Preface

Enterprise Information Systems (EIS) allow for the sharing and coordination of information across an organization. Given the global nature of today's business, it has become necessary to develop strategic alliances and promote inter-organizational communication. This collection, entitled *Organizational Advancements through Enterprise Information Systems: Emerging Applications and Developments*, provides a comprehensive assessment of the latest developments in the EIS revolution. Individual chapters, which focus on Enterprise Resource Planning (ERP) adoption, the integration of enterprise systems, personalized ERP, and the Semantic Web, offer ideas and solutions for the future of the global enterprise.

Chapter 1, "*Critical Success Factors in Enterprise Resource Planning Implementations*," by Joseph R. Muscatello and Injazz J. Chen seeks to further the study of the critical success factors of ERP implementations by using statistical analysis to further delineate the patterns of adoption of the various concepts. Through the use of a cross-sectional mail survey, the authors offer empirical evidence of critical success factors that will enable practitioners to improve their chances of ERP project success. Additionally, this study furthers the academic theory of ERP implementations that can benefit future studies.

Chapter 2, "*The Paradox of Complex ERP Systems used in Simplified Organisations such as Small and Medium Enterprises*," by Catherine Equey and Emmanuel Fragnière further develops and generalises findings from the authors' July 2008 paper in the International Journal of Enterprise Information Systems (IJEIS) by adding organisational issues such as business process reengineering (BPR). The authors argue that enterprise resource planning (ERP) systems are complex management tools that impose standard business processes from larger manufacturing firms. The authors test whether these systems can be adapted effectively to more simplified organisations such as small and medium enterprises (SMEs). The authors found that SMEs tend to have a high perceived level of satisfaction when using these complex tools, independent of size or sector. However, they cannot clearly establish that SMEs having applied BPR while implementing an ERP system are more satisfied than those that did not.

Chapter 3, "*Requirements Management for ERP Projects*," by S. Parthasarathy and Muthu Ramachandran proposes: (1) An ERP maturity model (EMM) for assessing the ERP maturity within the organization and (2) A Requirements Engineering Method (REM) for ERP system requirements to capture the requirements from the different types of users of an ERP system, verifying and validating them. The EMM consists of three levels and each level has a focus and a key process area. Key indicators of ERP functionality identified by a major ERP vendor have been used to apply the EMM to an enterprise. This identifies the level of the EMM to which an enterprise belongs. Then the REM is used to enable the enterprise to assess its ERP system requirements and refine it using a knowledge database to reach a higher level in the EMM than the present one. The authors deem that this model can benefit users across all the ERP projects.

Chapter 4, "*Requirements Elicitation for Personalized ERP Systems: A Case Study*," by Lex van Velsen, Corrie Huijs, and Thea van der Geest reports on the usefulness of several methods for eliciting

user input which served as a basis for requirements for a personalized ERP system. It describes the yield of heuristic evaluations, both by experts and by developers, and a focus group with six users representing the main user types. The focus group consisted of an identification of the most important functions, task demonstrations, and a mini design workshop. As a demonstration of the results of the various user-focused methods, some noteworthy findings on the personalization of ERP systems are presented.

Chapter 5, "*Specifying General Activity Clusters for ERP Projects Aimed at Effort Prediction*," by Guy Janssens, Rob Kusters, and Fred Heemstra hypothesizes that ERP projects consist of a collection of clusters of activities with their own focus on implementation costs and project size. This was confirmed in a survey among domain experts. This chapter describes a first step in retrieving these clusters. It shows 21 logical clusters of ERP implementation project activities based on 405 ERP implementation project activities retrieved from literature. Logical clusters of ERP project activities can be used in further research to find variables for defining the size of an ERP project.

Chapter 6, "*Time, Attitude, and User Participation: How Prior Events Determine User Attitudes in ERP Implementation*," by Lene Pries-Heje discusses the difficulty in assimilating an ERP system to an organization. User involvement seems to be the crux of the matter. However, even the best intentions for user involvement may come to nothing. A case study of a five-year ERP implementation process reveals that a main reason may be that the perception of usefulness of the system in any given phase of the implementation is heavily dependent on preceding events—the process. A process model analysis identifies eight episodes and nine encounters in the case showing that the user's attitude towards the ERP system changes between acceptance, equivocation, resistance and rejection depending on three things: (1) the dynamic between user and consultants, (2) the dynamic between different user groups, and (3) the understanding of technical, organizational and socio-technical options. When relating the empirical findings to existing theory on user participation, it is argued that the changes could be explained as a slide from influential user participation toward pseudo participation and back to influential participation, and that user participation in the context of ERP implementations raises new issues regarding user participation. Thus further research regarding new approaches and/or new techniques and tools for user participation in the context of ERP implementations is needed.

Chapter 7, "*ERP Selection: Effect of Product and Organizational Constructs*," by Uzoka Faith-Michael Emeka and Abiola Richard Oladele focuses on the product and organizational constructs that affect the selection of ERP systems. The authors utilized an extension of technology acceptance model (TAM) by elements of the information systems (IS) success model. The study evaluated the impact of system quality, information quality, service quality, and support quality as key determinants of cognitive response, which influences ERP system purchase/use. Industry, firm size, buying center, and product experience were introduced as organizational constructs. The results of the study indicate that system quality, information quality and software support are significant product qualities that affect an organization's decision to adopt an ERP product. Among the organizational constructs, only firm size was found to be statistically significant. The results also indicate that multi department committees and the IT department are the major buying centers responsible for vendor selection.

Chapter 8, "*A SOA-Based Approach to Integrate Enterprise Systems*," by Anne Lämmer, Sandy Eggert, and Norbert Gronau presents a procedure for the integration of enterprise systems. Therefore enterprise systems are being transferred into a service oriented architecture. The procedure model starts with decomposition into Web services. This is followed by mapping redundant functions and assigning of the original source code to the Web services, which are orchestrated in the final step. Finally, an example is given how to integrate an Enterprise Resource Planning System with an Enterprise Content Management System using the proposed procedure model.

Chapter 9, "*The Underlying Test—Human, Organisational and Technical Considerations adjoined with Critical Success Factors when Implementing ERP: A Case Study of a UK SME,*" by Jonathan D Owens and Julie Dawson intends to explore some of the problems that occur throughout the implementation of an ERP system. Enterprise Resource Planning (ERP) systems are pervasive information systems that have been fundamental in organisations for the past two decades. ERP systems may well count as the most important development in technology in the 1990s. There are many ERP success stories; equally there are as many failure stories. However, organisations encounter obstacles when implementing ERP systems.

Chapter 10, "*The Role of Enterprise Perceptions in Acceptance of Information Systems,*" by Blanca Hernández, Julio Jiménez, and M. José Martín analyzes current and future enterprise use of various Information Systems (IS), such as management software, employing a technology acceptance model (TAM) optimized by the inclusion of technological compatibility with previous IS and Web procurement. It also examines whether relationships in the model change according to the sector to which an enterprise belongs (i.e., if there exists a moderating effect of industry). The study applies two types of analyses: structural and multisample. The results show that Technological compatibility, Web procurement, Perceived usefulness and Perceived ease of use influence upon future use of business IS. Enterprises need to be aware that interrelationships exist among the various IS. Investment in a specific system may facilitate the acceptance and subsequent performance of other applications. Furthermore, the "industry effect" modifies two important TAM relationships, and consequently it affects enterprise behaviour regarding IS.

Chapter 11, "*Modeling and Implementation of Formal Power Structures in Enterprise Information Systems,*" by Alexei Sharpanskykh proposes a formal logic-based specification language for representing power- (in particular authority) relations and their dynamics to create a bridge between informal organization theories and automated EISs. The use of the language is illustrated by considering authority structures of organizations of different types. Moreover, the chapter demonstrates how the formalized authority relations can be integrated into an EIS.

Chapter 12, "*Enhancing Traditional ATP Functionality in Open Source ERP Systems: A Case Study from the Food & Beverages Industry,*" by Ioannis T. Christou and Stavros Ponis views Available-to-promise (ATP) procedures as a dynamic and more complex problem of deciding whether to accept a customer order request given the available inventory and planned production plus the remaining production capacity and business rules for covering demand from certain customer classes, for given products and time window. Whenever this is not possible, the production schedule is modified, by utilizing "reserved" capacity and resources, to cover extra demand. A prototype tool has been designed and implemented based on this approach, that can be easily integrated into existing ERP systems enhancing their functionality and increasing the level of customer service. The elaborated prototype is pilot tested in a case company in the food industry and is loosely integrated within the Open Source Compiere 2, ERP system extended to handle manufacturing. The prototype produces almost real time results on modern commodity-off-the-shelf computers, thus enhancing sales personnel performance and efficiency and increasing the level of customer service and satisfaction.

Chapter 13, "*Developing an Enterprise Wide Knowledge Warehouse: Challenge of Optimal Designs in the Media Industry*" by Amit Mitra and Laura Campoy first reviews reviews different frameworks that have come to be recognised as being effective in categorising organisational knowledge. Secondly, in the light of experiences of both authors in developing an interactive knowledge warehouse, the present chapter discusses usefulness of these frameworks. Prevalence of non-disclosure conditions would mean that the mentioned organisation would need to remain anonymous. For the purposes of the present chapter, the chosen organisation would be referred to as Kadrosi.

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Chapter 14, "*Exploring the Influence Sources of ERP Adoption and the Y2K Effect in Taiwan*," by Hsiu-Hua Chang, Chun-Po Yin, and Huey-Wen Chou investigates the influence sources of ERP adoption in Taiwan and explore if the Y2K can be viewed as a critical point. The results demonstrate that the main influence source of ERP adoption is the mixed influence source for all adopters. Before the Y2K, the internal model shows the higher power of explanation. And after the Y2K, the main influence becomes external influence source. With different diffusion patterns before and after the Y2K, the results confirm that the Y2K is a critical point. Besides contributing to the application of diffusion-of-innovation in Taiwan's ERP adoption, the results of this study can provide suggestions for ERP suppliers' marketing strategy.

Chapter 15, "*IS Success Factors and IS Organizational Impact: Does Ownership Type Matter in Kuwait?*" by Abdulrida Alshawaf and Omar E. M. Khalil, investigates the possible ownership type effect on the information systems (IS) success factors and IS impact on organizational performance in Kuwaiti organizations. Four IS success factors—IS strategy and resources, end user support, IS sophistication and IS organizational level & user involvement—and three IS organizational impact factors—improving work efficiency, improving decision making, and improving work effectiveness—were identified. Ownership type was found to affect the profiles of the IS success factors and IS organizational impact. Public organizations tend to commit less IS resources; their managers get less involved in IS strategy formulation, and their users get less involved in systems development. Yet, they tend to rate their IS organizational impact higher. This "IS expectation-performance gap" is further explained in the article, along with research implications, limitations, and future research.

Chapter 16, "*An ASP-Based Product Customization Service Systems for SMEs: A Case Study in Construction Machinery*," by Yan Su, Wenhe Liao, Yu Guo, Shiwen Gao, and Huibin Shi proposes an ASP-based product customization service system operating in lifecycle-oriented customization mode. Resource share, product data transform, and product configuration are three important aspects for effectively supporting lifecycle-oriented product customization service. A resource collection method for distributed resource share is put forward. An XML-based data mapping model for isomeric/isomorphic product data transform is presented. A new algorithm for rapid product configuration is designed, and an interactive virtual environment for collaborative configuration is suggested. Using this system, SMEs can develop their Internet-based sales and customization systems smoothly, in a short time, and at low cost. A construction machinery oriented product customization service platform is introduced as a case study.

Chapter 17, "*Monitoring Enterprise Applications and the Future of Self-Healing Applications*," by Shuchih Ernest Chang and Boris Minkin illustrates how self-healing application monitoring can facilitate the performance and availability management of Java based enterprise applications. The creating of enterprise strength monitoring solutions, together with the criteria of monitoring technology adoption and vendor selection, is also presented in this chapter.

Chapter 18, "*Managing the Implementation of Business Intelligence Systems: A Critical Success Factors Framework*," by William Yeoh, Andy Koroios, and Jing Gao represents a first step of filling in the research gap. The authors utilized the Delphi method to conduct three rounds of studies with 15 BI system experts in the domain of engineering asset management organizations. The study develops a CSFs framework that consists of seven factors and associated contextual elements crucial for BI systems implementation. The CSFs are committed management support and sponsorship, business user-oriented change management, clear business vision and well-established case, business-driven methodology and project management, business-centric championship and balanced project team composition, strategic and extensible technical framework, and sustainable data quality and governance framework. This CSFs framework allows BI stakeholders to holistically understand the critical factors that influence implementation success of BI systems.

Chapter 19, "*Rule-Based approach for a Better B2B Discovery,*" by Youcef Aklouf and El Kindi Rezig, presents an approach that targets the discovery of organizations' Web services according to what they provide to other organizations that might become potential partners using a functionality-based model. The proposed model attempts to express without ambiguity the functionalities of the organization's Web services operations by using an ontology. Moreover, the proposed approach exploits expert systems that aim at adding new business functionalities to Web services according to their rule-base defined by the organization knowledge engineer or the system administrator. The authors have also added a semantic layer between the ontology and the expert systems to make them more ontology-aware. A JAVA implementation has been done to validate the authors' proposal.

Chapter 20, "*Generic Object Oriented Enterprise Modeling Approach Utilizing a Strategic Abstraction Mechanism,*" by Islam Choudhury, Sergio de Cesare, and Emily Di Florido reports on the Generic Object-Oriented Enterprise Modeling Process (GOOEMP), a set of partially ordered steps intended to reach the objective of building a fully integrated, dynamic, object-oriented model of the enterprise. An abstraction mechanism is proposed to enable this process. The process is generic because it applies to most types of enterprises. Enterprise models are the products developed from the process and these can be used by various stakeholders in an organization to: a) give them an understanding of the enterprise; b) design integrated information systems; c) respond to business changes by evolving their enterprise models and information systems in a coordinated and coherent manner; and d) enable the enterprise models built within a particular industry to be reused and applied to many other industries.

Chapter 21, "*Semantic Web Services for Simulation Component Reuse and Interoperability: An Ontology Approach,*" by Simon J. E. Taylor, David Bell, Navonil Mustafee, Sergio de Cesare, Mark Lycett, and Paul A. Fishwick presents new research that partially alleviates the problem of limited semantic reuse and interoperability of simulation components in Commercial-off-the-shelf (COTS) Simulation Packages (CSPs). Semantic models, in the form of ontologies, utilized by the authors' Web service discovery and deployment architecture provide one approach to support simulation model reuse.

Organizational Advancements through Enterprise Information Systems: Emerging Applications and Developments aims to provide contemporary coverage of enterprise information systems with a focus on how these systems help to achieve a global supply chain. Through investigations of different types of planning and implementation, the collection aims to inform researchers of best practices in the application and management of enterprise information systems.