Preface

In the time of constant technological and managerial advancement, organizations of the 21st century are faced with an ongoing quest for implementing more effective strategies and methodologies to remain at the apex of the information resources management industry. Considering this, researchers and the pioneers of academia are continuously in search of innovative solutions to increase efficacy within technological and information resources management, as well as identify the emerging technologies and trends. *Best Practices and Conceptual Innovations in Information Resources Management: Utilizing Technologies to Enable Global Progressions*, part of the Advances in Information Resources Management Book Series, supplies the industry leaders, practicing managers, researchers, experts, and educators with the most current findings on undertaking the operation of the latest information technology reforms, developments, and changes. This publication presents the issues facing modern organizations and provides the most recent strategies in overcoming the obstacles of the ever-evolving information management and utilization industry.

Chapter I, “Integrating the Fragmented Pieces of IS Research Paradigms and Frameworks: A Systems Approach” by Manuel Mora, Autonomous University of Aguascalientes, Mexico, Ovsei Gelman, National Autonomous University of Mexico, Mexico, Guiseppe Forgione, Maryland University Baltimore County, USA, Doncho Petvok, Eastern State Connecticut University, USA, and Jeimy Cano, Los Andes University, Colombia, presents a formal conceptualization of the original concept of system and its related concepts from the original Systems Approach movement to facilitate the understanding of information systems (IS). This paper develops a critique integrative of the main IS research paradigms and frameworks reported in the IS literature using a Systems Approach. The effort seeks to reduce or dissolve some current research conflicts on the foci and the underlying paradigms of the IS discipline.

Chapter II, “Could the Work System Method Embrace Systems Concepts More Fully?” by Steven Alter, University of San Francisco, USA, discusses how the work system method was developed iteratively with the overarching goal of helping business professionals understand IT-reliant systems in organizations. It uses general systems concepts selectively, and sometimes implicitly. For example, a work system has a boundary, but its inputs are treated implicitly rather than explicitly. This paper asks whether the further development of the work system method might benefit from integrating general systems concepts more completely. After summarizing aspects of the work system method, it dissects some of the underlying ideas and questions how thoroughly even basic systems concepts are applied. It also asks whether and how additional systems concepts might be incorporated beneficially. The inquiry about how to use additional system ideas is of potential interest to people who study systems in general and information systems in particular because it deals with bridging the gap between highly abstract concepts and practical applications.

Chapter III, “The Distribution of a Management Control System in an Organization” by Alfonso Reyes A., Universidad de los Andes, Colombia, is concerned with methodological issues. In
particular, it addresses the question of how is it possible to align the design of management information systems with the structure of an organization. The method proposed is built upon the Cybersin method developed by Stafford Beer (1975) and Raul Espejo (1992). The paper shows a way to intersect three complementary organizational fields: management information systems, management control systems, and organizational learning when studied from a systemic perspective; in this case from the point of view of management cybernetics (Beer 1959, 1979, 1981, 1985).

Chapter IV, “Making the Case for Critical Realism: Examining the Implementation of Automated Performance Management Systems” by Phillip Dobson, Edith Cowan University, Perth Western Australia, J. Myles, Edith Cowan University, Perth Western Australia, and Paul Jackson, Edith Cowan University, Perth Western Australia, explores how although there have been a number of calls for an increased use of critical realism in Information Systems Research, this approach has been little used to date. This paper seeks to address the dearth of practical examples of research in the area by proposing that critical realism be adopted as the underlying research philosophy for enterprise systems evaluation. The authors address some of the implications of adopting such an approach by discussing the evaluation and implementation of a number of Automated Performance Measurement Systems (APMS). Such systems are a recent evolution within the context of enterprise information systems. They collect operational data from integrated systems to generate values for key performance indicators which are delivered directly to senior management. The creation and delivery of these data are fully automated, precluding manual intervention by middle or line management. Whilst these systems appear to be a logical progression in the exploitation of the available rich, real-time data, the statistics for APMS projects are disappointing. An understanding of the reasons is elusive and little researched. The authors examine a number of such implementations and seek to understand the implementation issues involved. The authors describe how critical realism can provide a useful “underlabourer” for such research, by “clearing the ground a little... removing some of the rubbish that lies in the way of knowledge” (Locke, 1894, p. 14). The implications of such an underlabouring role are investigated. Whilst the research is still underway the paper indicates how a critical realist foundation is assisting the research process.

Chapter V, “System-of-Systems Cost Estimation: Analysis of Lead System Integrator Engineering Activities” by Jo Ann Lane, University of Southern California, USA and Barry Boehm, University of Southern California, USA, examines how as organizations strive to expand system capabilities through the development of system-of-systems (SoS) architectures, they want to know “how much effort” and “how long” to implement the SoS. In order to answer these questions, it is important to first understand the types of activities performed in SoS architecture development and integration and how these vary across different SoS implementations. This paper provides results of research conducted to determine types of SoS Lead System Integrator (LSI) activities and how these differ from the more traditional system engineering activities described in Electronic Industries Alliance (EIA) 632 (“Processes for Engineering a System”). This research further analyzed effort and schedule issues on “very large” SoS programs to more clearly identify and profile the types of activities performed by the typical LSI and to determine organizational characteristics that significantly impact overall success and productivity of the LSI effort. The results of this effort have been captured in a reduced-parameter version of the Constructive SoS Integration Cost Model (COSOSIMO) that estimates LSI SoS Engineering (SoSE) effort.

Chapter VI, “Mixing Soft Systems Methodology and UML in Business Process Modeling” by Kosheek Sewchurran, University of Cape Town, South Africa and Doncho Petkov, Eastern Connecticut State University, USA, provides an action research account of formulating and applying a new business process modeling framework to manufacturing processes to guide software development. It is based on a mix of soft systems methodology (SSM) and the Unified Modeling Language (UML) business process modeling extensions suggested by Eriksson and Penker. The combination of SSM and UML
is justified through the ideas on Multimethodology by Mingers. The Multimethodology framework is used to reason about the combination of methods from different paradigms in a single intervention. The proposed framework was applied to modeling the production process in an aluminum rolling plant as a step in the development of a new information system for it. The reflections on the intervention give details on how actual learning and appreciation is facilitated using SSM leading to better UML models of business processes.

Chapter VII, “Managing E-Mail Systems: An Exploration of Electronic Monitoring and Control in Practice” by Aidan Duane, Waterford Institute of Technology (WIT), Ireland and Patrick Finnegan, University College Cork (UCC), Ireland, examines how an e-mail system is a critical business tool and an essential part of organisational communication. Many organisations have experienced negative impacts from e-mail and have responded by electronically monitoring and restricting email system use. However, electronic monitoring of email can be contentious. Staff can react to these controls by dissent, protest and potentially transformative action. This paper presents the results of a single case study investigation of staff reactions to electronic monitoring and control of an e-mail system in a company based in Ireland. The findings highlight the variations in staff reactions through multiple time frames of electronic monitoring and control, and this paper identifies the key concerns of staff which need to be addressed by management and consultants advocating the implementation of e-mail system monitoring and control.

Chapter VIII, “Information and Knowledge Perspectives in Systems Engineering and Management for Innovation and Productivity through Enterprise Resource Planning” by Stephen V. Stephenson, Dell Computer Corporation, USA and Andrew P. Sage, George Mason University, USA, provides an overview of perspectives associated with information and knowledge resource management in systems engineering and systems management in accomplishing enterprise resource planning for enhanced innovation and productivity. Accordingly, the authors discuss economic concepts involving information and knowledge, the important role of network effects and path dependencies in influencing enterprise transformation through enterprise resource planning.

Chapter IX, “The Knowledge Sharing Model: Stressing the Importance of Social Ties and Capital” by Gunilla Widén-Wulff, Åbo Akademi University, Finland and Reima Suomi, Turku School of Economics, Finland, works out a method on how information resources in organizations can be turned into a knowledge sharing (KS) information culture, which can further feed business success. This process is complicated, and the value chain can be broken in many places. In this study this process is viewed in the light of resource-based theory. A KS-model is developed where the hard information resources of time, people and computers are defined. When wisely used, these make communication a core competence for the company. As the soft information resources are added, that is the intellectual capital, KS, and willingness to learn, a knowledge sharing culture is developed, which feeds business success. This model is empirically discussed through a case study of fifteen Finnish insurance companies. The overall KS capability of a company corresponds positively to the different dimensions applied in the model. KS is an interactive process where organizations must work on both hard information resources, the basic cornerstones of any knowledge sharing, and make constant investment into soft information resources, learning, intellectual capital and process design in order to manage their information resources effectively.

Chapter X, “A Meta-Analysis Comparing the Sunk Cost Effect For IT and Non-IT Projects” by Jijie Wang, Georgia State University, USA and Mark Keil, Georgia State University, USA, investigates why escalation is a serious management problem and why sunk costs are believed to be a key factor in promoting escalation behavior. While many laboratory experiments have been conducted to examine the effect of sunk costs on escalation, there has been no effort to examine these studies as a group in
order to determine the effect size associated with the so-called “sunk cost effect.” Using meta-analysis, the authors analyzed the results of 20 sunk cost experiments and found: (1) a large effect size associated with sunk costs, and (2) stronger effects in experiments involving IT projects as opposed to non-IT projects. Implications of the results and future research directions are discussed.

Chapter XI, “E-Learning Business Risk Management with Real Options” by Georgios N. Angelou, University of Macedonia, Greece and Anastasios A. Economides, University of Macedonia, Greece, explores the rapid expansion of e-learning markets. As a result, the involved senior managers are increasingly being confronted with the need to make significant investment decisions related to the e-learning business activities. Real options applications to risk management and investment evaluation of Information and Communication Technologies (ICT) have mainly focused on a single and a-priori known option. However, these options are not inherent in any ICT investment. Actually, they must be carefully planned and intentionally embedded in the ICT investment in order to mitigate its risks and increase its return. Moreover, when an ICT investment involves multiple risks, by adopting different series of cascading options we may achieve risk mitigation and enhance investment performance. In this paper, the authors apply real options to the e-learning investments evaluation. Given the investment’s requirements, assumptions and risks, the goal is to maximize the investment’s value by identifying a good way to structure it using carefully chosen real options.

Chapter XII, “Examining Online Purchase Intentions in B2C E-Commerce: Testing an Integrated Model” by C. Ranganathan, University of Illinois at Chicago, USA and Sanjeev Jha, University of Illinois at Chicago, USA, discusses how the research on online shopping has taken three broad and divergent approaches viz., human-computer interaction, behavioral, and consumerist approaches to examine online consumer behavior. Assimilating these three approaches, this study proposes an integrated model of online shopping behavior, with four major antecedents influencing online purchase intent: web site quality, customer concerns in online shopping, self-efficacy, and past online shopping experience. These antecedents were modeled as second-order constructs with subsuming first-order constituent factors. The model was tested using data from a questionnaire survey of 214 online shoppers. Statistical analyses using structural equation modeling were used to validate the model and identify the relative importance of the key antecedents to online purchase intent. Past online shopping experience was found to have the strongest association with online purchase intent, followed by customer concerns, web site quality, and computer self efficacy. The findings and their implications are discussed.

Chapter XIII, “Information Technology Industry Dynamics: Impact of Disruptive Innovation Strategy” by Nicholas C. Georganantas, Fordham University Business Schools, USA and Evangelos Katsamakas, Fordham University Business Schools, USA, combines disruptive innovation strategy (DIS) theory with the system dynamics (SD) modeling method. It presents a simulation model of the hard-disk (HD) maker population overshoot and collapse dynamics, showing that DIS can crucially affect the dynamics of the IT industry. Data from the HD maker industry help calibrate the parameters of the SD model and replicate the HD makers’ overshoot and collapse dynamics, which DIS allegedly caused from 1973 through 1993. SD model analysis entails articulating exactly how the structure of feedback relations among variables in a system determines its performance through time. The HD maker population model analysis shows that, over five distinct time phases, four different feedback loops might have been most prominent in generating the HD maker population dynamics. The chapter shows the benefits of using SD modeling software, such as iThink®, and SD model analysis software, such as Digest®. The latter helps detect exactly how changes in loop polarity and prominence determine system performance through time. Strategic scenarios computed with the model also show the relevance of using SD for information system management and research in areas where dynamic complexity rules.
Chapter XIV, “Modeling Customer-Related IT Diffusion,” by Shana L. Dardan, Susquehanna University, USA, Ram L. Kumar, University of North Carolina at Charlotte, USA, and Antonis C. Stylianou, University of North Carolina at Charlotte, USA presents a diffusion model of customer-related IT (CRIT) based on stock market announcements of investments in those technologies. Customer-related IT investments are defined in this work as information technology investments made with the intention of improving or enhancing the customer experience. The diffusion model developed in our study is based on data for the companies of the S&P 500 and S&P MidCap 400 for the years of 1996-2001. The authors find empirical support for a sigmoid diffusion model. Further, the authors find that both the size and industry of the company affect the path of CRIT diffusion. Another contribution of this study is to illustrate how data collection techniques typically used for financial event studies can be used to study information technology diffusion. Finally, the data collected for this study can serve as a Bayesian prior for future diffusion forecasting studies of CRIT.

Chapter XV, “The Impact of Computer Self-Efficacy and System Complexity on Acceptance of Information Technologies” by Bassam Hasan, The University of Toledo, USA, and Jafar M. Ali, Kuwait University, Kuwait, investigates the acceptance and use of information technologies by target users. Building on past research and integrating computer self-efficacy (CSE) and perceived system complexity (SC) as external variables to the technology acceptance model (TAM), this study examines the direct and indirect effects of these two factors on system eventual acceptance and use. Overall, both CSE and SC demonstrated significant direct effects on perceived usefulness and perceived ease of use as well as indirect effects on attitude and behavioral intention. With respect to TAM’s variables, perceived ease of use demonstrated a stronger effect on attitude than that of perceived usefulness. Finally, attitude demonstrated a non-significant impact on behavioral intention. Several implications for research and practice can be drawn from the results of this study.

Chapter XVI, “Determining User Satisfaction from the Gaps in Skill Expectations Between IS Employees and Their Managers” by James Jiang, University of Central Florida, USA, Gary Klein, University of Colorado, USA, and Eric T.G. Wang, National Central University, Taiwan, explores how the skills held by information system professionals clearly impact the outcome of a project. However, the perceptions of just what skills are expected of information systems (IS) employees have not been found to be a reliable predictor of eventual success in the literature. Though relationships to success have been identified, the results broadly reported in the literature are often ambiguous or conflicting, presenting difficulties in developing predictive models of success. The authors examine the perceptions of IS managers and IS employees for technology management, interpersonal, and business skills to determine if their perceptions can serve to predict user satisfaction. Simple gap measures are dismissed as inadequate because weights on the individual expectations are not equal and predictive properties low. Exploratory results from polynomial regression models indicate that the problems in defining a predictive model extend beyond the weighting difficulties, as results differ by each skill type. Compound this with inherent problems in the selection of a success measure, and we only begin to understand the complexities in the relationships that may be required in an adequate predictive model relating skills to success.

Chapter XVII, “The Impact of Missing Skills on Learning and Project Performance” by James Jiang, University of Central Florida, USA, Gary Klein, University of Colorado in Colorado Springs, USA, Phil Beck, Southwest Airlines, USA, and Eric T.G. Wang, National Central University, Taiwan, investigate methods to improve the performance of software projects. A number of practices are encouraged that serve to control certain risks in the development process, including the risk of limited competences related to the application domain and system development process. A potential mediating variable between this lack of skill and project performance is the ability of an organization to acquire the essential domain knowledge and technology skills through learning, specifically organizational technol-
ogy learning. However, the same lack of knowledge that hinders good project performance may also inhibit learning since a base of knowledge is essential in developing new skills and retaining lessons learned. This study examines the relationship between information system personnel skills and domain knowledge, organizational technology learning, and software project performance with a sample of professional software developers. Indications are that the relationship between information systems (IS) personnel skills and project performance is partially mediated by organizational technology learning.

Chapter XVIII, “Beyond Development: A Research Agenda for Investigating Open Source Software User Communities” by Leigh Jin, San Francisco State University, USA, Daniel Robey, Georgia State University, USA, and Marie-Claude Boudreau, University of Georgia, USA, explores the use of open source software. Most of the research conducted so far has focused on the phenomenon of open source software development, rather than use. The authors argue for the importance of studying open source software use and propose a framework to guide research in this area. The framework describes four main areas of investigation: the creation of OSS user communities, their characteristics, their contributions, and how they change. For each area of the framework, the authors suggest several research questions that deserve attention.

Chapter XIX, “Electronic Meeting Topic Effects” by Milam Aiken, University of Mississippi, USA, Linwu Gu, Indiana University of Pennsylvania, USA, and Jianfeng Wang, Indiana University of Pennsylvania, USA, explores the effects of an individual’s perception of topics on process gains or process losses using a sample of 110 students in 14 electronic meetings. The results of the study showed that topic characteristics variables, individual knowledge, and individual self-efficacy had a significant influence on the number of relevant comments generated in an electronic meeting.

Chapter XX, “Mining Text with the Prototype-Matching Method” by A. Durfee, Appalachian State University, USA, A. Visa, Tampere University of Technology, Finland, H. Vanharanta, Tampere University of Technology, Finland, S. Schneberger, Appalachian State University, USA, and B. Back, Åbo Akademi University, Finland, evaluates a new text mining methodology: prototype-matching for text clustering, developed by the authors’ research group. Text mining methods seek to use an understanding of natural language text to extract information relevant to user needs. The methodology was applied to four applications: clustering documents based on their abstracts, analyzing financial data, distinguishing authorship, and evaluating multiple translation similarity. The results are discussed in terms of common business applications and possible future research.

Chapter XXI, “A Review of IS Research Activities and Outputs Using Pro Forma Abstracts” by Francis Kofi Andoh-Baidoo, State University of New York at Brockport, USA, Elizabeth White Baker, Virginia Military Institute, USA, Santa R. Susarapu, Virginia Commonwealth University, USA, and George M. Kaspar, Virginia Commonwealth University, USA, evaluates research using March and Smith’s taxonomy of information systems (IS) research activities and outputs and Newman’s method of pro forma abstracting, which maps the current space of IS research and identifies research activities and outputs that have received very little or no attention in the top IS publishing outlets. Eleven-hundred-fifty-seven (1,157) articles published in some of the top IS journals and the ICIS proceedings for the period 1998-2002 were reviewed and classified. The results demonstrate the efficacy of March and Smith’s taxonomy for summarizing the state of IS research and for identifying activity-output categories that have received little or no attention. Examples of published research occupying cells of the taxonomy are cited, and research is posited to populate the one empty cell. The results also affirm the need to balance theorizing with building and evaluating systems because the latter two provide unique feedback that encourage those theories that are the most promising in practice.

In the competing business environment of today, strategically managing information resources is at the forefront for organizations worldwide. The adaptation of technological advance has become the key
agenda for firms who desire the greatest effectiveness and efficiency of information resources management. Technology, and all it facilitates, has become the axis of the modern world, and thus, having access to the most current findings allows firms the vehicle for the next echelon of success. By investigating transpiring technological movements, researchers, experts, and practitioners alike have the opportunity to implement the highest of emerging standards and grow from that execution. *Best Practices and Conceptual Innovations in Information Resources Management: Utilizing Technologies to Enable Global Progressions* comprises the most current findings associated with utilizing these advancements and applying their latest solutions.

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*Editor-in-Chief*

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