.

In 1995, Nestlé facilities in 14 countries were running their businesses on SAP R/2, an older version of its ERP software. They all ran the software differently and used different schemes for formatting data and managing forms. The system disparity resulted in increasing maintenance costs. Compiling financial reports to gain a company-wide view of performance became more laborious.

Between 1994 and 1999, Nestlé increased its spending on information systems from $575 million to $750 million. Brabeck arrived in 1997, and while the technology budget was growing, he was actually decreasing the size of the company by selling off Nestlé brands. The cost of tracking the sales chain, as a percentage of total sales, rose from 1.2 percent in 1994 to 1.6 percent in 1999.

By April 2000, Brabeck had had enough of a corporate philosophy that allowed for thousands of differently configured supply chains, multiple methods of forecasting demand, and innumerable practices for invoicing customers and collecting payments. The inconsistencies and inefficiencies across the enterprise were chipping away at Nestlé’s profits. Brabeck, chief financial officer Mario Corti, and the entire executive board launched a $2.4 billion initiative to compel its market heads around the world to adopt a single set of business processes and systems for procurement, distribution, and sales management.

Chris Johnson, who was in charge of Nestlé’s Taiwan market, was asked to lead the initiative that would come to be known as GLOBE (Global Business Excellence). Johnson was instructed to find a way to harmonize processes, standardize data, and standardize systems. All of Nestlé’s worldwide business units were to use the same processes for making sales commitments, establishing factory production schedules, billing customers, compiling management reports, and reporting financial results. The units
France, and a panel of 12 senior executives with Olivier Gouin, chief information officer for Nestlé in France, launched on July 4, 2000. Johnson had support from the model due to its success in crossing cultures and satisfying multiple market managers.

Such an undertaking was unusual for Nestlé. Large projects, such as the construction of a coffee factory, generally cost the company in the range of $30 million to $40 million. Putting up billions of dollars to fund a project was risky, but for Brabeck, the potential benefits were too important. He could significantly curb IT spending, which was growing dangerously. In addition, he could gain an advantage over competitors like Unilever and Kraft Foods in improving operational efficiency while continuing to grow with new markets and new products. Nestlé would also be able to reduce its number of suppliers from 600,000 to 167,000, and save hundreds of millions of dollars in the process. The savings would be reinvested in innovation, pleasing its largest customers like Wal-Mart and Tesco, and further strengthening Nestlé’s position among the other global food suppliers. It would be the first global enterprise to conduct business as though it were operating in a single country.

The goal was lofty, and previous attempts at cooperative standards had mixed results. Technology experts from headquarters had emphasized standards and best practices to the 14 countries that deployed SAP in the past. The pleas for a unified corporate culture were largely ignored. On the other hand, market managers in Asia had come together to develop a common system for managing their supply chains using software from SSA Global. The Business Excellence Common Application flourished in Indonesia, Malaysia, the Philippines, and Thailand, and even spread to South Africa. The American division of Nestlé also standardized its practices using SAP software in a project known as BEST (Business Excellence through Systems Technology). However, it was the Asian effort that would serve as the model due to its success in crossing cultures and satisfying multiple market managers.

GLOBE, under the leadership of Johnson, launched on July 4, 2000. Johnson had support from Olivier Gouin, chief information officer for Nestlé in France, and a panel of 12 senior executives with various backgrounds who had been chosen specifically for the project. Even before beginning the likely difficult task of convincing market managers worldwide to adopt a centralized culture, the GLOBE team had a more pressing challenge to confront: Was it actually possible to convert 70 percent of the business to a common set of best practices and systems by the December 2003 deadline?

There were to be no shortcuts. Everything had to be standardized on the new mySAP Internet-based software. Moreover, the deadline had already appeared in a company newsletter, so changing the date could have damaged confidence in the project.

Johnson’s team studied the experiences of competitors, and received feedback from consultants at PricewaterhouseCoopers and deployment experts at SAP. Johnson and Gouin were not surprised to determine that the parameters of the project would have to be adjusted. GLOBE required a larger staff, more funding, and a larger window of time than the executive board had allotted. The GLOBE team predicted that its staff would need to grow to a maximum of 3,500 workers.

The team’s projections also gave rise to the $2.4 billion budget. Gouin softened the blow of the cost by pointing out that the status quo, individual markets managing their own systems, projected to cost $3.2 billion over five years. In the end, considering the scope of the project, Johnson’s team also concluded that the schedule was too ambitious. The schedule was revised so that a “majority of the company’s key markets,” rather than 70 percent, would be GLOBE-enabled by the end of 2005, instead of 2003.

Instead of technology managers, Johnson tried to build his team from a diverse group of business managers who had experience in a variety of business sectors including manufacturing, finance, marketing, and human resources. He recruited from Nestlé offices all over the world. He went after the best of the best—managers that were considered “untouchables” because they were too valuable in their current capacities to be let go for new projects.

Johnson put his first team together in the fall of 2000. By the following winter, the team had added 400 executives with diverse career backgrounds at Nestlé covering 40 different countries. In February 2001, this core group began the critical process of compiling the GLOBE Best Practices Library. The 400 were knowledgeable in how the company actually conducted business. They would need to know the processes for everything from calculating product
demand and managing the supply chain to generating an invoice and ordering office equipment. Many of these processes had never been documented and were simply passed down by word of mouth. Johnson described the task as converting Nestlé’s oral history into decoding “the DNA of how Nestlé does business.”

The 400 executives documented the best ways of performing each process. Then, the GLOBE team brought in experts in each area to challenge the processes, find their weaknesses, and pare the list down to the best practice for each process. In this way, the Best Practices Library evolved into an online database of step-by-step guides for 1,000 processes, divided into 45 solution sets that focused on disciplines such as demand planning or financial reporting.

Some best practices, such as getting a product to market, were afforded a degree of flexibility to account for the wide variety of Nestlé products and the breadth of markets in which they were sold. Other practices, such as financial reporting, were given no wiggle room. Salespeople were to enter orders with precision in a standard format and by a specific date every month. Financial terms and recording dates were standardized across the enterprise. Johnson later described the accounting software as being “kind of like handcuffs in a way to make you do the right thing.”

It became apparent to Johnson that the greatest challenge of GLOBE might not be technical, but personal. Despite clear support for the project from the highest-ranking executives, including Brabeck, managers resisted the idea of giving up control over their business processes to participate in a centralized solution. They feared the loss of decision-making power. Many thought that making back-office operations identical in so many different countries was impractical. They might agree to standardization, but only if it was their particular practices that were made the GLOBE standard. The resistance was fortified by the fact that each country’s operations would have to spend its own money to pay for the project.

In the fall of 2001, Johnson was on the defensive. He was given a full day of a three-day meeting to convince market managers that falling in step with GLOBE was in their best interest and in the best interest of the company. The managers peppered him with questions that were intended to demonstrate how GLOBE would make their jobs more difficult and degrade the performance of their units. Johnson did the best he could to satisfy them, and then took a frank approach. The project was going to proceed. If they did not get behind GLOBE, he would be fired, and Brabeck would select one of them to head the massive undertaking. The other managers were not interested in that outcome.

Johnson did receive support that day from Jose Lopez, the head of the Malaysia and Singapore markets, which were being used to test GLOBE’s back-office systems. It was too early to measure the benefits of the project, but Lopez expressed his belief in the premise and his willingness to cooperate.

A year and a half later in the spring of 2003, the market heads had another opportunity to question Johnson. While there were still plenty of questions, a number of them described the operational efficiencies they had achieved since implementing GLOBE standards. For example, their financial reports and demand forecasts were better and faster.

By a third meeting in May 2005, 20 market heads were able to endorse the benefits of GLOBE. In the interim, however, an unwelcome financial problem arose. GLOBE was not controlling information technology costs as expected. As a percentage of sales, costs were approaching 2 percent. Brabeck instituted a cap on information technology expenses at 1.9 percent. In order to meet the cap, Johnson and Gouin revised the schedule of the project again. They set a goal of 80 percent of Nestlé being on the GLOBE system by the end of 2006. The extended schedule allowed the GLOBE team to maintain Brabeck’s spending cap and protect the company’s profits.

In the fall of 2005, the percentage of Nestlé units running GLOBE reached 25 percent and costs were within the limit.

To help the rollouts along, Johnson asked each country to name a GLOBE manager who would facilitate the adoption of the system. These managers also provided value to each other by exchanging their experiences with the system and the solutions they employed for specific challenges. Johnson also established a steering committee at company headquarters to schedule and manage the rollouts. The steering committee oversaw the reduction of company data centers from 100 to four, including the center in Vevey, which stored the GLOBE templates, Best Practices Library, and central functions.

One of Brabeck’s biggest concerns was that the rollouts occur with no effect on customers. A rollout could only be a true success if no one outside the company noticed it. The initial test markets found this daunting because they would have to fix bugs
and confront unanticipated problems during the deployment. Nestlé also had to implement the new business processes concurrently with the new systems. There was no opportunity to perfect the processes. And, finally, the managers and their workers had no time to train on the new systems before they deployed them and began using them. Despite these challenges, the test markets experienced few problems, and rollouts proceeded around the world. After the test markets, market managers had at least nine months to document their processes and perfect them until they conformed with the GLOBE templates.

Along the way, Nestlé did encounter some technical issues. For example, Canadian market managers used special promotions liberally to attract business from local and regional grocery chains. The mySAP software was not designed to accommodate the extra data points generated by so many promotions. Nestlé worked with SAP to develop a “multiple angles approach” to allow for such a difference. The approach enabled Nestlé to separate the storage of data by market. This way, a country like Canada could have the extra storage space in the central system that it needed for its promotion data.

By the end of 2005, Nestlé had converted 30 percent of its business to GLOBE, and had the capacity for one major rollout every month. The 80 percent number by the end of 2006 was still looming, but the company had learned how to operate as a single unit on a global scale. Johnson was not entirely satisfied with the results, citing delayed and flawed summary reports compromising the work of factory and country managers. He was also eager to see reports made available instantly on a 24/7 basis rather than having to wait for them to be completed overnight each day.

To make sure that the data entering GLOBE’s streamlined data centers are accurate and complete, each country has a data manager. Johnson believes that the system will never achieve perfection as long as time constraints remain a factor. However, Nestlé is much closer to achieving its goal of standardizing all processes, data, and systems. The closer the company comes to developing the perfect system, the better the company can serve its customers.


### CASE STUDY QUESTIONS

1. Analyze Nestlé using the competitive forces and value chain models. What challenges did Nestlé face?
2. What type of global business and systems strategy did Nestlé adopt? Was this strategy appropriate for Nestlé’s business model?
3. What management, organization, and technology challenges did Nestlé have to deal with to standardize its business processes and systems?
4. What strategies did Nestlé management use to deal with these challenges? How successful were these strategies? Explain your answer.