

Preface

Lao-Tzu, 6th century BC Chinese poet said, “Those who have knowledge do not predict. Those who predict do not have knowledge.” It is not a crystal ball prediction that today’s enterprises are increasingly *going global* by becoming more distributed and leveraging resource bases in all parts of the world. Whether through offshore relationships, global support, or application development programs, or by linking disparate parts of organizations, enterprises are focused on leveraging globalization and cultivating innovation.

Global Information Technology Management in the Digital Economy provides comprehensive coverage of the most important issues, concepts, trends, and technologies in the field of the emerging sub-discipline of global information technology (IT) management (also referred to within the information systems [IS] discipline as global information technology management, as international information systems, and as global management information systems). The chapters provide definitions, explanations, and applications of various pertinent topics and issues. This publication will help in providing researchers, scholars, students, and professionals access to the latest knowledge related to global IT/S, and solving related problems and challenges. *Global Information Technology Management in the Digital Economy* with its contributions from authors in Australia, China, the Czech Republic, Finland, Germany, Malaysia, Mexico, New Zealand, Poland, Spain, and the USA encompasses multiple levels of analysis:

1. The nation(s), or international policy-making body
2. The firm(s), the MultiNational Enterprise (MNE) or the IT vendors
3. The group(s) or team(s)
4. The individual
5. The technology overlay

Clearly, these five levels of analysis look to numerous referent disciplines such as political science, economics, law, management, international business, human-computer interface, cross-cultural studies, sociology, psychology, telecommunications, and computer science.

The target audience for this book are global executives, managers, and other business decision makers who need to make informed choices about how their organizations can use global information technology/systems effectively; researchers (both academic and corporate) studying global information technology/systems, and global information technology/systems business models for industry and/or academic purposes; educators and trainers who increasingly find themselves using/teaching global information technology/systems; and administrators of global/international/multi-domestic/transnational organizations who wish to leverage global information technology/systems for competitive advantage.

The subject areas and specific topics covered in this book include the following:

- Aligning global information systems (IS) strategy to global business strategy
- Issues involving the technical platform for global IS applications
- Issues involved in international sharing of data
- Issues of IS projects spanning cultures
- Key GIT issues such as: (1) managerial/strategic, (2) technological/application, (3) host country social/cultural, (4) host country economic, (5) host country technological, and (6) host country political/legal
- Issues and trends in global information technology education
- Managing information technology in multi-domestic/international/global/transnational corporations
- Global information technology/systems and socio-economic development in under-developed/developing/developed countries

One example of concrete proof of global IT management in action in the digital economy is provided by Cemex, a 101-year-old global ready-mix concrete supplier with an annual sales volume of about 70 million cubic meters. A critical element is the product's perishability since the concrete begins to harden as soon as it is loaded into a truck for delivery to a construction site. Hence, Cemex needed a way to accommodate weather and traffic delays, in addition to last-minute orders from builders. Taking a page from the handbooks of FedEx, food delivery services, and ambulance dispatchers, chief information officer Gelacio Iniguez led development of a scheduling and routing application based on dynamic synchronization of operations (DSO), which is combined with a GPS system installed on the company's cement-mixer trucks. Dubbed CemexNet, the system has increased truck productivity by 35% and cut average response time for changed orders from three hours to 20 minutes. This has enabled Cemex to charge premium prices to time-sensitive customers, and it is building brand loyalty among contractors whose costs spiral when crews wait idly for deliveries. Cemex's ability to guarantee fast delivery is a huge competitive advantage over other companies that require a half- or full-day delivery window. It allows them to charge premium prices for what is the ultimate commodity product. Cemex grew sales more than 72% last year and has a three-year growth rate of nearly 30% for sales and more than 42% for earnings per share, according to Reuters.

In manufacturing, Toyota Motor Corp. has used world-renowned just-in-time supply-chain management and business-process management technology to eliminate waste, limit inventory buildup and continually improve production. Its technology leadership finally helped the Japanese manufacturer topple General Motors as the world's No. 1 automaker, with 2007 first-quarter sales of 2.35 million vehicles, compared with GM's 2.26 million.

In the context of global sourcing in and internationalization of the information and communications technology (ICT) sector, intercultural collaboration is for many ICT workers a daily affair. Especially in the field of software development, where the needs for communication are high, intercultural collaboration poses a particular challenge. Misunderstandings and an unproductive work atmosphere may result in hidden costs for the companies. Martina Maletzky's chapter entitled, *Intercultural Collaboration in the ICT Sector* highlights the different types of intercultural collaboration in the ICT sector, identifying the special challenges that occur and suggesting ways in which companies may minimize such challenges of intercultural collaboration.

Over that past two decades computer mediated communication (CMC) has become a vital form of communication for education, business, and industry, as well as simply another form of social interaction. Past authors have suggested that building online communities with the various CMC tools provides for a more egalitarian social network. However, others have suggested that this may not be the case as there are communication style differences that could impede equity or social interactions. The chapter entitled, *Computer-Mediated Communication: Enhancing Online Group Interactions*, by J. Michael Blocher, provides a discussion of the issues, recommendations, and trends that the future might hold for CMC, both in terms of technical advances and social implications.

The scope of interest in the area of information systems (IS) has focused mainly on technological aspects so far. If the human component were taken into account, it has been analyzed from the level of an individual. So have all new concepts of rationality. In *The Dynamics and Rationality of Collective Behavior within a Global Information System*, Jacek Unold argues that collective behavior, which is a basic determinant of the global IS dynamics, does not proceed in a planned manner, but is adaptive and follows certain patterns found in nature. It follows that this behavior can be expressed in a model form, which enables to structure it. A model exemplification of a global information system is a modern, electronic, stock exchange. The identification of quantitative attributes of a social subsystem can provide substantial theoretical and methodological premises for the extension of the optimizing and individualistic notion of rationality by the social and adaptive aspects.

The chapter entitled, *Group Decision Making in Computer-Mediated Communication as Networked Communication: Understanding the Technology and Implications*, by Bolanle Olaniran, explores networked communication using global and communication information systems in the organizational decision-making process. Specifically, the chapter examines the issues in designing CMC into group interactions and decision-making processes. For example, challenges facing communication information technologies (CITs) regarding freedom of participation and equal participation are addressed. The chapter also offers ideas for making decision processes effective when incorporating global information and communication information systems into decision-making process using the two stage process, namely, the idea generation and evaluation stages.

Subhankar Dhar's chapter entitled, *Global IS Outsourcing: Current Trends, Risks, and Cultural Issues*, states that in the last decade, there has been a spur of activities in offshore outsourcing, which is driven by the e-business revolution and a worldwide demand for IT skills. This contributed to the growth of IT-related industries in countries such as Ireland and India. Meanwhile, vendors from the Philippines, Russia, Hungary, China, Taiwan, Mexico, and other countries entered the market, and in some cases, adapting business models established by Indian firms that have dominated the services sector in the past decade. The emergence of new offshore centers has been marked by new approaches and skill sets, adding to the services and value propositions that define the offshore sector today. In this chapter, the author identifies the main risk factors and best practices in global IT outsourcing, delves into some important issues on IT outsourcing, particularly the challenges along with benefits, presents case studies of two Global 200 organizations and validates some of the claims made by previous researchers on IT outsourcing. This study will help the management to identify the risk factors and take the necessary remedial steps.

In the chapter entitled, *Teaching Information Systems to International Students in Australia: A Global Information Technology Perspective*, Zhaohao Sun examines international education in Australia and looks at IT and IS in Australian universities from a global viewpoint. He discusses impacts of global IT

on IT and IS in Australia and examines his own teaching experiences in Australia as an example of GIT. He discusses the future trends for IT and IS in Australia and proposes future research directions.

In *Natural Language Processing Agents and Document Clustering in Knowledge Management: The Semantic Web Case*, Steve Legrand and JGR Pulido argue that while HTML provides the Web with a standard format for information *presentation*, XML has been made a standard for information *structuring* on the Web. The mission of the Semantic Web now is to provide *meaning* to the Web. Apart from building on the existing Web technologies, we need other tools from other areas of science to do that. This chapter shows how natural language processing methods and technologies, together with ontologies and a neural algorithm, can be used to help in the task of adding meaning to the Web, thus making the Web a better platform for knowledge management in general.

In *Electronic Highways in South East Asia: Liberality, Control, and Social Change*, Loong Wong provides an overview of Southeast Asian economies, and then proceeds to provide an analysis of ICT projects in the region, focusing on the Singaporean and Malaysian experiences. This chapter examines the relationships and dynamics of changes effected through the intersection of economics, politics, and ICTs. Drawing on the examples of Indonesia, Malaysia, and Singapore, Wong argues that as these forces interact, greater political space is engendered. Economic change via privatization has a similar, although unintended, *liberalizing* effect. This chapter further notes that states have responded to this liberalizing thrust by seeking greater control and regulation, but suggests that these attempts are unlikely to be successful.

Bhuvan Unhelkar, Ming-Chien Wu, and Abbass Ghanbary provide an insight on how mobile technologies impact the enterprise architecture (EA) with an emphasis on supply chain management (SCM) systems. This chapter entitled, *Integrating Mobile Technologies in Enterprise Architecture with a Focus on Global Supply Chain Management Systems*, is based on the research conducted by the authors at the University of Western Sydney, defining the use of mobility in the area SCM systems and explaining the time and location independence in the area of EA and SCM. It provides the advantages and limitations of mobile integration in global organizations.

The chapter entitled, *Influence of Mobile Technologies on Global Business Processes in Global Organizations*, by Dinesh Arunatileka, Abbass Ghanbary, and Bhuvan Unhelkar is based on an action research project carried out in a global organization in order to evaluate how mobility alters the existing business processes of the global organizations. It provides an insight into organizational business processes and the impact of mobility providing competitive delivery to those business processes under investigation. The chapter provides the future benefits of the Web services in mobile technology enabling global organizations to collaborate with each other while using different platforms.

In *The Development of National ICT Policy in Kenya: The Influence of Regional Institutions and Key Stakeholders*, Timothy Mwololo Waema argues that the role that information and communication technologies could play in socio-economic development has been recognized by governments worldwide. The most important starting point in most countries is a national ICT policy. In many developing countries, ICT policy development has increasingly become a participatory process. This is largely as a result of implementing policy reforms, with a strong emphasis on governance systems. This chapter is a case study of the development of national information and communication technology policy in Kenya, the influences of regional institutions and their products, and the role of the private sector and civil society. The chapter is based on a study that was carried out by reviewing existing relevant documents and by interviewing key persons involved in national and regional ICT policy in Kenya. This chapter also presents the challenges, conclusions, and recommendations based on the case.

Stacy Kowalczyk's chapter, *Digital Preservation by Design*, argues that current knowledge is produced, disseminated, and stored in digital format. This data will not be preserved by benign neglect; digital information will be preserved only through active management. This chapter will provide a theoretical foundation for digital preservation, an overview of current best practice for digital preservation, and a research agenda, as well as a proscriptive framework by which to design digital preservation into a system.

In *Economic Development: Government's Cutting Edge in IT*, Gerald A. Merwin Jr., J. Scott McDonald, and Levy C. Odera explore the interface between information technology (IT) and economic development. The impacts of three IT innovations are assessed in terms of how they contributed to the development of economic development practice: database management systems (DBMS), geographic information systems (GIS), and the evolution of Web sites. With regard to the close relationship between IT and economic development, the chapter primarily focuses on current and future issues in this area. The chapter concludes by providing a glimpse of what might be expected in the future and some recommendations for future research on this topic.

Michaela Wieandt's chapter, *Information Technology Consulting in Global Information Technology*, outlines and maps the field of IT consulting in global information technology. In providing an overview of recent market developments, main characteristics of the field are highlighted and linked to the research on consultancy and organization development. In order to examine the role of IT consultants in modern organizations and to cover various aspects of the field, a conceptual framework is offered that may be used for further analytical investigation of the field.

In *Understanding Global Information Technology and Outsourcing Dynamics: A Multi-Lens Model*, Robert C. Yoder, Vera Eccarius-Kelly and Suvarna Cherukuri provide information technology (IT) project leaders, call center management, researchers, and educators with an analytical tool to examine current concerns and anticipate future trends related to globalization and information technology. The authors propose to use a multi-lens analysis as a framework for evaluating outsourcing opportunities. This approach offers a valuable and effective *full-circle* methodology for assessing technological, political, organizational, economic, legal, educational, and cultural considerations that encourage a fuller understanding of the issues, problems, and opportunities that globalization and technological innovation creates. An understanding of these factors related to outsourcing and other technical collaborative projects can avoid costly miscalculations, reduce misunderstandings, and promote mutually beneficial results. Outsourcing is part of a larger socio-political and cultural process, and extends beyond the narrow parameters of economic and technological considerations. The discussion of the various lenses is supported by relevant material from case studies and qualitative interview data collected by the authors in Germany and India from IT experts, call center managers, and call center agents.

The Possibility of Water-Cooler Chat?: Developing Communities of Practice for Knowledge Sharing within Global Virtual Teams, by Norhayati Zakaria looks at a key concept called *communities of practice* that helps to facilitate organizational learning through increased knowledge sharing within global virtual teams. By using Granovetter's (1974) *weak ties* theory, the author suggests that casual acquaintances known as *weak ties* have significant implications for social relationships and context, both of which can benefit virtual organizational team members. Furthermore, based on Hofstede's (1980) cultural dimensions, the author argues that cultural factors also can impact one's willingness to share knowledge. Thus, there are three questions that guide this chapter: (1) How do social relationships and context among global virtual teams affect the development of communities of practice? (2) How does

culture affect the knowledge sharing activities? and (3) What is the impact of ICTs on knowledge sharing and the emergence of communities of practice?

The chapter, *Understanding Brand Web Site Positioning in the New EU Member States: The Case of the Czech Republic*, by Shintaro Okazaki and Radoslav Škapa examines Web sites created by American multinational corporations (MNCs) in the Czech Republic. Utilizing a content analysis technique, we scrutinized (1) the type of brand Web site functions, and (2) the similarity ratings between the home (U.S.) sites and Czech sites. Implications are discussed from the Web site standardization versus localization perspective.

In *Information Technology Consulting and the Implementation of Information Technology*, by Michaela Wieandt, the author investigates the role of IT consultants in cases where the implementation of IT systems results in changes within the organization. Given the ever-present relevance of power relations within organizations and the fact that an actor's authority is dependent on his or her access to resources and the rules of the organization, IT systems can be said to be objects of micro-political negotiations. Power relations between IT consultants and members of the client organization, for instance between the project manager and his employees, are analysed on a micro level to illustrate the strategies actors use. Team work and collaboration between consultants and employees are analysed, and proposals for further research are suggested.

In *Offshoring in the ICT Sector in Europe: Trends and Scenario Analysis*, Esther Ruiz Ben, Michaela Wieandt, and Martina Maletzky argue that off- and nearshoring in the European ICT sector represents a relative new practice that significantly has increased since the beginning of the new millenium. Cost reduction, perceived cultural and historical nearness, and institutional and legal advantages influence the decision for host country destinations, whereas hidden and transaction costs represent some of the main related risks and can lead to a repatriation of off- and nearshore projects. This chapter overviews off- and nearshoring trends in Europe, and discusses the main related challenges and development chances.

Beyond Localization: A New Look at Disseminating Information via the Web, by Martin A. Schell, states that localization of a document requires tacit knowledge of the target language and culture. Although it is promoted by many software developers and Web designers, localization is becoming increasingly inadequate as a strategy for disseminating information via the World Wide Web. The 21st century already has seen dramatic rises in the numbers of Internet users in nearly every country, making it difficult, if not impossible, for any translation effort to accommodate all of the 347 languages that claim at least 1 million speakers. The best way to expand the accessibility of Web content is to make it more explicit, not more tacit. This means producing and uploading clear English content that non-native speakers can easily understand. Global English is written with simpler sentence structure, less jargon, and no slang—characteristics that make it a viable lingua franca for countless Web users whose native language is not considered important enough to merit a localization effort.

The chapter entitled, *Understanding Social Capital Formation for Knowledge Sharing in Virtual Communities*, by Shafiz A. Mohd Yusof, attempts to explore the possibility of building social capital in virtual communities (VC) by first introducing the phenomenon, its problems and context, types of VC, and the significance of knowledge sharing. It presents the process of social capital from a sociological standpoint employing two main theories—elementary theory of social structure and social exchange theory as the backbone of the arguments. By integrating both these theories, the chapter provides a conceptual framework that includes six antecedents to develop social capital. Subsequently, the propositions are expressed in terms of implications to the sociological approach of VC and some conclusions are made by including some future research agenda.

In the chapter, *Business & IT Alignment in a Multinational Company: Issues and Approaches*, A. J. Gilbert Silvius, explores the theory and practice of business & IT alignment in multinational companies. In the first part of the chapter, an overview of the theory is presented. In this part, the familiar frameworks for business & IT alignment are put in perspective in an *alignment development model*. The second part of the chapter presents the practical issues that are experienced in aligning IT to business in multinational companies. These issues and considerations resulted from a focused group discussion with IT managers and CIOs of medium-sized and large organizations in the Netherlands.

The chapter entitled, *Sampling Approaches on Collecting Internet Statistics in the Digital Economy*, by Song Xing, Bernd-Peter Paris, and Xiannong Meng, argues that the Internet's complexity restricts analysis or simulation to assess its parameters. Instead, actual measurements provide a reality check. Many statistical measurements of the Internet estimate rare event probabilities. Collection of such statistics renders sampling methods as a primary substitute. Within the context of this inquiry, the authors have presented the conventional Monte Carlo approach to estimate the Internet event probability. As a variance reduction technique, Importance Sampling is introduced, which is a modified Monte Carlo approach resulting in a significant reduction of effort to obtain an accurate estimate. This method works particularly well when estimating the probability of rare events. It has great appeal to use as an efficient sampling scheme for estimating the information server density on the Internet.

In this chapter, the authors have proposed the importance sampling approaches to track the prevalence and growth of Web service, where an improved importance sampling scheme is introduced. They present a thorough analysis of the sampling approaches. Based on the periodic measurement of the number of active Web servers conducted over the past five years, an exponential growth of the Web is observed and modeled. Also discussed in this chapter is the increasing security concerns on Web servers.