Preface

Information Resources Management (IRM) is driven largely by the steady evolution and advancement of Information and Communication Technologies (ICTs), such as mobile ad-hoc networks, Web 2.0, and online virtual communities. This book presents current research in the ICT field, providing organizations and individuals with the tools and knowledge they require to effectively manage the latest online technologies while avoiding common pitfalls and shortcomings inherent in those technologies. In the following chapters, readers will find a useful reference source for the successful implementation of information technologies in their everyday practices and endeavors, each one a quality contribution to the unfolding discourse amongst professionals and researchers actively engaged in the field.

R. P. Sundarraj and Nick Manochehri begin the discussion with “Application of an Extended TAM Model for Online Banking Adoption: A Study at a Gulf-Region University.” The understanding of factors leading to the acceptance or rejection of information systems (IS) is important and relevant. Although there have been studies examining the adoption of Internet Banking (IB), research on this topic in the Gulf context and from an IS perspective is lacking, even though societal factors are acknowledged as having an impact on technology adoption. To fill this gap, the authors use a version of the Technology Acceptance Model (TAM), extended by the compatibility and trust constructs. An empirical study, using students from a large university in the region, validates the research model.

Research indicates that rapidly evolving technology and markets do not provide a first mover strategic advantage but favor the second mover. In “Visible IT in Credit Unions: Strategic Advantage and Disadvantage in Two Web Eras,” H. James Nelson introduces a third variable: hype. In a time of rapid technology and market evolution, hype overrides the expected results and gives the first mover a strategic advantage. This chapter examines a homogeneous set of medium-sized information-dependent and information-intensive organizations as they implement visible information technology in two eras: during a time of intense hype and during a more normal time where technology has become commonplace. One hundred matched triples of credit unions were examined as they chose to remain offline, implement an informational website, or implement a transactional website during the highly hyped Internet expansion time of 1998 through 2002. One hundred matched pairs of credit unions were then examined during the more normal time from 2003 through 2007. Results indicate that credit unions that embraced the hyped technology gained significant strategic advantage. Second-moving credit unions that waited for the more mature technology survived, whereas the credit unions that did not adopt the technology were at a significant strategic disadvantage.

Governance of the information security function is critical to effective security. In the next chapter, “Governing Information Security: Governance Domains and Decision Rights Allocation Patterns,” Yu “Andy” Wu and Carol Saunders present a conceptual model for security governance from the perspective of decision rights allocation. Based on Da Veiga and Eloff’s (2007) framework for security governance
and two high-level information security documents published by the National Institute of Standards and Technology (NIST), the authors present seven domains of information security governance. For each of the governance domains, they propose a main decision type, using the taxonomy of information technology decisions defined by Weill and Ross (2004). This framework recommends the selection of decision rights allocation patterns that are proper to those decision types to ensure good security decisions. As a result, a balance can be achieved between decisional authority and responsibility for information security.

Chapter 4, “Antecedents to Job Success in Business Process Management: A Comparison of Two Models” by Richard J. Goeke and Yvonne L. Antonucci, presents a method by which Business Process Management (BPM) maximizes firm performance by transforming isolated functional activities into streamlined, cross-functional processes. Being a relatively new discipline, disagreement exists regarding the position structure and qualifications required for success. However, certain individual differences have been associated with job performance, both in general and for specific occupations. Because BPM initiatives can be expensive and risky, understanding these individual differences may help practitioners improve their chances for BPM job success. Two models of job performance have dominated organizational research; one argues that personality traits are the chief determinants, while the other argues that intelligence and experience are most important. This chapter uses logistic regression to examine the efficacy of each model in predicting job performance among BPM professionals. Results indicate that intelligence, conscientiousness, and openness to experience are the most important differentiators of BPM job performance.

The widespread applications of information and communication technologies have attracted many countries to e-government. Nonetheless, setting appropriate goals for e-government initiatives is an important factor for the success of these projects. “An Integrated Strategic Framework for E-Government Initiatives” by Fatemeh Saghafi et al. provides a context-based framework for understanding e-government initiatives in different countries, including degree of e-government readiness, degree of transparency, and level of democratization. According to these determinants, 141 countries are categorized using Parson’s generic strategy of IT. Classification of countries in this framework shows significant correlations between these determinants and GDP index, which is an important outcome for country performance. This framework provides a roadmap for policymakers to formulate goals for their e-government initiatives commensurate with their respective environments.

In “What Drives Malaysian E-Government Adoption? An Empirical Analysis,” Alain Yee-Loong Chong investigates the factors that affect the adoption of e-government in Malaysia. Variables like perceived usefulness, perceived ease of use, compatibility, trust, and demographic profiles of users are included in this research. Data was collected from 418 respondents, and multiple regression analysis is employed to test the research model. The results show that perceived usefulness, perceived ease of use, compatibility, trust, and age have significant relationships with e-government adoption. The results from this study are useful for Malaysian government in formulating appropriate strategies to improve the adoption of e-government applications in Malaysia.

Armin Sharafi et al. present “Bundling Processes between Private and Public Organizations: A Qualitative Study.” Businesses are aching under the burdens entailed by public reporting duties while public administrations are faced with rising cost pressures. Fostered by the diffusion and maturation of information technology, businesses put forth growing demands in regard to the quality, integration, and usability of public services. An effective means of meeting these challenges is through the identification and bundling of processes caused by reporting duties. Incorporating corresponding concepts from the business sector, the authors develop an approach for process bundling tailored to public organizations. The authors demonstrate the approach on waste management reporting duties. This chapter provides
guidance for practitioners striving to optimize information flows and reduce redundancies within B2G contacts. As a result, both public administrations and businesses benefit from a more straightforward and cost-efficient provision of public services.

Next, Wen-Jang Jih explores the “Impact of e-CRM on Website Loyalty of a Public Organization’s Customers.” Web-enabled customer relationship management, or e-CRM, is able to simultaneously achieve the conflicting goals of strategic flexibility and operational efficiency in developing and executing innovative e-commerce marketing strategies. A multi-disciplinary field, involving such areas as marketing, economics, business strategy, information systems, social psychology and consumer behavior, e-CRM strengthens customer relationships via a portfolio of trust-building practices with the support of powerful information technologies. While most literature in e-CRM has examined how firms formulate and implement e-CRM initiatives, there is little information on the overall quality of an e-commerce firm’s e-CRM practices from the consumer point of view. This chapter proposes such a consumer-oriented concept, e-CRM value, based on existing e-CRM research, and examines the effect of e-CRM value on website loyalty. An empirical study is conducted to validate the theoretical model. Customers’ perceptions of e-CRM value have positive causal effects on their website loyalty. Valuable implications can be derived from this finding for public organizations in managing their customer relationships.

Researchers have attempted to integrate the fields of management and ethics for the past 50 years. Although the moral aspects of knowledge management have been studied, its philosophical attitude has been overshadowed. In “Success of Public Knowledge Management in the Light of the Rossian Ethics,” Mehdi Shami Zanjani et al. design a philosophical background—in moral philosophy—for public knowledge management. To achieve the research goal, the relationships between human critical success factors of knowledge management and moral duties are discussed. These moral duties are based on the Rossian ethical framework. The authors recommend moral duties to public organizations that try to manage knowledge successfully. The results show that “beneficence” is the most significant to knowledge management success in the public sector. In this chapter, the authors integrate knowledge management with the Rossian ethical framework to increase successful knowledge management in public organizations.

“Challenges Faced by Megacities in the Future” by Ali Assadian and Mostafa Nejati explores the advancement of science, industry, and digital technologies, which has shaped the lives of many people and has encouraged more people to live in cities. Since 2007, the urban population has exceeded the rural, and this amount is estimated to increase up to 60% of world habitants by 2030, according to the United Nations. Considering that these changes in people’s lifestyle can create various challenges to society, identifying and managing the potential future challenges is a vital step to ensure a dignified living without conflicts. This chapter studies the challenges that cities and megacities may face in the future and provides solutions to manage and handle them. Reports and statistics from international organizations and the authors’ critical analysis have been applied to collect the necessary data. The research findings emphasize the importance of enhanced competitiveness and the quality of life and environment on the development of the city. Moreover, the major infrastructural problems facing cities in the digital world are discussed and the importance of strategic planning and sustainable approach toward resolving urban issues are emphasized.

Effective information systems security management combines technological measures and managerial efforts. Although various technical means have been employed to cope with security threats, human factors have been comparatively neglected. Xin (Robert) Luo et al. examine, in “Social Engineering: The Neglected Human Factor for Information Security Management,” human factors that can lead to social engineering intrusions. Social engineering is a technique used by malicious attackers to gain access to desired information by exploiting the flaws in human logic known as cognitive biases. Social
engineering is a potential threat to information security and should be considered equally important to its technological counterparts. This chapter unveils various social engineering attacks and their leading human factors, and discusses several ways to defend against social engineering: education, training, procedure, and policy. The authors further introduce possible countermeasures for social engineering attacks. Future analysis is also presented.

In Chapter 12, Sathiadev Mahesh develops “A Decision Table for the Cloud Computing Decision in Small Business.” An issue facing the manager of a small business is the use of cloud computing to meet the information technology (IT) needs of the firm. These businesses typically have limited in-house IT capabilities and often outsource much of their IT. This chapter discusses this rapidly evolving technology and provides a framework for businesses to decide on harnessing the power of cloud computing. It recommends the appropriate decision based on the way in which IT is currently used in the enterprise and future needs to meet competitive challenges. The potential cost savings, technology insurance from cloud computing, and security risks are discussed and factored into the decision.

The following chapter, “Information Technology and Supply Chain Collaboration: Examining the Contingent Role of Environmental Uncertainty” by Karthik N. S. Iyer, explores the utilization of advanced information technologies (IT) in interfirm collaboration—a thematic element in current IT literature. Although conventional wisdom perceives that IT systems facilitate supply chain collaboration, this chapter provides an alternative perspective. Drawing on resource-based view and contingency fit theory, the study investigates a model of relationships that specify how environmental uncertainty factors influence the nature of the association of two critical but distinctive IT capabilities with collaboration. Findings corroborate the positive association between collaboration and B2B e-commerce and IT analytic capability. However, demand unpredictability enhances the IT analytic capability-collaboration relationship while deterring from the B2B e-commerce-collaboration association. Notably, the study did not find any moderating influence of another critical uncertainty factor, technological turbulence. The findings reveal the complex nature of IT-collaboration relationships and provide managers a framework for understanding the uncertainty contexts under which specific information technologies with various functionalities may be more appropriately leveraged to derive benefits.

Oualid (Walid) Ben Ali and Samar Mouakket follow this with “Integrating OLAP/SOLAP in E-Business Domains: An Empirical Study.” E-business domains have been considered killer domains for different data analysis techniques. Most researchers have examined data mining (DM) techniques to analyze the databases behind E-business websites. DM has shown interesting results, but this technique presents some restrictions concerning the content of the database and the level of expertise of the users interpreting the results. In this chapter, the authors show that successful and more sophisticated results can be obtained using other analysis techniques, such as Online Analytical Processing (OLAP) and Spatial OLAP (SOLAP). Thus, the authors propose a framework that fuses or integrates OLAP with SOLAP techniques in an E-business domain to perform easier and more user friendly data analysis (non-spatial and spatial) and improve decision making. In addition, the authors apply the framework to an E-business website related to online job seekers in the United Arab Emirates (UAE). The results can be used effectively by decision makers to make crucial decisions in the job market of the UAE.

In “The Evolution of the Massively Parallel Processing Database in Support of Visual Analytics,” Ian A. Willson explores the evolution of the Massively Parallel Processing (MPP) database, focusing on trends of particular relevance to analytics. The dramatic shift of database vendors and leading companies to utilize MPP databases and deploy an Enterprise Data Warehouse (EDW) is presented. The inherent benefits of fresher data, storage efficiency, and most importantly accessibility to analytics are explored. Published industry and vendor metrics are examined that demonstrate substantial and grow-
ing cost efficiencies from utilizing MPP databases. The author concludes by reviewing trends toward parallelizing decision support workload into the database, ranging from within database transformations to new statistical and spatial analytic capabilities provided by parallelizing these algorithms to execute directly within the MPP database. These new capabilities present an opportunity for timely and powerful enterprise analytics, providing a substantial competitive advantage to those companies able to leverage this technology to turn data into actionable information, gain valuable new insights, and automate operational decision making.

Sofia Kyratzi and Nickolas S. Sapidis, in “3D Object Modeling Using Sketches,” present a new algorithm for constructing a solid model when the given input is only one partial-view sketch (natural sketch). This algorithm is a two-step process, where first a complete (wireframe) sketch is derived, which is then transformed into a 3D polyhedron. The chapter details topological and geometric aspects of the process, as well as the essential “user-interaction” components dealing with cases where the sketch-to-solid problem does not have a unique solution.

In the case of certain applications in which a need exists to visualize and interact with voluminous data sets and complex 3-D geometrical models, the conventional computer interface inhibits key human-computer interaction processes. In “On Volume Based 3D Display Techniques” by Barry G. Blundell, several deficiencies of the standard interface are identified with emphasis on a failure to make optimal use of the complex human sensory systems. Various general forms of interaction modality are outlined together with several types of image space. This provides a basis for brief discussion of emerging creative 3-D display systems with emphasis on computational holography, varifocal techniques, and volumetric systems.

Next, Stephen K. Callaway and Saad M. Alflayyeh present a chapter on “Understanding Critical Distance Learning Issues: Toward a Comprehensive Model Predicting Student Satisfaction.” Distance education has been the topic of a substantial amount of research. However, prior studies have shown mixed results when trying to determine if a difference exists in student satisfaction between students in distance courses versus traditional courses. Prior empirical studies have been too narrow in scope, and a more comprehensive model is needed to better explain the factors influencing student satisfaction. Therefore, this chapter includes student demographic factors, comprehensive measures of student motivation, and course format, as well as specific course features included, to fully explain student satisfaction. Structural equation modeling is used to test the model. Results indicate a positive association between demographics and motivation, between motivation and course format, between one demographic factor and course format, between course format and satisfaction, and between course features and satisfaction.

The final chapter, “Organizational Citizenship Behavior of Information System Personnel: The Influence of Leader-Member Exchange” by Tzy-Yuan Chou et al., investigates leader-member exchange (LMX), which represents the quality of interaction between leaders and members of a work unit, such as the information system function within an organization. LMX is expected to improve organizational citizenship behavior, beneficial behaviors not explicitly rewarded, but prior research has failed to establish this link satisfactorily. To determine the influence of LMX in the IS environment, a model is developed based on the background in the IS and management literature that considers LMX an important contributor to job satisfaction and organizational commitment. In turn, organizational commitment influences both work quality and organizational citizenship behaviors in a beneficial way. The model is confirmed with a sample of IS professionals in Taiwan. The results show that effective communication and coordination is crucial between leaders and subordinates at levels within the organization not previously considered.