

CHAPTER 11

Managing Global Systems

LEARNING OBJECTIVES

After reading this chapter, you will be able to answer the following questions:

1. What major factors are driving the internationalization of business?
2. What are the alternative strategies for developing global businesses?
3. How can information systems support different global business strategies?
4. What are the challenges posed by global information systems and management solutions for these challenges?
5. What are the issues and technical alternatives to be considered when developing international information systems?

OPENING CASE: SEVERSTAL CREATES AN IT INFRASTRUCTURE FOR GLOBAL STEELMAKING

THIS OPENING CASE DEMONSTRATES THAT A GLOBAL COMPANY HAS THE SAME INFORMATION SYSTEM REQUIREMENTS AS A DOMESTIC COMPANY, JUST ON A LARGER SCALE. SEVERSTAL NEEDED A FLEXIBLE IT INFRASTRUCTURE THAT COULD MEET CHANGING REQUIREMENTS AND SUPPORT EFFICIENT GROWTH. HOWEVER, ITS INFORMATION SYSTEM HAD TO SERVE BUSINESS UNITS IN FIVE DIFFERENT COUNTRIES – RUSSIA, ITALY, THE UNITED KINGDOM, FRANCE, AND THE UNITED STATES. USING AN ORACLE ENTERPRISE APPLICATION SUITE, SEVERSTAL INTEGRATED ITS SYSTEM ALLOWING USERS TO ACCESS DATA FROM DIFFERENT FUNCTIONAL AREAS. THAT IMPROVED THE DECISION MAKING PROCESS, CREATED MORE EFFICIENT WORK FLOWS, AND ENHANCED PRODUCTIVITY. IN A COMPETITIVE AND CAPITAL-INTENSIVE INDUSTRY LIKE STEEL-MAKING, SEVERSTAL NEEDS TO

REDUCE COSTS AND IMPROVE BUSINESS PROCESSES AS MUCH AS POSSIBLE. IT IS SUCCEEDING IN LARGE PART DUE TO ENHANCING ITS INFORMATION SYSTEM.

11.1 THE GROWTH OF INTERNATIONAL INFORMATION SYSTEMS

The world just keeps getting smaller and smaller. No company can afford to ignore foreign markets or the impact of foreign competition on the domestic business environment. You have to adapt to the changing faces, literally, of your competition and devise a plan to bring your organization into its view.

Globalization is possible even with very small businesses because of the technological advances in computer networks and telecommunications. Is your organization developing a Web site for e-commerce? You might want to consider publishing it in four or five foreign languages. That's what it takes today to compete.

DEVELOPING AN INTERNATIONAL INFORMATION SYSTEMS ARCHITECTURE

You must have an information system in place that will support the communications, coordination of people and products, and order processing for both domestic and foreign markets (**international information systems infrastructure**). You have to understand the characteristics and individual needs of foreign markets, just as you need to understand your domestic markets.

Before you tackle the technology, you must:

1. Understand the global environment, including which **business driver** is most prominent
2. Determine the negative factors that create management challenges
3. Consider a corporate strategy
4. Consider the appropriate organizational structure
5. Know how you will implement your strategy
6. Consider the technology platform

Notice that the last issue you'll have to contend with is the technology. We said before that every information system implementation plan must be in harmony with the basic business plan. In fact, you must first develop the overall business strategy for entering the global arena. Then and only then can you begin to think about how the information system will be synchronized with the basic strategy.

THE GLOBAL ENVIRONMENT: BUSINESS DRIVERS AND CHALLENGES

Table 11-1 gives you an idea of some of the global business drivers, factors influencing the direction of businesses that organizations must consider in today's environment.

Perhaps the most important challenge facing corporations and companies wanting to open foreign markets is that of the **global culture**. We're beginning to share more culture because of increased telecommunications and the Internet. However, when you are merging two entities, one domestic and one foreign, into one business, the culture of that merged organization can be an important influence on how well the company does.

Bill Vlasic from *The Detroit News* wrote about the DaimlerChrysler merger and its effect on the workforce: "DaimlerChrysler AG executives who want to get ahead must accept foreign assignments, learn a different language and adapt to the evolving culture of the newly merged global automaker. That's the message from Andreas Renschler, 40, former head of the Mercedes-Benz factory in Alabama who recently assumed responsibility for global executive management development at DaimlerChrysler." (Jan 6, 1999)

The DaimlerChrysler merger points out the need for everyone in an organization to think global. We'd like to destroy the myth of *domestic* being defined as a U.S.-based company and the *foreign* company being from, well, from a foreign country. In 1998, the German automobile manufacturer Daimler bought the U.S.-based Chrysler Corporation. In this case, Chrysler was actually the foreign-based manufacturer while Daimler was the domestic organization.

Advanced telecommunications systems now allow companies to work around the clock and around the world. Companies may choose to locate parts of their corporate offices in other countries because they fit better with the corporation's overall global strategy in that location. Ask yourself this question: Who says all corporate offices must be located in North America?

Business Challenges

There is tremendous risk associated with global businesses. Companies should make a point of adapting to foreign cultures. For instance, in many countries afternoon siestas are the norm. Other countries have religious and historical laws that prevent women from working or accepting jobs that place them in the position of supervising men.

Particularism means making judgments and taking actions on the basis of narrow or personal characteristics such as religion or gender.

Corporations and companies must reconcile these differences in order to allow **transborder data flow** between merged information systems.

It is appropriate that the international business setting be described initially from the general perspective of the international manager. In this context, relevant international issues specific to the political, cultural, legal, and economic dimensions of the international operating environment can be discussed. The breadth and depth of this coverage will depend on faculty preferences, student backgrounds, and the orientation of the course.

From this broad foundation, a conceptual model linking the IS function to its international business operating environment can be developed in the context of the previous discussions. The model provides a means to define factors in the external environmental that influence the IS function. Specifically, the external environment is composed of foreign, international, and domestic components. An array of cultural, legal, political, economic, and technological factors that may directly influence the IS function can be incorporated in the context of this model.

STATE OF THE ART

If you thought building an information system for an organization doing business only in one country was tough, think about some of the factors we've just discussed and then imagine how you would build a system that takes disparate practices into account. Then think about how difficult it is to mesh a system built on 1990s technology with one that was built in the 1980s and one built in 2010.

So why do companies even attempt to build themselves into global merchants? Because the potential payoff is enormous!

Bottom Line: Global businesses must devote their time and attention to understanding the cultures of countries in which they want to do business. Not only must they merge their business units, they must also merge their people into a cohesive team. They must understand and deal with external factors in both domestic and foreign environments.

11.2

ORGANIZING INTERNATIONAL INFORMATION SYSTEMS

First you have to decide what you're going to do — you have to choose a strategy. Then you have to organize your business around this strategy. The last step is to build the system that will incorporate the first two.

Ask students why organizations become international. Let them consider all the business drivers that motivate firms and other organizations to “go global.” Cultural factors increase the difficulty and unfamiliarity of working with foreign countries. Have students list how many of their friends and relatives work for organizations that are international. Pin them down. How are these organizations international? Why? Firms in the western part of Canada are more likely to be active in Asia. Why? Firms in the eastern part of Canada are more likely to be active in Europe.

GLOBAL STRATEGIES AND BUSINESS ORGANIZATION

Table 11-3 shows the four main global strategies that can form the basis for a global organizational structure. Let's dissect each one.

Domestic exporter: Most operations are located in the domestic country and the company exports products to foreign companies. A company located in India that imports rugs to Canada would fit this category. All corporate offices are in India, and products are sent to distributors in Canada.

Multinational: Part of the company is located in the domestic country and other parts are located in foreign countries. Japanese automobile manufacturers might be in this category.

Franchiser: Some operations are located in the domestic homeland whereas extended activities associated with the product are conducted in foreign countries. Starbucks Coffee Company is a primary example of this type of global business. Its corporate headquarters are located in Seattle, Washington. Recipes for products are developed in Seattle. Some coffee beans are roasted in Seattle and then shipped to coffee shops in England. These operations are franchised to keep quality controls in place, and the final product is made in the local area.

Transnational: DaimlerChrysler is the perfect example of a transnational corporation. Its Web site describes it as "the first automotive, transportation and services company with a truly global structure." Corporate headquarters are "located in Stuttgart, Germany and Auburn Hills, Michigan, USA." DaimlerChrysler did business in 200 countries with 441,500 employees at the end of 1998. Manufacturing facilities are located in 34 countries around the world. Bill Vlasic's article in *The Detroit News*, Jan 6, 1999, quoting Andreas Renschler at DaimlerChrysler says: "The biggest difference between people is not the national culture. It's how you think things have to be done. We have to integrate their experiences, and use the best of the best."

GLOBAL SYSTEMS TO FIT THE STRATEGY

Once you've decided which global business strategy to follow, it's time to decide how your information system will support it.

Figure 11-3 gives you an idea of the type of information system that will best support the different business strategies. To summarize the text definition of each type of system:

- **Centralized:** Everything is located at the domestic home base.
- **Duplicated:** Development occurs at the home base; operations are located at foreign branches.
- **Decentralized:** Each business unit, regardless of location, has its own system.
- **Networked:** All business units participate in development and operations.

REORGANIZING THE BUSINESS

You have to decide what your overall business goals are and what makes sense for your organization, fit the information system structure to your needs, and never lose sight of new opportunities.

1. *Organize value-adding activities along lines of comparative advantage.* Starbucks has to decide where to locate the marketing function to maximize its potential. Perhaps it can centralize this function in Seattle so the theme of the current marketing campaign is the same in every coffee shop. It is very picky about maintaining quality control over the coffee bean roasting processes. Is this process better left in Seattle, or should it be moved elsewhere?
2. *Develop and operate systems units at each level of corporate activity — regional, national, and international.* Wal-Mart would probably maintain small information systems in each foreign country to support its local operations. A regional information system would support entire geographic areas such as Southern Europe. Each of these regions would be connected to the main system in the United States that supports activities on a global scale.
3. *Establish a world headquarters, a single office responsible for development of international systems, a global chief information officer (CIO) position.* DaimlerChrysler has one person who is responsible for an information system that spans the globe. While smaller units spread throughout the world actually carry out the operations, the CIO ensures total integration of all the local, regional, and global systems.

Bottom Line: There are four main global strategies that businesses can use to organize their global efforts: domestic exporter, multinational, franchiser, and transnational. Determining the global strategy will help a business determine its information system structure.

11.3 MANAGING GLOBAL SYSTEMS

You might want to have students examine the difficulties of doing business in Eastern Europe, the former Soviet Union, and Vietnam. Case studies on these countries show students that political turmoil and cultural hostility, particularly in the former Soviet Union, are just as big a barrier as the lack of information technology infrastructure. What business drivers are encouraging firms to do business in the former Soviet Union? Students who examine these questions may see that some countries are globalized in only some regions—Moscow and Vladivostok in the Soviet Union, Guangdong in China.

The business challenges need to be considered in some detail. Cultural barriers and misunderstanding mean that some nations or nationalist (irredentist) movements within a

country will not share global values. The resistance of some Islamic groups to Westernization is an example. The unwillingness - for cultural and political reasons - of China, Singapore, and Malaysia to allow unfettered intercommunication and Internet access are examples of these problems. Even in the European Union, there is resistance to transnational data flows, particularly outside the Union. While there has been some deregulation of the national telephone systems, it is still more difficult to hook up phones, use modems, or set up data and telecommunication systems than in North America. Further, some nations have local content rules that make it more costly or difficult to internetwork. A good suggestion is to have students investigate particular countries in order to find the reasons for being in the country (business drivers) and the barriers or disincentives to being there. The kinds of barriers may be laws, cultural hostility to foreigners or businesses, government regulation or ownership of telecommunications, tax laws, unionization, and laws that make it difficult to reduce the work force or consolidate plants.

A TYPICAL SCENARIO: DISORGANIZATION ON A GLOBAL SCALE

The text gives a wonderful scenario of challenges facing corporations wanting to develop information systems to support global operations. Bring it a bit closer to home: You're part of a team of 12 students with an assignment due by the end of the month. You have to develop a Web page to support three different presentations given in three different sections of the same class. Each of you will receive an individual grade in addition to a team rating. You've been given minimal resources with which to complete the assignment.

All 12 team members approach the project from different perspectives, different values, different needs, and different goals. Some like to start early and do a thorough job; others never start any assignment until the day it's due. Some team members have Apple computers, some have PCs; some have the most current software, others rely on programs created five years ago that are incompatible with today's software. All of you are very busy with jobs, other classes, and other interests; you find it nearly impossible to meet in order to coordinate project tasks.

Now you can begin to understand the difficulty for managers when they are organizing or reorganizing global commerce.

GLOBAL SYSTEMS STRATEGY

The figure shows the connection between the core business processes and the **core systems**. Only a few business processes use global core systems. Others are divided among regional and local systems.

Define the Core Business Processes

Decide how your business processes are divided among global, regional, and local units. Which location does each process better than the others? Make sure you keep cultural and political biases out of the way when you're deciding which location is better. Carefully analyze each task and all available resources to support the process in each location. You may be surprised to learn that it's cheaper and more efficient to store manufactured goods separately from where they are produced.

Identify the Core Systems to Coordinate Centrally

Once you've identified and analyzed each workflow process, you can figure out which to centralize and which to keep decentralized. Some decisions will be based on political influences, and some decisions will be made to appease various groups within the organization. Some decisions will seem totally rational, while others may seem irrational.

Once you analyze and determine which core business processes to keep locally, establish regionally, or maintain in transnational centres, you can build your system. It's obvious you wouldn't decide that a process should be done locally and then build a transnational information system to support it.

While determining how and where to establish your core processes is the first step, part of the analysis must include the implications of building an information system to support them. For instance, if you decide to create a transnational unit to handle customer technical support, how will your information system support the data storage associated with customer information? How will you handle the political and cultural influences that determine access and distribution of the personal information associated with your customers? Although it may make sense to create this unit on a transnational basis, you might decide that an information system to support it is not feasible.

Choose an Approach: Incremental, Grand Design, Evolutionary

If you try to fulfill your development and implementation plan all at once, combining every task into one huge project, you're setting yourself up for failure. It may indeed be cheaper to do it that way, but you have lots of considerations other than cost. There are political, cultural, and historical biases to overcome. Remember, change is extremely difficult for people to accept. You have to convince everyone, especially the executive branch, that your plan is possible and best for the company.

Many companies choose to take an evolutionary approach to merging disparate information systems. That is, they pick the most critical areas, such as finance, to merge first. Then they move on to perhaps sales and marketing. Corporate strategic planning may be next, and last might be human resources systems. The point is you can't do it all at once.

This isn't the piecemeal approach to which the text refers. The piecemeal approach discussed in the text would be to move accounts receivable to the global system, then a year later move the accounts payable. Another example of an ill-advised piecemeal approach would be to leave the daily production planning processes on the old systems

while transferring the production supply purchasing processes to a new system without proper coordination between the two.

Make the Benefits Clear

You have to convince the organization's managers that the impending changes will benefit them in the long run. Get them behind your effort and use them to help you develop and establish system changes. They need to understand how they can enhance their own operations through the new system.

Global systems can help an organization improve its vertical and horizontal operations. If a political conflict interrupts sugar supplies, a global system can shift the flow of that vital supply to another region. As global operations continue to expand, corporations are realizing the benefits of having multiple geographic locations from which they can operate virtually uninterrupted.

Should a region or operating unit experience a disruption in sales, such as we've seen in South American markets in the last few years, the economic burden of the declining profits can be spread to other units of the global company. The economies of scale that corporations are realizing through global operations are tremendous. No longer does a company have to build individual production units in every country in which it wants to sell its products.

Bottom Line: Analyze each workflow process and decide which business unit can best carry it out. Go with the best of the best. Match the structure of your information system to that of your core business processes. Make the benefits clear to all levels of the organization. Use cooptation to encourage ownership of the system. Manage the changes in the information systems as intensely as you manage anything else.

THE MANAGEMENT SOLUTION

Management's biggest task is to manage the changes that must take place in a global company. As we mentioned earlier, the changes are more difficult and complex because of the added characteristics of politics, culture, and language.

Agreeing on Common User Requirements

Keep the list of core business processes short and simple. It's easier to implement. Don't lose sight of the common goal of integration.

Introducing Changes in Business Procedures

Your **legitimacy** is enhanced by how well people accept your authority as a change agent. If you establish yourself as knowledgeable, competent, willing to accept input

from others, and if your vision of the end result is sound, you're more likely to succeed. Give other people some ownership of the change process, and they'll be more than happy to help you and the company succeed.

Coordinating Applications Development

Communicate, communicate, and communicate. Tell people what's going on; don't surprise them about anything. Change is difficult enough without people feeling like they're getting blindsided. This is one area in which an Intranet may prove to be an invaluable tool to help you get the word out.

Coordinating Software Releases

Encouraging Local Users to Support Global Systems

Participants will want to do it their way because that's what they are most comfortable with. Your task is to convince them that they may need to adapt to a new way of doing business for the overall good of the company.

Get the opposition on your side as quickly as possible. **Cooptation** is the process of getting the naysayers to help you determine the solution to the problem without giving up total control of the change process. Persuading them to help you is far better than beating them into submission.

Bottom Line: The opportunities, challenges, and solutions to managing international information systems are extremely daunting and more complex because of political, cultural, and technological issues that are not a part of a domestic-based system. However, in today's global economy, they can't be ignored.

WINDOW ON MANAGEMENT: Colgate-Palmolive Keeps the World Smiling

To Think About Questions

1. Why was the traditional method of allocating IT resources to profits no longer effective?

It was difficult to manage IT projects throughout 200 countries and track who in the company was working on IT projects and how much the projects were actually costing. Colgate-Palmolive had traditionally allowed each geographic region in the world to plan its own IT projects and deploy available resources to build those systems. Local and regional managers coordinated their IT resources on spreadsheets that were emailed among the operating companies and offices.

Central executives had no idea who was working on which project, and had lost control over IT resources to the regions. Colgate-Palmolive did not have any mechanism for

coordinating global IT operations. Executives determine that the regional system was inefficient and ineffective.

2. Why is it important for central management to understand the global disposition of IT personnel and funds?

Adoption of the SAP Resource and Portfolio Management software enabled the company to achieve a “real-time” view of its IT project portfolio and better synchronize projects with its corporate strategy and priorities. The monitoring and reporting capabilities of the new system also enable the Colgate IT team to better align its priorities to business objectives. The company now has a clear understanding of the percentage of time spent on application development and support. The CIO discovered a hidden 20 percent resource pool in the IT organization when it became apparent that people were not being used efficiently. Outsourcing of maintenance work has increased by 40 percent, allowing internal IT staff to focus on developing systems to serve customer needs.

3. Which of the four global business strategies described in this chapter is Colgate pursuing, and how has this affected its selection of an IT resource management system?

Colgate-Palmolive appears to be pursuing a transnational business strategy in which there is no single national headquarters but instead have many regional headquarters and perhaps a world headquarters. Nearly all of its 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. There is a strong central management core of decision making, but considerable dispersal of power and financial muscle throughout the global divisions.

Specific to Colgate-Palmolive's IT management, the SAP RPM application allows the company to inventory and track resources, skills, and budgets related to planning and managing projects. It uses dashboards to relay the status of budgets, schedules, and key performance indicators to executives. The corporate IT department reviews a slate of projects submitted by various corporate groups, establishes priorities, and approves or disapproves projects. Each month IT personnel from all the regional groups submit reports that identify the actual use of IT people and funds that month. Corporate headquarters then has a comprehensive list of available people to work on new approved projects. People are shared across the organization to work on development projects that are closer to the customers.

4. What elements of “The Management Solution,” described in this chapter, are mentioned in the case study? What elements are missing?

Colgate-Palmolive appears to be using all of the Management Solutions:

Agreeing on Common User Requirements: the company has established a list of core business processes and core support systems that its new system will support –

development work for internal IT staff in regions that are closer to the customer. The new system has enabled it to identify maintenance work that it can outsource to less expensive off-shore firms.

Introducing Changes in Business Processes: Apparently corporate management was able to convince local and regional users that the change in the system was feasible and desirable.

Coordinating Applications Development: it is coordinating information systems projects on a global basis enabling it to identify a resource pool available for internal IT staff to focus on developing systems to serve customer needs.

Coordinating Software Releases: It's assumed that since the SAP RPM system is used throughout the company that all operating units convert to new software updates at the same time.

Encouraging Local Users to Support Global Systems: Colgate involved users in the creation of the design of the new system without giving up control over the development of the project to parochial interests. IT regional managers report data to central headquarters monthly. People available to work on new projects are shared across the organization, giving them a feeling of ownership in the system.

MIS In Action

Explore the Colgate Web site and then answer the following questions:

1. Go to the SAP Web site and search on “RPM.” Read SAP’s description of the product and identify (a) other firms that use the product, and (b) how RPM integrated into (“snaps” into) larger SAP resource management applications.

(Copied from SAP.com Web site, Dec 2008)

(a) other firms using the product:

Anglo Platinum: Delivering Huge Returns: Anglo Platinum is one of the world's leading primary producers of platinum group metals. See how the organization is using SAP RPM to manage complex projects, integrate business processes, and improve decision making.

Arla Foods: Gaining a Better Product Overview: Arla Foods is a co-operative owned by more than 10,000 milk producers in Denmark and Sweden and operates in Denmark, Sweden, and the United Kingdom. See how Arla Foods is using SAP RPM to remain competitive and achieve better insight into its products.

Statoil: Consolidating Processes: Based in Stavanger, Norway, Statoil is an integrated oil and gas company located in 33 countries. See how Statoil is using SAP RPM to integrate its different practices and methodologies at its plants into one common process.

Thomson: Greater Visibility Into Entire Portfolio: Thomson is a world leader in digital video technologies, serving the global media and entertainment industries. Learn how Thomson is using SAP RPM to streamline its processes across the organization and gain consolidated visibility into its entire R&D portfolio in multiple countries.

(b) how RPM integrated into (“snaps” into) larger SAP resource management applications:

Successful organizations are those that can maximize business value, achieve balance, and align their overall portfolio with strategic objectives. The SAP Resource and Portfolio Management (SAP RPM) application helps you deliver on this, and helps you deliver on it more effectively.

SAP RPM addresses your organization's need for strategic and operational portfolio management. An enterprise-level solution for the management of a range of portfolios – including product innovation management (PIM), professional service portfolios, and enterprise IT – SAP RPM enables you to better control and innovate projects, processes, products, and services across their life cycles.

Powered by the SAP NetWeaver technology platform, SAP RPM “snaps-on” to existing heterogeneous IT landscapes and leverages data from disparate systems – including human resource, financial, project management, and desktop systems – enabling new, cross-functional business processes and providing ready insight into operations. For example:

- Prebuilt integration with SAP and non-SAP systems provides out-of-the-box transparency into project-cost actuals, forecasts, baselines, and other KPIs across your entire portfolio.
- Deep integration with your HR system, including visibility into the organizational structure to support both line and pool management, enables resource allocation and strategic capacity planning based on up-to-date information on skills, availability, and approval workflows.
- Flexible dashboards and sophisticated analytics drawn from disparate systems enable continuous monitoring of your portfolio's performance.

SAP RPM aligns activities, resources, and budgets with business priorities. So you can maximize the value of your portfolio and leverage your existing investments in IT systems, skills, and resources.

And, together with other SAP solutions tightly integrated by SAP NetWeaver, SAP RPM can support your new product development and introduction processes.

2. Visit SAP's largest competitor, Oracle.com, and identify similar applications provided by Oracle. What do you think are the most important management and business considerations in deciding between Oracle and SAP solutions for global projects?

Oracle's Project Portfolio Management Suite appears to be a similar application.

(Copied from Oracle.com Web site, Dec 2008)

Oracle delivers the world's leading project portfolio management solutions to help enterprises achieve and maintain strategic advantage. Only Oracle supports the full lifecycle of project and portfolio management within a single, integrated, accurate view of all project-related activities.

- Only Oracle offers a comprehensive scenario modeling and "what-if" approach to portfolio alignment and optimization
- Only Oracle enables companies to run global projects and programs by supporting multiple currencies, languages and business units
- Only Oracle offers a single global project repository providing complete, secure and personalized project information for all team members
- Only Oracle offers efficient drill downs from summary information for deeper level analysis
- Only Oracle effectively controls project issues and changes to determine the impact of potential changes on cost, schedule, and plan accordingly
- Only Oracle allows for sharing of project information anytime, anywhere, with a single instance view
- Only Oracle is the market leader in automating operations and finances by integrating project portfolio management with CRM, Financials, HRMS, Procurement, and PLM

Management and business considerations when deciding between Oracle and SAP solutions for global projects should include

- Agreement on common user requirements
- how well the software applications will mesh with existing systems
- user acceptance
- user training required
- amount of cooptation necessary to bring the opposition into the process of designing and implementing the solution

3. Visit HP.com and search on “Business Technology Optimization.” BTO is a suite of products provided by HP to optimize the use of IT resources. Describe this suite of offerings and identify one global firm that uses this technology. Describe the global strategy of this firm, how it has changed in recent years, and the reasons for adopting this HP software.

(Copied from HP.com Web site, Dec 2008)

Bridge the gap between IT and your lines of business.

Cutting IT costs. Mitigating operations-related risks. Speeding development and delivery of new business services. Strengthening business-IT alignment.

As you transition to the value-driven supplier/consumer model required for business technology success, these are the kinds of challenges you're facing every day. HP helps you meet them with Business Technology Optimization Services that leverage the power of our management software, proven methodologies and applications-specific expertise to drive better business outcomes.

The HP Business Technology Optimization portfolio helps you provide consistently high-quality business services. Our process discipline and global delivery capabilities give you the peace of mind that stems from standardized, repeatable service offerings. And our service and delivery options bring unprecedented levels of flexibility to your resource strategy.

Application Development & Management Services

Succeeding in today's competitive global marketplace calls for implementing and optimizing software that is fine-tuned to your unique business requirements and processes. HP can help.

HP Software Consulting and Development Services combine infrastructure services, middleware, packaged applications and custom development targeted toward your toughest business problems. Our software professionals work with you to shorten development cycles and streamline the transformation of your business processes.

HP Application Management Services leverage our experience, skillsets, and global scale to host, operate and manage the large, complex applications that power your business — applications like SAP, PeopleSoft, Siebel and Oracle. These proven outsourcing solutions not only bring you cost and time savings; they allow your key people to keep their focus on core business activities.

Application Modernization Services

HP Services professionals can help transform your legacy application environment to meet today's — and tomorrow's — business requirements. Whether you need to reengineer an application, rehost an application on a new standards-based platform, replace custom code with a packaged application or retire an application that no longer supports your business, we can help you profit from change and minimize the risk of transition-related business disruption. Team up with HP to maximize the business value of your applications and close the gap between business processes and IT.

Service-Oriented Architecture Services

A Service-Oriented Architecture can give your organization the flexibility and responsiveness you need to keep pace with changing business requirements. And as it helps tighten business-IT alignment, SOA implementation can lower operations costs, reduce management complexity and accelerate time-to-results as you leverage legacy applications and deploy new technologies.

HP Services has proven capabilities, experience and resources to help you reap the benefits of an SOA. Our application specialists partner with you all the way from the early stages of SOA adoption through SOA deployment and optimization to deliver solutions that yield favourable business outcomes.

More HP services for business technology success

- Business Information Optimization Services — Helping you use technology to make better business decisions and manage your business-critical information throughout its lifecycle
- Adaptive Infrastructure Services — Helping you contain IT costs while delivering higher service quality and greater business value

Describe the global strategy of this firm, how it has changed in recent years, and the reasons for adopting this HP software.

(Excerpt copied from HP.com Web site, Dec 2008. The complete case study is available at <http://h20195.www2.hp.com/PDF/4AA0-9568ENW.pdf>)

ClearPointe (www.clearpointe.com) has been delivering remote managed IT services to companies located throughout North America, including 38 states in the U.S and areas of Canada. ClearPointe has established itself as a national centre of excellence for practical deployment of advanced Microsoft technologies, including managed services for small and mid-sized businesses. Over time, the Arkansas-based company's IT environment had grown to include a mix of UNIX and other non-Windows operating systems on a mix of disparate servers, including mainframes. "Our IT environment had become difficult and we couldn't get enough traction with it," says Bob Longo, Channel Partner Manager at ClearPointe. "Our customers were unhappy, and internally, we couldn't control our costs." With rising costs of operation, growing customer dissatisfaction and difficulty moving to new service delivery business model, ClearPointe realized that it was time for a complete IT overhaul. To meet its goals, ClearPointe decided to standardize its IT services delivery infrastructure on HP ProLiant servers and HP Integrated Lights-Out Management (iLO) and HP Systems Insight Manager (HP SIM) remote monitoring and management software

11.4

TECHNOLOGY ISSUES AND OPPORTUNITIES FOR GLOBAL VALUE CHAINS

Using some of the sources found in business magazines and journals, such as *The Globe and Mail*, *Macleans*, *Business Week*, *Fortune*, or *Canadian Business*, have students examine some success stories of international integration. Students should show the management and organizational issues as well as technical issues.

Students benefit from approaching the international technology issues from several perspectives. Two relevant themes that emerge include issues relevant to the flow of data and information across national borders and those related to global communication networks and connectivity.

An array of issues might be incorporated into the discussions at this stage of the course. The issues of significance will vary over time. Transborder data flows and international implications of electronic data interchange (EDI) are topics of particular relevance for the multinational firm.

International telecommunications standards play an important role in efforts to move toward worldwide communication. Lack of international standards, the proliferation of products and vendors, and rapid changes in technology contribute to the difficulty of integrating information technology across national borders.

Students are very familiar with Canada Post. Consider the postal, telephone, and telegraph (PTT) companies in other countries and how they may pose particular obstacles for multinational corporations. Price and quality of telecommunications is directly linked to the PTT issue and may vary considerably from one country to another. The available telecommunications infrastructure may limit the available alternatives especially in developing countries. The size of the local market may dictate the number of available vendors and the quality of the service that is provided. Movement toward deregulation of telecommunications both in North America and outside will influence these concerns. Establishing an international or global network with communication capabilities without regard for geographical boundaries is difficult at best. An array of unique issues including legal restrictions, government regulations, cultural barriers, and increased data security concerns contribute to the difficulty of setting up global information systems and worldwide communication networks.

TECHNOLOGY CHALLENGES OF GLOBAL SYSTEMS

Hardware, software and telecommunications are special problems in a global setting: you need to synchronize, harmonize, and integrate.

Computing Platforms and Systems Integration

Most global companies are a result of merging several units into one cohesive success story. When the merger takes place, you can't just buy all new hardware and software. It's too expensive for one thing, and it probably won't make sense. You have to figure out how you're going to get all the different types of hardware to work together in one seamless system. You have to get one type of software "talking" to another type of software.

You've already figured out your core business processes. Now you should figure out which types of software, some of which may already be present in the various units of the merged organization, is the best to use for each process. If you're currently using proprietary software and choose to keep it, you will probably need a bridge, or middleware software, in order for it to work across all your business units and regions.

Each region of the business is used to working according to its standards. For instance, the German unit has been storing data according to its standards and definitions. The Asian units have been using different standards and definitions to accomplish the same task. The idea is to get the data conformed to one standard across all units so that they can be shared efficiently and effectively.

Each unit is going to have to adapt in order for that to work. That's where the central office comes into the picture. It will have to determine the end goal of the business and the final information requirements needed, take the best of the best, adapt the rest, and solidify all the units into a cohesive whole.

Connectivity

When you're trying to establish global communication networks, you must work through the maze of various laws, high to low levels of service reliability, different rate charges and currency exchanges, and different companies and governments controlling the telecommunication systems.

You can attack this problem three different ways:

- **Build your own network:** very expensive, time consuming, and not an option in some countries.
- **Patch together a public network:** very expensive, time consuming, and a hodge-podge of services.
- **Outsource telecommunication requirements:** economies of scale, rely on previous experiences of outsourcers, limited to data transmissions.

Many foreign countries are leap-frogging some of their past connectivity problems with brand-new technology such as Web-enabled cell phones. Instead of building expensive old-fashioned telecommunication systems with traditional phone lines, people are using wireless communication devices based on satellite and microwave technologies to communicate with each other. Finland has far greater penetration in connectivity per capita than any other country in the world, but it's based on wireless technology not traditional telephone lines. And Japan has a greater saturation of Web-enabled cell phones than North America.

As the Internet grows outside North America, more corporations are turning to it as a solution to the connectivity problem. To be sure, there are still problems associated with using the Internet. But its open standards, ease of use, and expanding connections offer viable solutions.

Software

We mentioned before that different foreign units probably have divergent standards for their information systems. Trying to merge different databases from several domestic units is tough enough. Trying to merge databases from different countries can be quite troublesome because of the added layer of politics, traditions, and languages.

Even though the English language is widely accepted in foreign business circles, and it seems reasonable to build software programs based on that language, that decision will create its own problems. Foreign business units may resent having to use applications written in a different language. Although most of the upper management levels of the foreign business units may understand English and can use it, will the data workers know the language, or will they have to learn it at the same time they are learning a new information system?

Traditionally, companies have merged their transaction processing systems into one or a few worldwide applications. Now they are looking to do the same with collaborative workgroup software, and well they should. We mentioned at the beginning of this course that many companies are “time-shifting” their projects around the world. A person in Toronto may work on the new advertising campaign all day Tuesday. When she’s done for the day, she may electronically send the project to a collaborator in New Delhi, India. He will work on it for several hours and forward it on to the third team member located in Munich, Germany. All of them need to be able to communicate using collaborative software in a common language.

MANAGING GLOBAL SOFTWARE DEVELOPMENT

The latest trend in the technology sector is **offshore software outsourcing**. The same phenomenon that caused manufacturers to move many blue-collar manufacturing jobs to foreign countries since the early 1980s is now affecting white-collar workers in software development, customer care centres, and transaction processing. Much of this trend can be traced to the globalization of telecommunications making it almost transparent whether the work is accomplished in Peterborough or Pyongyang. However, while it may appear much cheaper to transfer the work to lower-paid employees in foreign countries, there are hidden costs that may not make it all that less expensive in the long run.

As the text discusses the total cost of ownership issues that companies may overlook include:

- Contract costs
- Vendor selection costs
- Transition management and knowledge transfer costs
- Domestic human resources costs
- Costs of improving software development processes
- Costs of adjusting to cultural differences
- Cost of managing an offshore contract

Bottom Line: Differences in hardware, software, and telecommunications throughout the organization and the countries in which you're doing business pose tremendous challenges in integrating disparate business units into a cohesive global whole. Although on the surface offshore outsourcing may seem cheaper than keeping the functions in Canada, hidden costs may negate any savings.

WINDOW ON ORGANIZATIONS: Can Cell Phones Close the Global Digital Divide?

To Think About Questions

1. What strategies are cell phone companies using to “close the digital divide” and market phones to the poorest segment of the world’s population?

Cellular phone companies use ‘human-behaviour researchers’ or ‘user anthropologists’ to gather information about consumer habits and the lives of potential cell phone buyers. Cell phone designers and technology architects use the information in a process called ‘human-centered design.’ Products that people find appealing and easy to use are built around these design principles. That increases the likelihood that people in poorer countries will buy the phones. Phone companies must overcome barriers such as the lack of electricity, low incomes, and lack of service in non-urban areas. Apparently the phone companies are succeeding in overcoming these problems based on these statistics: It took 20 years for the first billion phones to sell, four years for the second billion, and only two years for the third billion. Eighty percent of the world’s population lives within range of a cellular network, double the level in 2000.

2. Why do economists predict that widespread cell phone usage in developing countries would have an unprecedented effect on the growth of those countries?

Cell phones are becoming useful business tools in poorer countries by allowing people to more easily identify and take advantage of business opportunities. Cell phones increase profits on an individual level. Every additional 10 cell phones per 100 people per country, adds 0.5 percent to that country’s gross domestic product. Here are a few creative ways people are using cell phones to develop new business opportunities:

- Phone ladies in Bangladesh charge small commissions for fellow villagers to make and receive calls
- Ugandans use prepaid air time as an intermediary to transfer currency
- People in West African countries trade a variety of projects using cell phone text messaging to communicate
- Fishermen off the coast of Kerala use cell phones to contact prospective buyers

3. What are some examples of how cell phones might increase quality of life for residents of developing countries?

Even the poorest families dedicate a significant portion of their small budgets to communication technologies for these reasons:

- People remain reachable even though they are constantly on the move due to war, drought, natural disasters, or extreme poverty
- Patients can more easily reach doctors, and doctors can more easily acquire information pertaining to diseases and ailments they may need to treat
- Cell phones enable people to more easily identify and take advantage of business opportunities thereby increasing their standard of living

4. Do you believe that cell phones will proliferate widely through Africa and Asia? Why or why not?

Cell phone will probably continue to proliferate throughout Africa and Asia in spite of the lack of electricity, low incomes, and lack of service. Cell phone companies will continue to solve technologically-related problems while people will continue to find ways to afford cell phones. Cell phones combine features of watches, alarm clocks, cameras and video cameras, stereos, televisions, and wallets. They are growing in usefulness even as they decrease in price. They are cheaper and easier to use than computers when accessing the Internet. Access to the Internet via cell phones also promises to bring about societal and political change in developing countries in which repressive governments exert control over all forms of media.

MIS In Action

Explore the Web site for One Laptop Per Child (www.laptop.org) and then answer the following questions.

1. What are the capabilities of the XO PC? How well-suited is this machine for developing countries?

(Copied from Laptop.org Web site, Dec 2008)

Introducing the children's laptop from One Laptop per Child, a potent learning tool created expressly for the world's poorest children living in its most remote environments. The laptop was designed collaboratively by experts from both academia and industry, bringing to bear both extraordinary talent and many decades of collective field experience in every aspect of this non-profit humanitarian project. The result is a unique harmony of form and function; a flexible, ultra low-cost, power-efficient, responsive, and durable machine with which nations of the emerging world can leapfrog decades of development—immediately transforming the content and quality of their children's learning.

Unlike any laptop ever built

The laptop is not a cost-reduced version of today's laptop; we have fundamentally reconsidered personal computer architecture—hardware, software, and display. Unlike any laptop ever built, the laptop:

- Creates its own mesh network out of the box. Each machine is a full-time wireless router. Children—as well as their teachers and families—in the remotest regions of the globe will be connected both to one another and to the Internet.
- Features a 7.5-inch, 1200×900-pixel, TFT screen and self-refreshing display with higher resolution (200 DPI) than 95% of the laptops on the market today. Two display modes are available: a transmissive, full-colour mode; and a reflective, high-resolution mode that is sunlight readable. Both of these modes consume very little power: the transmissive mode consumes one watt—about one seventh of the average LCD power consumption in a laptop; and the reflective mode consumes a miserly 0.2 watts.
- Can selectively suspend operation of its CPU, which makes possible further remarkable power savings. The laptop nominally consumes less than two watts—less than one tenth of what a standard laptop consumes—so little that laptop can be recharged by human power. This is a critical advance for the half-billion children who have no access to electricity.

Free software

To enhance performance and reliability while containing costs, The laptop is not burdened by the bloat of excess code, the “feature-itis” that is responsible for much of the clumsiness, unreliability, and expense of many modern laptops. We intend for laptop to start up in an instant—faster than any commercial laptop now available—and move briskly through its operations.

The laptop is an open-source machine: free software gives children the opportunity to fully own the machine in every sense. While we don't expect every child to become a programmer, we don't want any ceiling imposed on those children who choose to modify their machines. We are using open document formats for much the same reason: transparency is empowering. The children—and their teachers—will have the freedom to reshape, reinvent, and reapply their software, hardware, and content.

The generation-one machine's core electronics begin with the 433Mhz AMD Geode processor. There are 256MB of dynamic RAM and 1GB of SLC NAND flash memory on board. The basic integrated operating system is a “skinny” Fedora distribution of Linux. The user interface is specially designed to support collaborative learning and teaching: every activity comes with a support network of teachers and children, so learning need not be an isolated, lonely endeavor.

Features

Each machine features a video/still camera, three external USB-2.0 ports, plus an SD slot.

The laptop is VOIP-enabled, creating another link among users (both locally and globally). It features CSound, an incredibly powerful and versatile music synthesis software that takes advantage of a full-featured audio codec (and the mesh network for collaborative musical performances). There are internal stereo speakers, as well as a stereo line-out jack. The microphone is built in, with a mic-in jack, which offers another unique feature: “sensor input” mode. The children can plug in any of a number of home-made data sensor, enabling them, for example, to turn their machines into thermometers or oscilloscopes.

Form factor

Form factor was a priority from the start: the laptop could not be big, heavy, fragile, trivial, ugly, dangerous, or dull. Another imperative was visual distinction. In part, the goal is to strongly appeal to the laptop's intended users; but the machine's distinctive appearance is also meant to discourage gray market traffic. There's no mistaking what it is and who it is for.

The laptop is about the size of a textbook and lighter than a lunchbox. Thanks to its flexible design and “transformer” hinge, the laptop easily assumes any of several configurations: standard laptop use, e-book reading, and gaming.

The laptop has soft, rounded edges. The integrated handle is kid-sized, as is the sealed, rubber-membrane keyboard. The touchpad supports pointing and dragging.

Safety and reliability

The laptop is fully compliant with the European Union's RoHS Directive. It contains no hazardous materials. Its batteries (NiMH or LiFePo4) contain no toxic heavy metals, plus it features enhanced battery management for an extended recharge-cycle lifetime. It will also tolerate alternate power-charging sources, such as car batteries.

To top off the battery — for use at home and where power is not available — the laptop can be hand powered. It will come with at least two of three options: a crank, a pedal, or a pull-cord. It is also possible that children could have a second battery for gang-charging at school while they are using their laptop in class.

Experience shows that the laptop components most likely to fail are its hard drive and internal connectors. The laptop has no hard drive to crash and only two internal cables. For added robustness, the machine's plastic walls are 2.0mm thick, as opposed to the standard 1.3mm. Its mesh network antennas, which far out-perform those of the typical laptop, double as external covers for the USB ports, which are protected internally as well. The display is also cushioned by internal “bumpers.”

The estimated product lifetime is at least five years. To help ensure such durability, the machines will be subject to factory testing to destruction as well as in situ field testing by children.

A real computer

Some computer industry figures have publicly dismissed the laptop as a stripped-down toy—a gadget. “Geez”, asked one, “why not get a real computer?” Indeed. These individuals certainly now know better: as a not-for-profit, we have done something out of their reach—something for the children of the world. Comments and critiques are, of course, always welcome at laptop.org.

2. How would the use of the XO laptop narrow the global digital divide? Compare the potential impact of this machine to that of cell phones in developing nations.

(Copied from Laptop.org Web site, Dec 2008)

“Mission Statement: To create educational opportunities for the world's poorest children by providing each child with a rugged, low-cost, low-power, connected laptop with content and software designed for collaborative, joyful, self-empowered learning. When children have access to this type of tool they get engaged in their own education. They learn, share, create, and collaborate. They become connected to each other, to the world and to a brighter future.”

While the XO laptop will probably help narrow the global digital divide, it's likely cell phones will enjoy a wider acceptance. Cell phones have most of the same capabilities of the XO laptop but are easier to carry from one place to another. Cell phones don't consume as much battery power as the laptop, even though the laptop has a low-consumption feature. Cell phones may also be easier to use than laptop computers.

SUMMARY

1. What major factors are 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. What are the alternative strategies for developing global businesses?

There are four basic international strategies: domestic exporter, multinational, franchiser, and transnational. In a domestic exporter strategy, there is heavy

centralization of corporate activities in the home country of origin. 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. In a franchiser strategy, 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. 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. *How can information systems 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. *What are the challenges posed by global information systems and management solutions to these challenges?*

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. *What are 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

The following alphabetical list identifies the key terms discussed in this chapter.

Business driver — a force in the environment to which businesses must respond and that influences the direction of business.

Cooptation — bringing the opposition into the process of designing and implementing a solution without giving up control of the direction and nature of the change.

Core systems — systems that support functions that are absolutely critical to the organization.

Domestic exporter — form of business organization characterized by heavy centralization of corporate activities in the home country or origin.

Franchisers — form of business organization in which a product is created, designed, financed, and initially produced in the home country, but for product-specific reasons relies heavily on foreign personnel for further production, marketing, and human resources.

Global culture — the development of common expectations, shared artifacts, and social norms among different cultures and peoples.

International information systems architecture — the basic information systems required by organizations to coordinate worldwide trade and other activities.

Legitimacy — the extent to which one's authority is accepted on grounds of competence, vision, or other qualities. Making judgments and taking actions on the basis of narrow or personal characteristics.

Multinational — form of business organization that concentrates financial management and control out of a central home base while decentralizing.

Offshore software outsourcing — outsourcing systems development work or maintenance of existing systems to external vendors in another country.

Particularism — making judgments and taking action on the basis of narrow or personal characteristics, in all its forms (religious, nationalistic, ethnic, regionalism, geopolitical position).

Transborder data flow — the movement of information across international boundaries in any form.

Transnational — truly global form of business organization with no national headquarters; value-added activities are managed from a global perspective without reference to national borders, optimizing sources of supply and demand and local competitive advantage.

REVIEW QUESTIONS

1. What major factors are driving the internationalization of business?

List and describe the five major dimensions for developing an international information systems architecture.

According to Figure 11-2 the five major factors are the need to:

- Understand the global business environment in which your firm is operating.
- Consider a corporate strategy for competing in that environment.
- Consider how to structure your organization to pursue the strategy.
- Consider management and business processes in implementing the strategy.
- Develop an appropriate technology platform.

Describe the five general cultural factors leading toward growth in global business and the four specific business factors. Describe the interconnection among these factors.

According to Table 11-1, the five general cultural factors are

- global communication and transportation technologies: a global village has been created in which global communications of all kinds are no more difficult and not much more expensive than domestic communications.
- development of global culture: has created shared values and beliefs around the world.
- emergence of global social norms: references the fact that proper attire, proper consumption, good and bad government, and other norms are more and more shared.
- political stability: the world is living through the longest period of world political stability in the modern age
- global knowledge base: educational, scientific, and industrial knowledge and skills are no longer centered in North America, Europe, and Japan, but have spread to Latin American, China, Southern Asia, and Eastern Europe

The specific business factors are :

- global markets: patterns of consumption of goods are becoming similar around the world.
- global production and operations: far-flung production facilities are coordinated at central headquarters thousands of miles away.
- global coordination: coordination of business factors has expanded beyond production to include all major business functions, such as accounting, marketing, sales, and human resources systems development.
- global workforce: the location of business activities is based on workforce availability.
- global economies of scale: production is concentrated where it is best accomplished; lower production costs are exploited wherever they emerge.

These factors are interrelated. The spread of global communications has led to the emergence of a global culture and global social norms. This, in turn, has led to the development of global markets. Emerging global technologies make possible the transportation of raw materials and finished products throughout the world, and have given businesses the ability to act globally. Global production and coordination and the ability of businesses to make use of global economies of scale all depend upon the emergence of sophisticated global communications. The existence of global markets has been one of the factors making global production and operations attractive.

List and describe the major challenges to the development of global systems.

According to Table 11-2, the general challenges are:

- cultural particularism – regionalism, nationalism, language differences: different standards for electronic data interchange, email, and telecommunications.
- social expectations – brand-name expectations, work hours: phone networks are not uniformly reliable.
- political laws – transborder data and privacy laws, commercial regulations: different data transfer speeds and shortages of skilled consultants.

Explain why some firms have not planned for the development of international systems.

For some companies, the competition has not been powerful enough yet to drive them towards developing international systems. Other companies lack the global strategy needed for such development, or they have inherited a patchwork of international systems built with outdated technologies and standards. Some companies underestimate the time, expense, and logistical difficulties of making goods and information flow freely across different countries. The difficulties involved in 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 are simply too much for some companies.

2. What are the alternative strategies for developing global businesses?

Describe the four main strategies for global business and organizational structure.

Referencing Table 11-3, there are four main strategies.

- Domestic exporter: heavy centralization of corporate activities in the home country of origin. Production, sales, marketing, finance, and other such functions are set up to optimize resources in the home country. Foreign marketing is totally reliant on the domestic home base.
- Multinational: concentrates financial management and control in a central home base, but decentralizes production, sales, and marketing to suit local market conditions.
- Franchiser: create, design, and finance the product in the home country, but rely on foreign personnel for further production, marketing, and human resources. Often, the product must be produced locally because it is perishable.
- Transnational: a stateless, truly globally managed firm. It has no single national headquarters, but instead has many regional headquarters and perhaps a world headquarters. Nearly all of the value-added activities are managed from a global perspective without reference to national borders.

3. How can information systems support different global business strategies?

Describe the four different system configurations that can be used to support different global strategies.

According to Figure 11-3 there are four different system configurations:

- Centralized: systems development and operations that occur totally at the domestic home base.
- Duplicated: systems development occurs totally at the home base, but operations are handed over to autonomous units in foreign locations.
- Decentralized: each foreign unit designs its own, totally unique solutions and systems.
- Networked: systems development and operations occur in an integrated and coordinated fashion across all units.

4. What are the challenges posed by global information systems and management solutions for these challenges?

List and describe the major management issues in developing international systems.

The major management issues in developing international systems are listed in Table

11–4. These issues include agreeing on common user requirements, introducing changes in business processes, coordinating applications development, coordinating software releases, and encouraging local users to support global systems.

Identify and describe three principles to follow when organizing the firm for global business.

According to Figure 11-4, a sensible strategy is to reduce agency costs by developing only a few core global systems that are vital for global operations, leaving other systems in the hands of regional and local units. Not all systems should be coordinated on a transnational basis. Core systems are those that support functions that are absolutely critical to the organization. Other systems should be partially coordinated because they share key elements, but they don't have to be totally common across national boundaries. A final group of systems is peripheral, truly provincial, and needed to suit local requirements only.

Identify and describe three steps of a management strategy for developing and implementing global systems.

Step 1: A company must define its core business processes before it can build an information system that supports them.

1. Define a short list of critical core business processes by conducting a business process analysis. The list should include about ten business processes that are absolutely critical for the firm.
2. Identify centres of excellence for these processes. Some areas of a company, for some lines of business, have a division or unit that stands out in the performance of one or several business functions.
3. Rank-order the business process of the company and decide which processes should be core applications, centrally coordinated, designed, and implemented around the globe, and which should be regional and local. By identifying the critical business processes, the company has gone a long way towards defining a vision of the future that it should be working toward.

Step 2: Identify the core systems to coordinate centrally. Keep the list to an absolute minimum. By dividing off a small group of systems as absolutely critical, the opposition to a transnational strategy is divided. You can appease those who oppose the central worldwide coordination implied by transnational systems by permitting peripheral systems development to progress unabated.

Step 3: Choose an incremental, grand design, or evolutionary approach. Both the incremental and grand design approaches are dangerous. The best 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.

Define cooptation and explain how it can be used in building global systems.

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. The idea is to find a way whereby local units in transnational companies are brought into the process of building transnational core systems by becoming part of the process rather than by being brought in through raw power. One cooptation approach is to permit each country unit to develop one transnational application first in its home territory, and then throughout the world. Another approach is to develop systems based upon existing centres of excellence. The centres of excellence perform the initial identification and specification of the business process, define the information requirements, perform the business and systems analysis, and accomplish all design and testing. This approach uses a phased rollout strategy.

5. What are the issues and technical alternatives to be considered when developing international information systems?

Describe the main technical issues facing global systems.

Hardware, global software, and telecommunications are the main technical issues. Hardware issues arise because the firm needs to standardize the computer hardware platform when there is so much variation from operating unit to operating unit and country to country. Finding applications that are user friendly in an international environment and that truly enhance productivity is a critical software challenge. Making data flow seamlessly across networks shaped by disparate national standards is a major telecommunications challenge. Table 11-5 highlights the most prominent problems of international networks.

Identify some technologies that will help firms develop global systems.

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 an 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.

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?**

There are many 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.

As the text points out, not all systems are candidates for coordination on a transnational basis. The focus should be on the business core systems, those systems that support functions that are absolutely critical to the organization. Figure 11–4 is a good tool to help differentiate core systems from regional coordinated systems and local option systems.

2. Describe ways the Internet can be used in international information systems.

Companies can use the Internet for international communication by creating global intranets and extranets. Companies can also use the Internet to create virtual private networks. Although the Internet is an attractive option, caution must still be exercised, since many countries still lack the infrastructure for its successful use. The Internet can be used in international information systems to co-opt widely dispersed foreign units into one Internet-connected unit. Factors of production can be coordinated on a global scale. Transnational firms can use the Internet to permit considerable decentralization of development and operations. It can also increase centralized financial controls.

COLLABORATION AND 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. You might choose, for instance, an automobile parts franchiser or a clothing franchise, such as 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 Google Sites to post links to Web pages, team communication announcements, and work assignments; to brainstorm; and to work collaboratively on project documents. Try to use Google Docs to develop a presentation of your findings for the class.

For many companies, staying competitive means they must keep up with emerging technologies. This project should help students think along those lines, as well as orient them toward the emerging relevance of global strategies. This text contains many examples of uses for emerging technologies, including many that can be or are global in scope. Consider open systems architecture to establish a global network, and earlier case studies that discuss the use of artificial intelligence to support such processes as authorizing charges. All are related to telecommunications and can easily be applied

globally, plus all rely on recently emerging technology. To take an example from the question itself, if the students selected Express to explore, they might want to consider the following systems (depending upon what technology they were focusing):

- A collaborative work group software product that allows their style experts around the world to work better together to predict (and even partially control) the latest styles.
- An e-mail system that their buyers can use to communicate better among themselves and with the home office.
- A digital network that allows buyers to send graphic images from their offices to other locations so that the company can immediately take advantage of new opportunities.
- Point-of-sale systems in stores around the world to better control inventory and allow management to discover emerging trends.
- A standardized accounting package that stores use around the world allowing the home office to consolidate financial data. In non-Canadian countries such a system would probably be installed with an automated interface from the local, non-Canadian accounting system.

Some of these systems may already exist in that company, and the students can easily come up with more. Students should present their answers to the class, explaining the system and its underlying technology. They must be careful to relate the technology to the global strategy and to a business scenario to carry out that strategy.

HANDS-ON MIS: PROJECTS MANAGEMENT DECISION PROBLEMS

1. United Parcel Service: UPS has been expanding its package delivery and logistics services in China, serving both multinational companies and local businesses. UPS drivers in China need to use UPS systems and tools such as its handheld Driver Information Acquisition Device for capturing package delivery data. UPS wants to make its WorldShip, CampusShip, and other shipping management services accessible to Chinese and multinational customers via the Web. What are some of the international systems issues UPS must consider in order to operate successfully in China?

UPS is likely to face these international systems issues:

- **User interfaces:** which language will be used, Chinese or English? The Chinese language has far more interpretations than the English language. The Chinese language is character based so it may not be easy to translate the user interface instructions between the two languages.
- **Databases:** again the languages don't easily translate between each other which may make it difficult to incorporate Chinese data into an English-based database and vice versa.
- **Telecommunication technologies and transmissions:** UPS is likely to face

connectivity issues especially in the non-urban areas. The Chinese government may censure transmissions which could hinder UPS operations.

- **Cultural barriers:** Chinese cultural particularisms like regionalism, nationalism, and language differences in different geographic areas may hinder UPS operations.

2. Selling tennis rackets outside Canada: Your company manufactures and sells tennis rackets and would like to start selling outside Canada. You are in charge of developing a global Web strategy, and the first countries you are thinking of targeting are Brazil, China, Germany, Italy, and Japan. Using the statistics in the CIA World Factbook, which of these countries would you target first? What criteria would you use? What other considerations should you address in your Web strategy? What features would you put on your Web site to attract buyers from countries you target?

Statistics below are copied in Dec 2008 from the CIA World Factbook online that's updated bi-weekly. These are some criteria students may use to help them decide which country they would target first to sell tennis rackets. Since the sport is associated with higher income groups with higher levels of education, those criteria may determine which country has the best target group. The number of Internet users is helpful but shouldn't be the most important criteria in the decision.

Country	Age Structure 0-14years /15-64 years	Literacy Rates Over 15 yrs can read & write	Education Levels # of years in school	GDP- per capita	Household incomes by percentage share highest 10%	Internet users
Brazil	27/66	88%	14	\$9,500	44%	50 mil
China	20/71	90%	11	\$5,400	34%	253 mil
Germany	13/66	99%	16	\$34,100	22%	42 mil
Italy	13/66	98%	16	\$30,900	26%	32 mil
Japan	13/64	99%	15	\$33,500	21%	88 mil

Other considerations to address in the Web strategy may include language translations for the user interface and database, cultural factors, and the availability and costs of Internet connections.

Features students may consider adding to the Web site would be to track local tennis players in competitions, statistics of professional players from that country, and blogs about tennis-related products, the game itself, and the professional tour.

ACHIEVING OPERATIONAL EXCELLENCE: DEVELOPING A JOB DATABASE AND WEB PAGE FOR AN INTERNATIONAL CONSULTING FIRM

Software skills: Database and Web page design

Business Skills: Human resources international job postings

Fictional 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 Canada, 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.

1. **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.**

Data that should be included in the database are: area name; geographic location, contact person and phone number, hours per week, position title, necessary qualifications, and required experience.

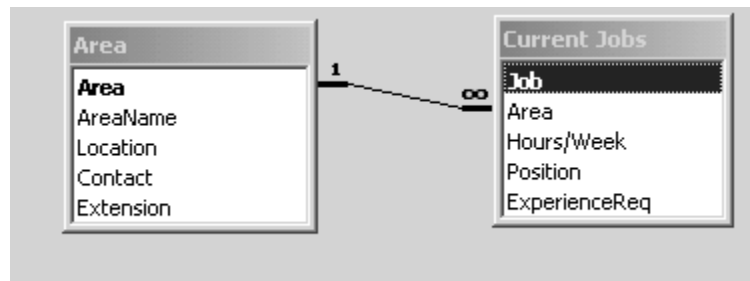
Data that probably should not be included in the database: position salary, race, religion (although it may be a significant consideration in some geographic locations).

You should not include any information that would infringe on the employee's privacy such as gender, religious affinity, or ethnicity.

2. **Populate the database with at least 20 records. You should also develop 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.**

Students must first be reminded that before coding begins, it is the responsibility of the developer to fully understand the task at hand, the company's needs, and the external business environment. The second step is to plan for the development of the Web database construction. Planning tools include Entity Relationship Diagrams, Relational Schemas, and Dependency Diagrams. Once the developer *understands* and has made *plans*, then the coding and construction of the Web database can begin.

Students are asked to create a database. Most will use Microsoft Access, however some MIS/CIS programs may have SQL Server or Oracle in their programs. If this is the case, you may want to have students work in different database packages and compare the time to build, populate, and mine. The finished result should be a relational database with at least 20 records.



In an earlier application exercise, students worked with simple Web page creation. They may do this again, or you may want to introduce them to other Web creation software. Remind them that simple HTML can be created in notepad. Microsoft FrontPage is an intuitive program that students familiar with Microsoft Word pick up quickly. This exercise is more involved since it must pull data from the database the students created. This is an example of how the Web page could be displayed.

JOB POSTINGS AT KTP

- About Job Postings
- Job Postings by Area
- Job Postings by Job Title
- Job Postings by Location
- Look up **current** postings using keyword(s)
- Look up a **current** posting using its Location Code
- Other Job Postings at KTP

IMPROVING DECISION MAKING: CONDUCTING INTERNATIONAL MARKETING AND PRICING RESEARCH

Software skills: Internet-based software

Business Skills: International pricing and marketing

You are in charge of marketing for a Canadian 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.

The students will use various approaches in completing this exercise. As of this writing,

the home page for Sorin SRL is <http://www.sorin-italia.it/>. The students should find <http://www.xe.net/ucc/> very simple to use as a currency converter. Answers will vary depending on the day the assignment is completed. The two other sites for the Europages Business Directory and UK Business Directory may or may not be available when the assignment is made. If they are not available, the students will need to conduct a search for other business directories. They will have various answers to the ease of use. One of the difficulties I found was that the businesses often did not have an associated Web site. After going back to a search engine and finding the business, the Web site primarily had contact information as opposed to customs and legal information. The shipping costs will vary greatly depending on the mode of shipping, the shipping point of departure, and the value of the currency on the day of the shipment.

CASE STUDY: NESTLÉ TRIES FOR AN ALL-FOR-ONE GLOBAL STRATEGY

1. Analyze Nestlé using the competitive forces and value chain models. What challenges did Nestlé face?

Potential Entrants: Nestlé is the largest food and beverage company in the world. As such, the threat of new entrants would be low as it would not be easy for new competitors to enter the market.

Industry Competitors: Nestlé must be able to get their products to market quicker and cheaper than their competitors in order to maintain their dominant standing. Margins tend to be low in this industry and the consolidation of global data is one way of keeping their costs down and their efficiencies high.

Substitutes: Ideally, Nestlé would like to be in a market with few substitutes. However, in the food and beverage market that is simply not the case. The threat of substitutes would be relatively high due to the very nature of the product.

Suppliers: Suppliers power would be considered high. Given Nestlé requirements for massive quantities of raw products, and a limited number of suppliers who can meet these demands, the suppliers would have some “muscle” power to flex.

Buyers: The power of the buyer is high due to the number of choices they have in the food and beverage market.

Value chain model: Nestlé has been very successful in developing and using ERP software through their global operations. This software helps them form strong collaborative ties throughout their global operations. Through their ERP efforts, Nestle has added value-creating activities that did not result in increasing costs to their customers. The company is heavily dependent upon technology in order to maintain their competitive advantage. ERP has enable them to realize greater efficiencies and business processes to bring products quickly into the marketplace while keeping their costs down.

Nestlé faces the challenge of making all of their facilities function as one single-minded business. Traditionally, they allowed local organizations to conduct business as it saw fit, taking into account the local conditions and business cultures. This decentralized strategy resulted in having 80 different information technology units spread throughout their global operations. Allowing these local differences resulted in creating inefficiencies and extra costs that could prevent the company from competing effectively in electronic commerce. The lack of standard business processes prevented Nestlé from leveraging its world-wide buying power to obtain lower prices for its raw materials.

As a result of these inefficiencies, Nestlé are developing a concept of having “one company” representing all of their global operations. They will accomplish this by embarking on a program to standardize and coordinate its information systems and business processes.

Other challenges included:

- Standardization of the business to the new mySAP Internet-based software by established deadline and within budget.
- Maintaining confidence in the project in light of rigid deadlines and complexity of the project.
- Implement new system without affect customers.
- Overcome managers resistance.

2. What type of global business and systems strategy did Nestlé adopt? Was this strategy appropriate for Nestlé's business model?

Nestlé are developing a multinational global business and systems strategy. With this strategy they will centralize key business functions such as material, distribution, and accounting while decentralizing production, sales, and marketing operations to units in the other 200 countries. The products and services on sale in different countries are adapted to suit local market conditions and business cultures. This needed to be maintained however, in the new strategy business units will no longer be permitted to adhere to local customs for conducting business except in cases where the laws of a particular country require it.

This strategy is very well suited to Nestlé business model. As a “single-minded e-business”, Nestlé will be able to use sales information from retailers on a global basis in order to measure the effectiveness of promotional activities and reduce product overstocks and spoilage. By improving operational efficiencies, Nestlé is hoping to gain an advantage over competitors in improving operational efficiency while continuing to grow with new markets and new products. Nestlé will also be able to reduce the number of suppliers and save millions of dollars. Through improved systems, Nestlé will be able to strengthen its 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.

3. What management, organization, and technology challenges did Nestlé have to deal with to standardize its business processes and systems?

Achieving global standardization of operational processes was a very complex task. None of Nestlé products are considered a “truly global brand” as the majority of their products are rebranded, repackaged, and reformulated to create over 200 product versions for different regional preferences.

Management:

- Centralize management of the company's business operations.
- Establish cooperative standards to develop a unified corporate culture.
- Develop single set of business processes and systems suitable to all cultures.

Organization:

- Convince market managers worldwide to adopt a centralized culture
- Convert and implement 70 percent of the business to a common set of best practices and standards 14 countries.
- Reduce IT spending and maintenance costs associated with traditional business methods.
- Implement new business processes concurrently with the new system by making it seamless to others outside the company.
- Rollout test market implementation even though managers and workers had no time to train on the new system before they were deployed and expected to use them.

Technology:

- Consolidate SAP R/2 (older version of ERP software) into new GLOBAL system.
- Move disparate systems into one system known as GLOBE (Global Business Excellence) into the new mySAP Internet-based software.
- Implement new business processes and fix any bugs and confront unanticipated problems during the deployment without disruption to customers.
- Develop GLOBE templates to be used by all countries.
- Develop extra storage space to accommodate a “multiple angles approach” that could not be accommodated by the mySAP software.

4. What strategies did Nestlé management use to deal with these challenges? How successful were these strategies? Explain your answer.

Strategies used by Nestlé included:

- Chris Johnson was asked to lead the GLOBAL initiative to find a way to harmonize processes, standardize data, and standardize systems.
- GLOBAL team composed of senior executives with various backgrounds were chosen specifically for the project.
- Studied experiences of competitors and consulted with PricewaterhouseCoopers and deployment experts at SAP.

- Adjustments had to be made to the original parameters of the project (more staff, more funding, longer time frame, and schedule adjustments (GLOBE-enabled the majority of the company's key markets — rather than 70% by the end of 2005, instead of 2003).
- Utilized a diverse group of business managers (rather than technology managers) who had experience in a variety of business sectors including manufacturing, finance, and human resources.
- The “best of the best” business managers from Nestlé offices all over the world were chosen to be members of the GLOBE team.
- Following the selection of the business managers, 400 executives with diverse career backgrounds and from 40 different countries joined the team.
- Compilation of the GLOBE Best Practices Library by 400 executives who were knowledgeable in how the company actually conducted business.
- GLOBE team brought of experts to challenge documented GLOBE Best Practices, to find their weaknesses, and pare the list down to the best practice for each process.
- Best Practice Library resulted in a step-by-step guide for 1,000 processes, divided into 45 solution sets that focused on specific disciplines.
- To overcome managers resistance to the project, educational sessions were used to convince them that GLOBE was in their best interest and in the best interest of the company.
- Test site for the back-office systems was supported by Jose Lopez who would become an instrumental as a project champion.
- By 2003 the project was achieving operational efficiencies. These were directly attributed to the implementation of GLOBE standards.
- GLOBE system required careful project management throughout its implementation. Scope, scheduling/rollouts, and project costs were carefully maintained.
- In the rollout period, each country had a GLOBE manager who facilitated in the adoption of the system.
- Establishment of a steering committee at company headquarters to schedule and manage rollouts.
- After test market rollouts the test market managers had nine months to document their processes and perfect them until they conformed with the GLOBE templates.
- Worked with SAP to develop a “multiple angles approach” to allow for differences in markets that could not be accommodated by the mySAP software.

These strategies worked extremely well for Nestlé. As stated in the case, by the end of 2005, they 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 a single unit on a global scale.

There is still work to be done to streamline the system to increase its operational efficiency and effectiveness. However, Nestlé is much closer to achieving its goal of standardizing all processes, data, and systems.