Going Global: Using Information Technology to Advance the Competitiveness

Of the Virtual Transnational Organization

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Abstract

It has become almost axiomatic that business success depends upon expanding the global reach of an organization. Moreover, the adoption of the transnational organizational model for multinational enterprise is widely acknowledged as the preferred means of "going global." Designing effective transnational organizations depends on the effective deployment of advanced information technologies. Because globalization requires employees and business partners to be geographically and temporally distant from one another, deploying information technologies within a "virtual organization" is an obvious choice for overcoming spatial and temporal boundaries. This article reviews three competitive requirements of the transnational enterprise: efficiency, responsiveness, and learning. We then describe the role of specific information technologies in meeting these requirements and offer practical guidelines for using these technologies to increase competitiveness in global markets.

Going Global: Using Information Technology to Advance the Competitiveness of the Virtual Transnational Organization

There is little doubt that the competitive landscape has changed dramatically over the past dozen years. Throughout most of the 1980s and 1990s, radical reorientation in customer demands, industry regulations, and technological innovations produced a challenging new environment in which world businesses now compete. Organizations have extended their activities around the world, as indicated by the tremendous growth in the number of multinational organizations.[1] According to a recent survey conducted by the American Management Association, survival in the global business arena has become a major concern of three out of four senior executives.[2] Managing interdependencies between nations is inherently more complex than managing activities within a single nation, and many globalization efforts have been crushed under the weight of unmet coordination needs. Therefore, it is critically important to design organizations that can compete effectively in the global business environment.

While the mandate for global enterprises is widely acknowledged, the preferred organizational form is unclear. In order to structure their global enterprises, executives need to understand forms such as virtual organizations, networked organizations, learning organizations, temporary organizations, T-form organization, and many other exotic alternatives, too numerous to mention. Typically, advanced information technologies play a central role in such structures because technology permits new organizational designs to overcome the spatial and temporal dispersion that accompanies increased global reach. Confronted with choices among a wide array of structural alternatives and their enabling technologies, executives need guidance based on criteria that they understand and trust.

In this article, we draw upon Bartlett and Ghoshal's proposal for the design of *transnational organizations*, incorporating three criteria that must be met for such a company to be competitive: efficiency, responsiveness, and learning.[3] We then describe the *virtual organization* as a viable model for the transnational company. The roles of information technology in the virtual, transnational organization are discussed next, and we show how specific technologies contribute to satisfying the criteria for effective global competition. We conclude the article by offering specific managerial guidelines for using technologies and applications to build the virtual organizational form.

Criteria for Successful Transnational Organizations

Michael Porter defines global industries as those "...in which a firm's competitive position in one country is significantly influenced by its position in other countries."[4] For Porter, competition in global industries requires the integration of activities on a worldwide basis rather than splitting the world into isolated markets or sites for operations. Global industries, therefore, impose daunting coordination requirements upon firms that seek to compete successfully. These requirements are best met by what Bartlett and Ghoshal describe as *transnational* companies. Transnational enterprises may be contrasted with companies using global, multinational, or international strategies. Each of these four enterprise strategies faces different competitive issues, but the transnational enterprise must respond to a multiplicity of competitive challenges, as summarized in Table 1.

Table 1

Enterprise Strategies and their Key Competitive Issues

Types of Enterprise Strategies	Key Competitive Issues
Global	Efficiency
Multinational	Responsiveness
International	Learning
Transnational	Efficiency Responsiveness Learning

The *global* strategy is used when an enterprise locates its headquarters in one country while its operations are performed in one or more other countries.[5] Many domestic organizations adopted this approach in order to broaden their markets by exporting their products. Under this approach, an organization operates in a centralized manner. *Efficiency*, obtained through economies of scale, is the key criterion of effectiveness sought by the global company. Many Japanese firms, such as Honda and Nissan, have used this approach to expand their markets within United States.

In a *multinational* strategy, national or regional operations are relatively autonomous and decentralized in order to increase sensitivity to differences among the individual countries in which it operates. Here, the key competitive issue is *responsiveness* to local markets. Alcoa, Honeywell, and General Foods are among the best-known examples of companies that have developed regional subsidiaries via this strategy.

Under an *international* strategy, enterprises compete on a worldwide basis against other international companies. The international approach calls for a more horizontal structure and establishes strategic linkages between countries in which it operates. Given that the key to success in this approach lies in an enterprise's ability to transfer knowledge to overseas units, *learning* constitutes its key issue. General Electric, Procter & Gamble, and L.M. Ericsson are organizations that have adopted this approach.

According to Bartlett and Ghoshal, organizations will be most competitive if they simultaneously meet the challenges of global efficiency, local responsiveness and learning. Meeting these challenges requires firms to adopt a *transnational* strategy in which each organizational activity is performed in a location where it can be best accomplished. For example, Verifone, Inc., a subsidiary of Hewlett-Packard that produces low-cost terminals for credit card and check authorization, has pursued a strategy of responsiveness to emerging markets around the globe. The company locates its manufacturing activities near defined "centers of excellence" to take advantage of already established economies of scale and to provide access to the best intellectual or capital resources. VeriFone's employees are dispersed all over the world; less than seven percent of them are located at the nominal corporate headquarters in California. Yet, all employees are linked electronically and can share knowledge relevant to major decisions. Verifone's transnational strategy simultaneously promotes efficiency, responsiveness, and learning.

Clearly, the transnational enterprise strategy poses the greatest challenges for organizations seeking to increase their global competitiveness. The primary difficulty is to design an organizational form that is capable of being efficient and responsive, and which enables the transfer of knowledge across locations. For many firms, the answer to the problem of

going global is to adopt a *virtual organizational design*. In the following section, we describe the

characteristics of the virtual organizational form, which we believe offers a viable solution to the

challenges of going global.

The Virtues of Going Virtual

Virtual organizations have been widely discussed during the past decade.[6] Unfortunately,

the virtues of going virtual are often asserted without an exact definition of the meaning of a

virtual organization. Here, we define three characteristics of the virtual organization and

demonstrate how each characteristic enhances global competitiveness. Table 2 summarizes these

arguments.

The central feature of virtual organizations is their *dependence on a federation of*

alliances and partnerships with other organizations. A virtual organization operates as a

federated collection of enterprises tied together through contractual and other means such as

partial ownership arrangements. Specific arrangements include joint ventures, strategic alliances,

minority investments, consortia, coalitions, outsourcing, and franchises. The practice of

permeating organizational boundaries through partnerships and alliances has enabled virtual

enterprises to realize tremendous advantages. For example, the development of the B-1 bomber

required teams from as many as 2,000 separate corporations to work together. They formed a

virtual organization to accomplish the design and manufacture this product, an effort that

required several years to complete. The virtual organization's goal is to extract the maximum

value from its partners while making the minimum investment in permanent staff, fixed assets,

and working capital. This is typically accomplished by assigning to its partners as many

functions as possible except for the core strategic functions that are difficult for competitors to

replicate. Core strategic competencies are retained because they provide the company with sustainable competitive advantage.

Table 2

Characteristics of Virtual Organizations and their Effects on Global Competitiveness

Characteristics	Effects on Competitiveness	Examples
Dependence on a federation of alliances and partnerships with other organizations	Corporate functions can be easily integrated with functions provided by allied partners to enhance and extend corporate reach worldwide.	Sun Microsystems Nike Reebok
Relative spatial and temporal independence	Geographical boundaries can be easily transcended, providing competitive presence in global markets and improving access to natural and human resources.	Eastman Kodak Tandem Services
Flexibility	Resources can be easily reassigned to respond to shifting opportunities in global markets.	Allergan Pharmaceuticals Intel

Although traditional organizations may also use partnerships and alliances, virtual organizations use the federation concept as their primary principle of organizing. Consequently, the major challenge in designing a virtual organization is to create seamless integration among a variety of federated organizations. When this is accomplished, customers are unaware of the fact that separate organizations are servicing their needs. This creates an essential advantage for the transnational company by allowing, for example, local production and services to be seamlessly integrated with worldwide customer support.

The high tech and sports footwear industries provide good examples of federated arrangements. In the high tech arena, for example, Sun Microsystems views itself as an intellectual holding company that designs computers.[7] All other functions, including product ordering, manufacturing, distribution, marketing and customer service are handled through contractual arrangements with partners located throughout the world. In the volatile sports footwear industry, neither Nike nor Reebok own many production facilities. Rather, they outsource nearly all footwear production to firms based in Taiwan, South Korea, and other Asian countries. Many other industries are finding that the distribution of value-adding tasks across a federation of firms helps to provide effective worldwide sales and service.

A second characteristic of a virtual organization is its *relative spatial and temporal independence*. No organization operates completely independent of space or time, but virtual organizations are able to overcome vast spatial and temporal barriers by linking geographically remote resources together. This characteristic is extremely important to the transnational firm, which operates more effectively if it can transcend geographical boundaries. Virtual organizations often allow individual employees to perform their work in a variety of locations: home, car, office, or on airplanes. Moreover, employees performing services need not be physically located close to their customers if customer contact can be mediated by other means, notably advanced communication technologies. The characteristic of spatial independence acknowledges that the physical location of work can be decided by more relevant criteria than the need to co-locate workers contributing to a common task.

Global markets require sensitivity to local product and service needs, and spatial and temporal dispersion allows the virtual organization to be locally responsive yet centrally coordinated. For example, a virtual team was used recently by Eastman Kodak to develop a

single-use camera for the European market.[8] While the camera's functional features were similar to those marketed worldwide, Kodak wanted to adapt the product's appearance and supporting features so that it would appeal to European buyers. Two German engineers worked with the design team, first in Rochester, NY and later through telecommunications links from Germany. By creating a virtual team that could function independently of time and space, Kodak was able to respond rapidly to a local market opportunity.

Tandem Services Company, the systems integration unit of Tandem Computers, provides a second example of spatial and temporal independence. In the mid 1980s, Tandem Services employed a virtual office design for an urgent project involving information systems developers from London, Tokyo, and several U.S. cities.[9] A plan for passing work from one time zone to the next was devised, so that program code was written by developers in London, tested in the United States, and debugged in Tokyo. By the time the London developers came to work the next day, another cycle was ready to begin. This approach allowed the project to receive attention around the clock. Quite literally, the sun never set on Tandem Services' global virtual team.

A third characteristic of a virtual organization is its *flexibility*. Parts of virtual organizations may be formed, disbanded, and reformed to respond rapidly to changing business needs. Flexibility is an important asset for transnational companies because opportunities in global markets are constantly shifting. The geographically dispersed work force of the virtual organization may be molded into temporary teams to seize new business opportunities when they arise. In more conventionally organized competitors, reaction time is slowed by rigid organizational structures. The most competitive companies have the dexterity to shift resources to capitalize on new opportunities while less nimble competitors may be stuck with underutilized

resources.

For example, Intel has used virtual teams for a medley of projects: formulating and delivering sales strategies for specific products, developing new products, and manufacturing microprocessor elements. Composed of members from company locations in Ireland, Israel, England, France and Asia, the teams came together quickly, did their work, then disbanded and regrouped with a variety of other teams. Allergan Pharmaceuticals also uses temporary global teams throughout its organization, improving time-to-market for new products and creating effective marketing strategies for its customers around the world. Allergan's teams potentially draw resources from the corporation's entire employee base.[10]

When applied to the design of transnational organizations, these three characteristics of the virtual organization potentially contribute to enhanced global competitiveness. Virtual organizations react to customers' needs more quickly, bring new products to market faster, and change their contours more rapidly than other organizations. However, to achieve this potential, the virtual organization must respond to its most serious challenge: *coordination*. Virtual organizations incur higher coordination costs because of the numerous external and internal relationships that must be managed across time and space. Because of the federated and dispersed nature of virtual organizations, traditional coordination and control mechanisms are ineffective. While designing any organization requires careful attention to the technologies by which work is performed, virtual organizations would simply not exist without the advanced information technologies that link their parts together. In the following section, we identify the technologies that may be employed effectively by the virtual organization seeking to be more competitive in the global business arena.

Matching Information Technology to Transnational Business Requirements

Information technology is a key ingredient in virtual, transnational organizations because it facilitates the coordination among loosely federated components, overcomes the spatial and temporal barriers that characterize conventional organizational structures, and promotes flexibility. Indeed, information technology has the capability to enable dramatic organizational transformation and to make traditional forms obsolete. But which information technologies and applications specifically enable virtual transnational organizations to be competitive?

In Table 3, we propose a representative group of information technologies and applications that match the three basic needs of the transnational business: efficiency, local responsiveness, and learning capability. Executives may draw upon these enabling technologies to respond to the needs of the transnational enterprise. Where a technology or application is well suited to a business need, we have placed an asterisk in the appropriate cell of the table. Blank cells indicate a less obvious match, but it is still conceivable that applications could contribute to meeting the need. For example, EDI systems are shown contributing to efficiency and responsiveness, as explained below. However, EDI systems could also contribute to learning if, for example, electronic transaction histories were archived and analyzed for market trends and tendencies. Since most EDI systems are not designed with this feature in mind, we do not consider EDI to be an obvious match with needs for learning.

Table 3

Technologies and Applications for Meeting the Needs of the Transnational Enterprise

Representative Information Technologies and Applications	Efficiency	Responsiveness	Learning
Electronic Data Interchange (EDI)	*	*	
Interorganizational Systems (IOS)	*	*	
Electronic Commerce using Internet	*	*	*
Language Translation Software		*	
Mass Customization Technology		*	
Extranet		*	*
Groupware	*		*
Intranet	*		*
Organizational Memory Systems (OMS)		*	*

Electronic Data Interchange

Electronic data interchange (EDI) facilitates both efficiency and responsiveness. EDI

links the computer systems of buyers and sellers to allow the transmission of structured data in a

machine-readable format using a standard communication protocol. EDI is becoming the norm in

many inter-company transactions, particularly in ordering, distribution, and payables and

receivables. In the retailing industry, EDI systems have enabled firms to reduce to a few days

their logistics cycle for ordering and stocking. The competitive advantage accrued to the leaders

in the EDI movement is so pronounced that many experts expect that fully half of today's

retailers will be out of business by 2001.[11] Similar pay-off is found in the fabric industry where

the average EDI-equipped firm takes only ten days to process orders, compared to an average of

125 days for other firms. The Port of Rotterdam's EDI system clears cargo in an average of 15

minutes and has substantially reduced the errors and returns of export order documents. Each of

these examples illustrates the efficiency gains that can result from EDI and the greater

responsiveness of firms to their customers.

Interorganizational Systems

Interorganizational systems (IOS) are types of information systems that permit the

coupling of transactions between organizations, making them more efficient and responsive.

Interorganizational systems are different from internal systems in that they include more

provisions for reliability, data security, user privacy, and system integrity. The classic example

of an IOS was American Hospital Supply's Analytical Systems Automatic Purchasing System

(ASAP), which provided the capability of customers to order, track, and manage the status of

purchases for over 100,000 health-care products.[12] Insurance carriers also use IOS links with

independent agents. Contemporary IOSs may even cross industry boundaries. For example,

Singapore's TradeNet system couples trade agents, government agencies, port authorities, freight

forwarders, shipping companies, banks, and insurance companies with customers and

immigration officials. The efficiency and responsiveness gains are impressive. Clearing the port,

which formerly required two to four days, may now take as little as ten minutes. As a result of

this IOS, Singapore remains a port of choice in the Far East, where competition is growing.[13]

Electronic Commerce using Internet

Electronic commerce provides the capability of buying and selling products and

information via telephone lines, computer networks, and other electronic means. The *Internet*, the largest network of computer networks, is the medium usually favored for electronic commerce because it allows an organization to cut service costs while increasing the speed of service delivery. Electronic commerce is considered a primary means by which organizations may expand rapidly into high growth emerging markets of the world. As transnational companies become skilled in their use of the Internet, they will be able to pursue global electronic commerce more efficiently, saving important advertising, communication and administrative costs. Moreover, the Internet can increase responsiveness by notifying individual customers when new products in their areas of interest become available and by creating customized products and services. Finally, transnational companies using the Internet can increase their knowledge about consumer habits, be able to define trends, and turn consumer statistics into long-term customer relationships.

Currently, the banking industry is being reshaped by electronic commerce. Bank customers are now able to conduct most of their personal financial, investment and, in some cases, insurance transactions through their personal computer terminals. Through electronic commerce, banks and other companies can develop new products and services and penetrate new markets, all without regard to geographical location and often cutting costs in the process. For example, it has been estimated that a bank's cost of processing an electronic transaction originating anywhere in the world is six times lower that the cost of processing a local customer's check.[14]

Language Translation Software

Among the primary skills for managers of transnational organizations is the awareness of other cultures through the learning of the appropriate foreign languages. *Language translation*

software allows the translation from one language to another, and therefore may be used to increase the speed and local responsiveness of an enterprise. While allowing a foreign written or verbal communication to be translated into the language of the recipient, such software also reduces cultural gaps between countries. For example, an enterprise that can capture knowledge at a plant in Sweden and quickly transfer that knowledge to another location in Brazil without language barriers can gain advantage over local and other international enterprises.[15]

Mass Customization Technology

Mass customization technology allows businesses to modify products and services to suit local needs, while retaining the advantages of large-scale production of those products and services. The key to mass customization is the ability of information technologies to control the introduction of customized features into the production process. Systems that allow firms to produce products on assembly lines to suit individual preferences are commonly exploited in the automobile industry.[16] Made-to-order cars can be delivered to individuals within a relatively short period because of the ability of computer systems to control the assembly of custom components at the precise moment needed in the factory process. While mass customization was originally associated with manufacturing, successful examples now occur in telecommunications, mass media, and software development. Mass customization in media software, for instance, gives news broadcasters the ability to deliver local news to its respective locale as well as combining it with mass media news.

Extranets

An *extranet* is an application of Internet technology that provides specific external parties with limited access to corporate information. Most commonly, an organization's customers and partners can use extranets to access account information and coordinate shipments of supplies.

The package delivery industry, which serves worldwide markets, makes extensive use of extranets and promotes responsiveness by giving customers access to the firm's internal tracking system. Also, by automatically tracing customers' inquiries on an extranet, a firm can acquire new knowledge about its customers' needs. One of the best examples of this type of system is the Federal Express package tracking system that allows customers to access Federal Express's own system for tracing the status of packages in transit.[17] In many ways, these systems are the ultimate in responding to local needs and can make a transnational more competitive than local companies that lack such systems.

Groupware

Global teams are becoming more common. Nearly three-fifths of the companies in a recent survey report moderate or extensive experience with global teams.[18] The major challenge to effective global teamwork is to dissolve distance and time so that people from diverse cultures can work together profitably. Groupware technology can be part of the solution. Groupware is more than just an electronic messaging system. It typically integrates electronic messaging with screen sharing, group scheduling, meeting support, group writing and other applications. These features support team leadership, facilitate group processes, and extend the team's technical and managerial competence. A leading example of a groupware product that supports these processes is IBM's Lotus Notes.

As a tool, groupware is a primary enabler of dispersed work teams because it facilitates efficient and accurate sharing of ideas, streamlines processes, and makes parallel task execution possible. These features render a global team more time and cost efficient. Groupware also helps group members to learn from each other's expertise. Because teams are comprised of experts in different specialties, the sharing of knowledge through groupware increases the overall level of

knowledge of team members. For example, CIGNA International recognized that the knowledge spread across 55 international units could be shared from country to country, thus increasing learning.

Intranet

Learning can be enhanced with intranets, which are Web-based, firewall-protected networks that connect all employees through common, hyper-linked interfaces to documents, messaging, and multimedia information sources. Despite their "internal" orientation, intranets promote communication and information sharing across global boundaries. Intranets typically give employees access to newsletters, human resources information, calendars, product inventories, recruiting data, and so on. Electronic mail is frequently included within intranets to guard messages against outside surveillance. The rapid access to crucial internal information that intranets allow can increase learning by transnational firms because intranets may be accessed from anywhere in the world.

The experience of DHL Systems illustrates how both efficiency and learning can be enhanced by intranets. For example, by placing an enterprise software license on an intranet, DHL was able to save enormous time and effort in contrast to their former practice of distributing the license to over 220 countries via conventional electronic media. Moreover, DHL's 15 formal intranet sites supported learning by facilitating communication among 20,000 employees about corporate activities, including global programs and services, competition, internal job postings, and meeting calendars and minutes.[19]

Organizational Memory Systems

Until recently, information systems and information technologies were not expressly

targeted to support organizational learning and memory. This has changed since the introduction of *organizational memory systems* (OMS).[20] OMS consist of electronic systems for storing both structured and unstructured documents. A mnemonic subsystem of the OMS integrates, supports and automates the acquisition, retention, maintenance, search and retrieval of information. Such systems provide a means by which knowledge from prior experience can be shared widely and applied to current problems.

An example of an OMS is the system developed and used for complex software development projects.[21] This OMS captured the detailed rationale behind decisions made in system requirements engineering. By tracking group processes and decisions, the system became an important part of organizational memory for the software development group using it. It allowed system developers to enhance their learning about requirement specification, as well as to increase their responsiveness to requests about the origin and evolution of those requirements.

Many of the information technologies discussed in this section are already household words in the business world, and our treatment in no way constitutes a complete discourse on any one of them. Yet, frequently such technologies are acquired and implemented without much thought given to their role in supporting corporate strategy. By making an explicit connection between these technologies and the needs of the transnational organization, we hope to guide managers in their efforts to become more globally competitive. By supporting the virtual organizational form, these technologies enable greater efficiency, responsiveness, and learning in the transnational firm. We conclude with some specific guidelines for the practicing manager.

Guidelines for Managers

In this article, we have argued that information technologies can enable a virtual

organizational design, which is regarded as a preferred means of meeting the needs of a transnational organization. Our analysis identifies the advantages of the virtual organization in increasing global competitiveness and shows how information technology can be deployed effectively. Managers can prepare for the transformation of their global business organizations by following some basic guidelines.

First, managers wishing to commit to the transnational strategy as a means of achieving greater global competitiveness should do several things.

⇒ Insist on commitment to the transnational strategy at the highest organizational levels. Individual units cannot accomplish transnational strategies on their own because all worldwide business units are affected. All top executives must be on board.

⇒ Educate top executives in the underlying strategy of transnational organizations. Make them understand that geographical boundaries should no longer be viewed as limitations on business practice.

⇒ Train all employees in the tactics that support the transnational strategy. This requires an organization-wide commitment to using new tools to coordinate the far-flung components of the virtual organization. More importantly, it requires a healthy spirit of cooperation among partners to make alliances work.

Second, executives need to deploy relevant technologies to support the virtual, transnational organization.

⇒ Encourage initiatives that rely on information technology to create economies of scale in

both manufacturing and services. Specifically, deploy EDI, IOS, and Electronic Commerce technologies to create seamless flows of information among suppliers, customers, clients, vendors, intermediaries, and consumers.

$\Rightarrow$ Develop systems that permit the firm to respond quickly to local market conditions and to local cultural characteristics. Specifically, adopt language translation software, extranet, and mass customization technologies that allow firms to tailor their products and services to the local market while benefiting from the mass production of the base commodity.

$\Rightarrow$ Design and implement systems that transfer knowledge and spread expertise throughout the firm. Specifically, implement groupware, intranets, and OMS to capture, disseminate and preserve knowledge to enhance competitiveness.

We do not consider the virtual organization to be a passing fad. Because the feasibility of virtual organizational designs, and their application to the transnational company, depend upon information technologies that continue to evolve, we are confident that the principles of virtual organizational design will endure well into the 21st century. Technologies are becoming more powerful, and business is becoming more dependent upon them. There is little to be gained from a nostalgic return to old-fashioned designs. Managers in the 21st century must be able to compete effectively in global markets.

No one can predict with certainty the precise configuration of 21st century organizations or how they will function. Whatever their specific form, however, organizations will be thoroughly infused with information technology. Advantages offered by the technologies described in this article can greatly enhance corporate global competitiveness. Firms that

leverage virtual organizational forms can potentially unleash electronic engines of unprecedented power, changing their industries in a fashion comparable to the changes of the industrial revolution.[22]

Three caveats are in order, however. First, the selection of an appropriate organizational form is only one aspect of the transnational corporate strategy. Indeed, an understanding of the consequences of a transnational strategy for managerial systems, coordination mechanisms, and control processes are other aspects that need to be considered when going global. It is folly to imagine successful global competition without providing employees the proper orientation, training, and cultural exposure. Second, the virtual organizational form is not the only design for an organization that can work for the transnational organization. Other, more traditional structures can be employed *if* adequate care is given to communication requirements and coordination needs among the parts of a traditional structure. We believe that coordination is more easily attained by using appropriate information technologies within the virtual form, but it is clear that other options exist. Third, information technology should not be considered as a simple determinant of the virtual organization. Information technology cannot transform an organization on its own. Rather, information technology enables the realization of managerial intentions, but managers need to demonstrate sensitivity to the unanticipated consequences of information technologies in organizations.

In addition, adoption of the virtual organization and its supporting technologies raises issues about the identity and culture of an organization. Temporary federations of disparate operations, all linked through electronic networks, do not inspire the same images of corporate solidarity or cultural identity that many managers desire. While acknowledging the positive benefits of traditional structures, we do not feel that global competitiveness depends upon

cultural unity as much as it depends upon the willingness and capability to respond to business opportunities anywhere in the world. Indeed, a unified corporate culture may reduce a company's appetite for global business by reducing sensitivity to cultural diversity.

Executives with a good grasp of the requirements for the transnational virtual enterprise will pay particular attention to information technology. Depending on the firm's current capabilities to support the strategic goals of efficiency, responsiveness, and learning, managers will want to focus on those technologies that address areas of deficiency. If the firm were wholly lacking in systems that support learning, for example, then investments in intranets and organizational memory systems would be appropriate. Fitting the correct technologies to the firm's specific needs will effectively advance the cause of greater global competitiveness.

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