Preface

Management of information technology in today's connected, information rich global marketplace is a far cry from management in the 1980s and 1990s. Today's computing environment is ubiquitous, networked, and systemically connected; yesterday's computing environment was distributed, centralized, and stovepiped. From selecting and designing systems to implementing and evaluating systems, an organization and its leadership are challenged to perform differently than in the past. The articles in this volume illustrate new organizational, leadership, and management approaches to information systems and technology. They are drawn from international governments, small and medium-sized enterprises (SMEs), and universities. The diversity and range of the articles underscores the pervasiveness of the trends that are changing today's global computing landscape.

Computing in today's world is ubiquitous. Increasing numbers of people have access to information technology; the variety of IT devices continues to proliferate; technology prices continue to fall; and people are educated and trained in the use of technology at increasingly younger and older ages. People around the world continue to access digital technology with increasing frequency. As rural areas decline in population and cities increase in population, people have greater and greater access to computing technology in the office and home, in airports, hotels, and coffeeshops, and on the local street corner. Additionally, the variety of information technology devices is increasing. IT still assumes the traditional form of microcomputers, but it also appears in everything from palm pilots and cell phones to automobiles and traffic lights, to smart cards and facial scanners. And despite a predicted slowdown in the growth of computing power, the power of digital devices from year to year still continues to follow Moore's law and the price per megaflop continues to drop exponentially. Finally, individuals around the world interact with technology during periods of their lives that would be considered unusual 10-15 years ago. Child programmers and hackers are commonplace, and retired workers are turning to digital communications for second careers and hobbies and to keep up with the grandchildren. All of these trends – increasing access, increasing types of IT devices, decreasing prices, and increasing numbers of computer users – are helping to create a world of ubiquitous computing.

Computing is not only ubiquitous, it's networked. Computers were first connected locally with WANs and LANs in the 1980s, thus increasing the speed of communications within and across organizations. The growth of the Internet in the 1990s increased the number of those communications exponentially and expanded them around the world to include millions of players and organizations. Global communications now occur in near real-time, across a variety of economic, government, political, and social groups, and frequently between people and groups that previously were unknown to one another.

Until the advent of the Internet, global communications were confined primarily to financial institutions and the movement of money. These communications were dependent on the technology of magnetic tape traveling by "planes, trains, and automobiles"; they could take minutes, hours, and in some cases, days. Today the Internet moves not only money, but information of all types, to any location on the globe in milliseconds. In addition to traditional financial and economic groups, local and national governments enable electronic government through Web sites; manufacturers execute just-in-time ordering and delivery; and non-traditional state actors influence international opinion regarding local and national authorities. In addition, political groups discuss international trade, elections, and political candidates; grassroots groups discuss the environment, land mines, and urban protests; and social groups discuss art, literature, and music. The Internet is a thriving real-time communication system for any person or group regarding any topic of interest. And it's free.

The third characteristic of today's global computing landscape is the systemic nature of those network connections. Not only are global digital networks increasingly numerous and pervasive, but those networks are increasingly connected to one another. The "I Love You" virus infected thousands of computer systems within hours by traveling across global network paths, but the inter-dependence of those paths allowed the virus to move significantly more quickly than if the connections had been serial. Global networks also interact with economic, political, and social systems thus creating complex, dynamic socio-technical communications phenomena and events. On the morning of 9/11, cells phones in New York City relayed information to family and friends in other areas of the country who then transferred that information to the Internet for quicker dissemination. That information was then summarized by CNN and broadcast around the world. International political and social events affect global stock markets which, in turn, affect those same political systems. Companies sell goods and services in the global marketplace through the Internet, simultaneously developing new customer profiles that redirect marketing strategies to unexplored market niches. And small, previously unempowered political groups such as the Zapatista movement in Chiapas, Mexico and the International Campaign to Ban Landmines (ICBL) in

the United States use the Internet for global reach and building grassroots support to affect international politics.

Thus today's computing environment is one of ubiquitous digital activity communicated globally through technical networks interacting systemically with other technical networks and with human networks. The articles in this book illustrate that new 21st Century computing environment. They are organized into three sections – the first section includes six chapters addressing the management of IT within organizations; the second section includes seven chapters addressing the management of IT across organizations, regions, and countries; and the third and final section includes five chapters addressing the management of global IT. A brief description of each chapter follows:

Chapter 1 examines the applicability of a theoretical model, the theory of entrepreneurship, to research regarding the strategic utilization of information technology in small businesses. The authors argue that small businesses are typically growing and evolving and thus different challenges arise over time, necessitating different approaches to the strategic use of IT. The traditional theoretical models used by researchers and practitioners are more appropriate to large, stable businesses.

Chapter 2 describes a model for systematically assessing the benefits of information technology purchases. The authors propose a modified factor rating approach that separates subjective benefits from the objective cost-benefit analysis. They conclude that the best computer may often be the cheapest computer.

Chapter 3 examines the use of intranets in the United States Federal government, identifying sources of and impediments to intranet development. Six case studies reveal overall trends in intranet use including the importance of upper management support and successful marketing efforts. The authors conclude that intranets offer strong potential for enhancing inter-organizational communications and predict further growth of intranets in the U.S. federal government.

Chapter 4 explores the outsourcing of information technology and its implications for SMEs. The author emphasizes the criticality of up-to-date in-house IT knowledge and its relationship to continuous improvement of business processes; he also stresses the importance of communications between users and in-house software developers. He concludes that outsourcing decisions should be made carefully and with great discrimination.

Chapter 5 describes a model for systematically assessing the monetary and human costs of developing small business Web sites for interacting with customers. The authors illustrate the use of SWOT analysis to build a conceptual model and then describe the process of translating that conceptual model into a spreadsheet to support Web site investment decisions.

Chapter 6 examines a project-oriented undergraduate course at the University of Colorado in the United States. The author describes the processes by which students work with local community service agencies to build and evaluate software for those agencies. He/she concludes that the most important outcome of the course is the relationship building and communication that occurs among the students and with the community service agencies.

Chapter 7 addresses the accelerating development of information resources in China. The authors describe several critical information resources initiatives in China, linking the initiatives to Chinese government information resources policies and their impact. They conclude with a discussion of the challenges of developing information resources in China and suggest potential solutions to these challenges.

Chapter 8 presents an analysis of the factors that influence the ability of small and medium-sized enterprises to effectively utilize Web-based electronic commerce. The authors base their analysis on a qualitative study of thirty-four Australian companies from seven different industries. They identify the internal and external factors that are critical determinants of SMEs success with electronic commerce. They conclude with a discussion of these factors and their implications for maximizing the effectiveness of electronic commerce.

Chapter 9 examines the state of "digital readiness" in the local governments of Japan, consisting of 47 prefectures each divided into several municipalities. The authors conclude that the major uses of technology in local governments are e-mail and local area networks. They further conclude that many prefectures are financially weak and need to redirect financial resources from legacy systems to new IT systems. Other impediments to digital readiness that are identified by the authors are IT security and privacy protections and outdated organizational structures.

Chapter 10 examines the potential of electronic voting systems (EVSs) to enable government reform and renew the democratic and political processes. The authors discuss the advantages of EVS implementation to the citizenry as well as the obstacles of privacy, security, and accessibility. They conclude with recommendations for gaining voters' trust and increasing voters' participation with EVSs.

Chapter 11 reviews the empirical research regarding barriers to electronic commerce adoption and diffusion by SMEs. The authors divide the literature's barriers into those internal to an organization and those imposed by external forces. They conclude that the barriers to e-commerce adoption have not changed over time as newer technologies have entered the market. They further suggest that researchers develop normative models to help SMEs overcome internal barriers and that policy makers develop programs to help SMEs overcome external barriers.

Chapter 12 describes an exploratory study of e-commerce development in the United Kingdom's SMEs. The authors review interview data and documentation from three organizations, each in a different industry, that implemented e-commerce service in the recent past. They conclude that the companies are in the early stages of B2B e-commerce, function on limited financial and educational resources, and would benefit from an increased emphasis on business strategy.

Chapter 13 explores the applicability of game theory and social theory to technology adoption decisions in general, and B2B e-commerce in particular. The authors discuss recent ASEAN public and private e-commerce initiatives in SMEs. They conclude that effective initiatives focus on global reach and the creation of commodity markets and a positive brand image.

Chapter 14 examines the concept of virtualization and its role in society. The author argues that the virtualization process creates enormous opportunity for economic growth for those countries and organizations which have not been competitive in the past. He explores the positive and negative aspects of virtualization in traditional organizations, in small and medium sized organizations, and in educational institutions.

Chapter 15 also examines the concept of virtual organizations using the lens of structuration theory. The authors focus on the relationship between the virtual organization, the real organization, and the human players. Their goal is to initiate theory building for the Internet age and to provide new epistemological frameworks that are more appropriate to the study of virtual organizations than the traditional analytical framework of modern science.

Chapter 16 explores the development of interorganizational communication systems in a rapidly changing environment. The author reviews the concepts of interorganizational relationships, strategic alliances, and interorganizational networks using Barnard's theory of cooperative systems and formal organization as a lens for analysis. He also identifies barriers to creating and maintaining effective interorganizational communication systems and suggests strategies for overcoming these barriers.

Chapter 17 reviews the results of an exploratory study of the internationalization efforts of small Internet retailers. The authors interviewed key personnel in top and middle management in three e-tailers in Singapore, highlighting the issues the companies faced in expanding their operations to service an international customer base. The authors conclude that internationalization strategies must address foreign market accessibility, infrastructure, and localization issues.

Chapter 18 explores the use of the Internet for improving the project management of aid projects in Sub-Sahara Africa (SSA). Based on interviews and supporting observation, the author concludes that effective communication and information openness are critical components of success. He further concludes

that the Internet is a potential vehicle for increasing the participation of local people in international issues and improving the effective utilization of aid from the Western world.

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