

December 2002

GLOBAL INFORMATION SYSTEMS: CONNECTING ORGANIZATIONS IN THE GLOBAL ENVIRONMENT

Jose Santos
Rutgers University

Jerry Fjermestad
Rutgers University

Follow this and additional works at: <http://aisel.aisnet.org/amcis2002>

Recommended Citation

Santos, Jose and Fjermestad, Jerry, "GLOBAL INFORMATION SYSTEMS: CONNECTING ORGANIZATIONS IN THE GLOBAL ENVIRONMENT" (2002). *AMCIS 2002 Proceedings*. 187.
<http://aisel.aisnet.org/amcis2002/187>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2002 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

GLOBAL INFORMATION SYSTEMS: CONNECTING ORGANIZATIONS IN THE GLOBAL ENVIRONMENT

Jose Santos

Graduate School of Management
Rutgers University
Joescrant@aol.com

Jerry Fjermestad

School of Management
Information System Department
New Jersey Institute of Technology
Fjermestad@adm.njit.edu

Abstract

Recent attention to information systems has evolved from domestic U.S. centric perspectives to a more international focus. The objective of this article is to examine the challenges in global information systems (Global IS) and provide a framework to structure the issues related to management, strategy and organization. We will introduce five elements of Global IS (organization, client, market, system, network/platform), which will address and link the key issues identified by researchers to the global business strategies of practitioners.

Keywords: Global information systems; global information technology; global IS framework; global IS issues; global IS strategy

Introduction

Surging economic pressures in both domestic and international markets has led to intensified competition between organizations attempting to secure a position in the global arena. Although global competition has existed for many years, the early 1980's have proven to be the beginning of a most dynamic era, which has continued into the new millennium. Words such as global and globalization have become familiar to both academics and practitioners. These terms have been widely used to describe the new competitive backdrop that organizations are faced with. In an effort to meet the demands of this new landscape, organizations have been in a race to expand their focus from domestic markets to international ones. One of the keys to the expansion of the global landscape is the increasing use of information technology IT beyond domestic boundaries. Failure to succeed in global expansion has been extremely costly. Organizations that do not adapt to the new landscape will become victims of those that do (Montgomery & Porter, 1991). Organizations have realized that the decentralized nature of international operations has had severe consequences on the flow of information necessary to quickly adjust to the competitive dynamics of these new markets. This has resulted in the need to move information around the world at increasingly high levels of efficiency and effectiveness (Bamberg, 1990).

The effort to overcome the problems associated with information flow has resulted in the emergence of Global Information Systems (Global IS). Global IS has attempted to bridge the gap between information systems and the dynamics of global expansion. Global IS has emerged as a sub-discipline of the Information Systems field. Borrowing and adding to the definition provided by Sankar and Palvia (1990), we suggest the following definition for Global IS as those information systems that receive inputs from many countries that allow organizations to store, transmit, and manipulate data, while producing outputs to sites around the world. Such systems go beyond the traditional domestic boundaries of organizations blurred by global expansion, simultaneously allowing organizations to achieve seamless connectivity that spans multiple international markets and takes Information Systems into a global context (Carmel & Davison, 2000). Global IS may include any variation or combination of traditional information systems. They may consist of, but are not limited to, executive information systems, decision support systems, expert systems, transaction processing systems and information reporting systems (Azad, Erdem, and Saleem, 1998).

It is the purpose of this paper to examine current trends in the development, implementation, and execution of Global IS as they relate to the management, strategic, and organizational issues surrounding the field by interpreting current literature of both academics and practitioners of the discipline. Thus, providing us with a focal point to evolve the Global IS discipline within the boundaries of current related issues. The contribution in the evolution of Global IS understanding will appear in the form of a framework consisting of five elements of Global IS that will assist in making sense of how an organization's global business strategy can diminish the complication of those issues identified by researchers as critical challenges facing organizations in a global IT context.

We will begin by discussing some of the critical challenges facing management in a global IT context. This will provide us with the groundwork necessary for discussing the important elements of the global strategic initiative and then examining the implications on the organizational issues surrounding the development and implementation of a Global IS. Finally, we will evaluate the extension of Global IS opportunities for organizations and the next steps in achieving a truly global connection between organizations, customers and partners in the value chain.

Management Issues

In the effort to realize the potential of global expansion through infiltration of international markets, managers are feverishly attempting to evolve what was once the domestic business strategy into a more dynamic focus on global strategies whose underpinnings lay in the successful development of Global IS. Global IS provides management with the efficient information flows that will correspond into effective management decisions resulting in a competitive advantage relative to both local and global organizations (Lascu, Ashworth, Giese, and Omar, 1995). The focus on global strategies requires managers to align the current IT strategy with that of the current global expansion strategy. However, this may be more difficult than management may realize.

The effort to do so has had a profound effect on information system spending, as spending has risen above \$2 trillion dollars (Minoli, 1994; Quinn & Bailey, 1994). Due to the enormous investments realized by organizations that partake in such endeavors, managers must be certain to coordinate both the information systems strategies and the business strategies in a way that will realize the full potential of these investments. Many ways that this may be achieved through the use of Global IS have been identified. They include coordination of international operations through enterprise resource packages, support for global product expansion, flexibility in manufacturing operations, and sharing of resources. The ultimate objective of these solutions should be to achieve a high level of integration among the components of the Global IS. However, to do so effectively, managers must be able to react to trans-border data flow issues, understand the technological infrastructure of the international markets, and cope with cultural and political forces associated with the international markets (Ives and Jarvenpaa, 1991; Davenport, 2001). Other researchers in the field have also supported this view.

Dimensions which Affect Global IS

Deans, and Ricks, (1991) suggested four dimensions that influence the key issues surrounding Global IS. The four dimensions identified are economic structure, political/legal environment, technological status, and national culture. The difficulty of realizing the full potential of a Global IS is augmented by the number of different regions an organization has or plans on expanding into. For the system to be truly global and still meet the requirements of the global business strategy it must equally service and provide redundant functionality to all of the regions involved (Cohen, 1995). This will inevitably involve varying cultures and values, market strategies and trans-border data flow issues resulting from differing political and regulatory requirements related to information transfer. Such complicated issues can easily lead to underestimated project cost related to project creep. That is to say, incremental changes in functionality meant to address issues during the development and implementation of Global IS can lead to over budget projects. Over budget projects may fall victims to corporate spending cuts, which may in turn fail to meet the required functionality of the organizations global business strategy. The effort to diminish the effects of issues related to development, implementation and execution of Global IS has led to an interesting trend developing in the hiring practices of organizations attempting global strategies.

Strategic Issues

Beyond some of the management issues related to Global IS, a host of strategic issues must be address. Practitioners and academics have both tackled this most complex set of issues in an attempt to understand the relationship between a Global IS and the successful integration of the global business strategy. As previously mentioned, there have been four dimensions among

which this complex set of issues resides. The four dimensions, as previously stated, include the economic, political/legal, technological factors, and culture.

These dimensions result in regional differences underlying the competitive landscape. Such that, organizations will regularly attempt specific strategies given the market forces and requirements of local governments within the regions (Schwarzkopf, et al., 1995). To improve effective and efficient coordination of the various aspects as they relate to the specific regional strategies, organizations will attempt to coordinate these strategies through the use of Global IS. This coordination is focused on strengthening the relationship between employees and customers, and between data and decision makers at various functional and organizational levels (Haapaniemi, 1996). Coordination of strategic focus through Global IS results in optimizing the transfer of information into usable knowledge providing a competitive advantage to the organization. The optimization of the information and knowledge relationship improves the processes by which organizations conduct business in the global market (Blumentritt and Johnston, 1999).

The increasing convergence of technologies such as computers, communications, media and content technology makes the need for a unified Global IS strategy and business strategy that much more important. Organizations find themselves in a race to apply these new technologies to their day-to-day operations. The current trend of globalization and the increasing level of technological applications have proven difficult for many organizations as they struggle to adapt and integrate their strategies. Hitt et al. (1998) refer to this as the new competitive landscape. They argue that the new landscape equates to increasing strategic discontinuities, blurring industry boundaries, hyper-competitive markets, extreme emphasis on customer needs, focus on continuous learning, and changing career dynamics. These strategic issues facing organizations greatly impact their ability to focus on a flexible yet integrated strategy. Failure to execute the necessary bridging of Global IS and strategy will result in a failure to meet the challenges of the new competitive landscape, thus the organization will not be able to survive and will inevitably be a casualty of its myopic rational.

Organizational Issues

The Global IS initiative has great implications for both management and strategic considerations of the organization. However, the impact of a global expansion policy goes beyond the technical and management levels of planning. The effective implementation of a Global IS is by its very nature one that crosses multiple dimensions of command and control factors. As previously mentioned, the economic, political, technological and cultural considerations of information systems' expansion have great implications for the organization. One, which is not the least of the implications, is the extreme pressure place on an organization undergoing a radical change process. Change by its very nature is multi-dimensional and so the forces of change have a multi-dimensional affect on the organization. Although planned change is easier to control than that of a sudden change brought on by an unseen competitive shift in the environment (Azad, Erdem, and Saleem, 1998), we can anticipate resistance to change at multiple levels of the organization regardless of the level of planning.

The effort to manage change at the organizational level has been identified as one of the greatest challenges facing practitioners. One of the solutions to minimize the affects of a large technological innovation such as a Global IS on an organization is to develop a new culture and structure that will sustain the change forces. One such example provided by Hitt, Keats, and DeMarie, (1998) is to diminish the effects of change by developing cross-functional teams, while providing management attention and support in the form of incentives, training and moral support. This effort revolves around implementing a horizontal organization that is more susceptible to the change forces. This may also be referred to as a shift from a hierarchical structure to a center out structure that's designed to reduce response time and increase customer service by the efficient use of information systems (Chan, and Heide, 1992).

Political forces may also affect the organization. However, political forces are rather difficult to overcome. The best solution for the political forces dilemma is to maintain a high level of understanding regarding the government control of data transfer/dissemination. This requires organizations to organize the structure in a way that doesn't violate the regulation of trans-border data flows regarding privacy protection, economic and national sovereignty considerations. The violation of these considerations may result in blocking of the information flow by the host country. To best control for this, the organizational structure must include or introduce a department of information system's control auditors. The auditors will verify that local national regulatory policy is not violated within the information exchange across boundaries (Waples, and Daniel, 1992).

While organizational issues are wide and include areas of restructuring, training, and development within the cultural, economic, technological and political dimensions, proper planning in the strategic phase with consideration to implementation of the Global IS will limit both the impact of key management issues and organizational change in large technological initiatives.

Global IS Framework

Understanding and managing the relationships between organizations and Global IS issues has been a critical point to both academics and practitioners. A key point in achieving this integration resides in the link between the formation of a formal Global IS strategy and the global business strategy. The importance of this reflects the need for organizations to access information quickly in a market driven environment. A recent interview of Penelope A. Flugger (Sr. VP J.P. Morgan) published in *Financial Executive* alluded to critical issues regarding technology and information in global markets. By extrapolating and identifying the elements of Global IS necessary to meet the global business strategy, we can develop a framework under which the key issues facing management, strategy and organization of Global IS can be grounded. Critical to the formation of a formal information strategy are the following five elements that must be addressed by the strategy (It is beyond the scope of this paper to provide any further detail other than the list.).

- organization
- Client
- Market
- System
- Network/platform

By incorporating and addressing the five general elements of Global IS strategy organizations will be able to better understand and limit the impact regarding the key issues as they relate to the four dimensions of information technology in the global context. Incorporating the four dimensions of key issues provided by Deans, and Ricks, (1991) with the list of key management issues related to global information technology identified in the meta-analysis provided by Palvia, et. al. (2002) and relating them to the five elements of the Global IS strategy presented here, we could better understand these relationships. Figure 1 provides us a view of the relationships regarding the five elements discussed. We can note from the table that the relationships between the key issues and the five general elements are not mutually exclusive. That is to say, the five general elements are multi-dimensional and the relationships between them and the key issues cross boundaries among various aspects of the elements. We could also reasonably argue that the impact of economic, political/legal, technological and cultural dimensions are multi-dimensional in nature and their impact on key issues will vary in the amount of importance by region. In some cases, they may have a single affect on a region, while in others a combined affect may determine the level of importance.

Conclusion

The use of information systems in organizations has redefined the landscape of competitive forces in the market drive economy. Both domestic and international competition has increasingly driven organizations to realize the potential of information systems at a global level. The impact regarding the use of information systems on an organizations ability to enter new markets, streamline operations and effectively meet the needs of a growing international client base has been widely accepted by practitioners. However, the ability to match the organizations global business strategy to that of international networks has been a difficult task. Identifying the key issues and employing solutions have been a great concern to both the practitioners and researchers. The efforts of researchers have received increasing interest as more and more practitioners employ the concepts that have evolved from the study of global information technology and applications of Global IS. One such initiative critical to the success of Global IS has been identified as the coordination of the global business strategy and that of the information system strategy. The combination of these efforts has lead to better planning, implementation and execution of the Global IS initiative. It is this combination that leads organizations to realize the potential of increased market penetration that results in a successful incursion into the competitive global economy.

Elements of strategic planning related to Global IS have developed an increased ability to support the identification of key issues and limit the impact of those issues related to the expansion policy of organizations. The revision of both internal measures of success and organizational market performance is critical in the dynamic environment.

It was the purpose of this paper to identify some of the trends in the growing discipline of Global IS. The concerns of practitioners regarding the expansion policy and those dimensions of economic, technological, political/legal and culture related to international exposure have been combined to those of current research. We find that the implication of those dimensions on the strategic initiative and organizational structure are broad and varied. It is our hope that we have been able to bring some clarity to the issues by streamlining and connecting some of the literature in the field.

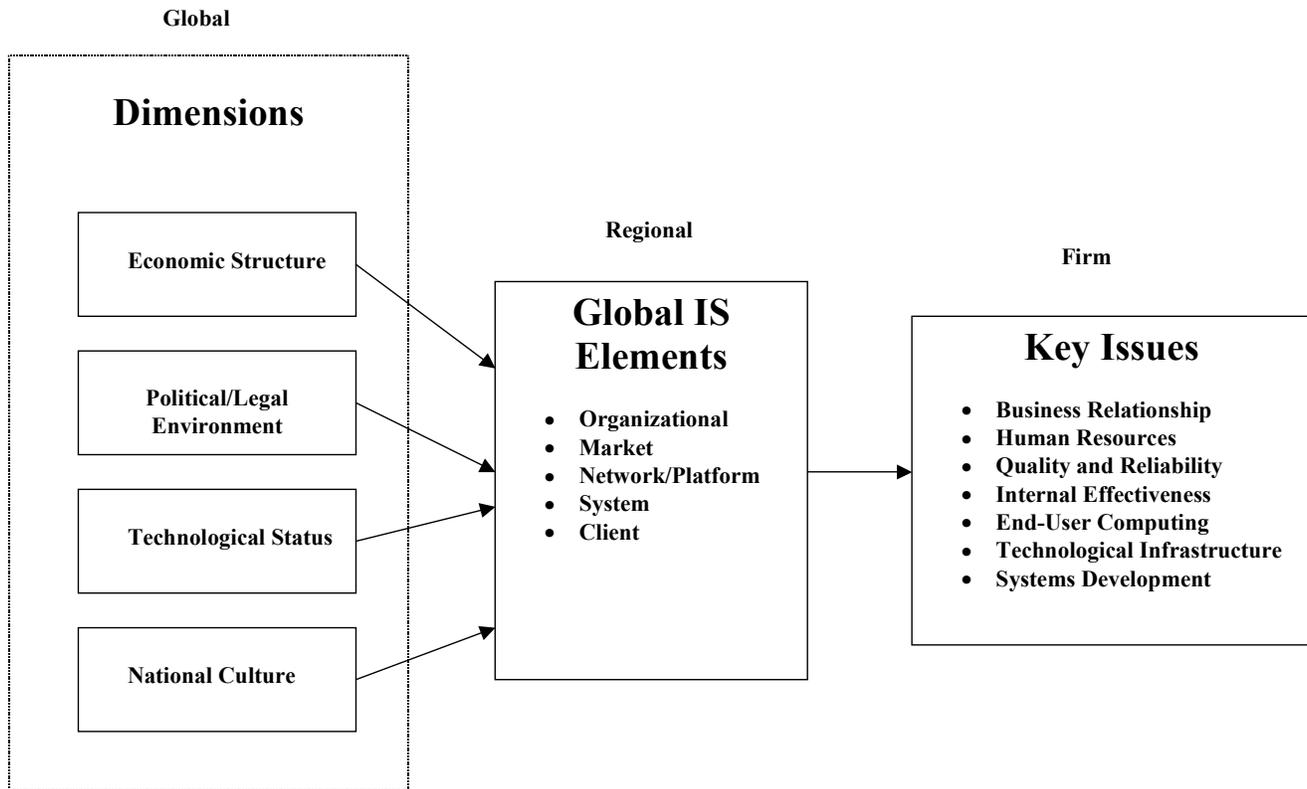


Figure 1. A Conceptual Model of Global IS Framework

Acknowledgements

This research was supported by the New Jersey Commission on Science and Technology through a grant to the Center for Pervasive Information Technology and by the National Science Foundation.

References

- Azad, A., Erdem, A. and Saleem, N. "A framework for realizing the potential of information technology in developing countries," *International Journal of Commerce Management*, (8:2), November 1998, pp. 121 – 133.
- Baker, R. "Information System Development in a Global Environment," *Business Forum*, Winter/Spring 1993, pp. 57 – 59
- Bala, G. "Global Sourcing Constraints on Sales Growth," *Global Sales Force*, 1997, pp. 18 – 22.
- Bamberg, R. "Global Networking," *Telecommunications*, December 1990, pp. 57-59.
- Blumentritt, R., and Johnston, R.. "Towards a Strategy for knowledge Management," *Technology Analysis & Strategic Management*, (11:3), 1999, pp. 287-300.
- Brandel, W. "Dow Shakes Up Customer Service with Worldwide Integration Strategy," *Computer World*, September 1989, pp. 62 – 64.
- Carmel, E. and Davidson, R. "Global Information Technology," *ISWORLD Net*, March, 2000.
- Chain Store Age*. "International Information Technology: Managing across borders," September 1996, pp. 14 – 16.
- Chang, P. and Heide, D. "Information Technology and the New Environment: Developing and Sustaining a Competitive Advantage," *SAM Advanced Management Journal*, Autumn 1992, pp. 4 – 9.
- Cohen, J. "Global Information Systems: Managers beware," *Wall Street Journal*, (13:11), November 1995, pp. 56 – 58.
- Financial Executive*. "Information Management: The key to a winning competitive advantage," (3:6), November/December 1987, pp.34 – 41.
- Grimes, R. "When does global really mean global?" *Nation's Restaurant News*, (31:31), August 1997, pp. 56 – 57.

- Gwynne, P. "Information Systems Go Global," *MIT Sloan Management Review*, (42:4), Summer 2001, pp. 14.
- Haapaniemi, P. "Cyber-Strategy," *Journal of Business Strategy*, January/February 1996, pp. 22-27.
- Henaan, D. "The Rise of a World Wide Cyber Market," *Journal Of Business Strategy*, pp. 20 – 21.
- Hitt, M., Keats, B. and DeMarie, S. "Navigating in the new competitive landscape: Building strategic flexibility and competitive advantage in the 21st century," *Academy of Management*, (12:4), November 1998, pp. 22 – 42.
- Ives, B., Jarvenpaa, S. and Mason, R. "Global business drivers: Aligning information technology to global business strategy," *IBM Systems Journal*, (32:1), 1993, pp. 143 – 161.
- Jarvenpaa, S. Ives, B. "The global network organization of the future: Information Management Opportunities and Challenges," *Journal of Management Information Systems*, (10:4), Spring 1994, pp. 25 – 57.
- Kranch, D. "The Development and Impact of a Global Information System," *IT and Libraries*, December 1989, pp. 384 – 392.
- Lascu, D., Ashworth, N., Giese, T. and Omar, M. "The user information satisfaction scale: International applications and implications for management and marketing," *Multinational Business Review*, (3:2), Fall 1995, pp. 107 – 115.
- McBride, N. and Rogerson, S. "The Effect of Global Information Systems on Business Vision and Values," *Centre for Computing and Social Responsibility De Montfort University BIT '95 conference paper*, 1995.
- Mongomery, C. and Porter, M. "Strategy: Seeking and Securing Competitive Advantage," *Harvard Business Review*, 1991.
- Panepinto, J. "Management Style dictates form of global nets," *Network World*, May 1990, pp.29-31.
- Pelland, D. "Middle Market firms expanding overseas: Think Globally, manage risk globally," *Risk Management*, (43:8), August 1996, pp. 10 – 11.
- Palvia, P., Palvia, S. and Whitworth, J. "Global information technology: a meta analysis of key issues," *Information & Management*, (39), 2002, pp. 403 – 414.
- Schwarzkopf, A., Burroughs, B. and Harvey, M. "The role of the information center in multinational corporations," *Multinational Business Review*, (3), 1995, pp. 82-94.
- Sass, J. and Keefe, T. "Management Information Systems for Strategic Planning and a Competitive Edge," *Journal of Systems Management*, June 1988, pp. 14 – 17.
- University of Missouri, St.Louis*. "Why general managers need to understand Information Technology, October 2001.
- Waples, E. and Norris, D. M. "Information Systems and Transborder Data Flow," *Journal of Systems Management*, (43:1), January 1992, pp. 28.
- Watson, R., Kelly, G., Galliers, R. and Brancheau, J. "Key Issues in Information System Management: An International Perspective," *Journal of Management Information Systems*, (13:4), Spring 1997, pp. 91 – 115.