

Table of Contents

Preface	xiv
Chapter I	
Examining the Factors Affecting Project and Business Success of ERP Implementation	1
<i>Emad M. Kamhawi, Zagazig University, Egypt</i>	
Chapter II	
Evolution of Enterprise Resource Planning.....	17
<i>Ronald E. McGaughey, University of Central Arkansas, USA</i>	
<i>Angappa Gunasekaran, University of Massachusetts—Dartmouth, USA</i>	
Chapter III	
Information Technology Usage in Maquila Enterprises	32
<i>Purnendu Mandal, Lamar University, USA</i>	
<i>Mohan P. Rao, University of Louisiana, USA</i>	
Chapter IV	
Performance and Cost Analysis of Service-Oriented Enterprise Architectures.....	49
<i>Henk Jonkers, BiZZdesign, The Netherlands</i>	
<i>Maria-Eugenia Iacob, Univeristy of Twente, The Netherlands</i>	
Chapter V	
Significance of Analytical Hierarchy Process (AHP) and Nominal Group Technique (NGT) in ERP Implementation.....	74
<i>S. Parthasarathy, Thiagarajar College of Engineering, India</i>	
Chapter VI	
Specifying Software Models with Organizational Styles.....	91
<i>Manuel Kolp, Université Catholique de Louvain Place des Doyens, Belgium</i>	
<i>Yves Wautelet, Université Catholique de Louvain Place des Doyens, Belgium</i>	
<i>Stéphane Faulkner, University of Namur Rempart de la Vierge, Belgium</i>	

Chapter VII	
Towards Identifying the Most Important Attributes of ERP Implementations.....	114
<i>Piotr Soja, Cracow University of Economics, Poland</i>	
<i>Dariusz Put, Cracow University of Economics, Poland</i>	
Chapter VIII	
A Voice-Enabled Pervasive Web System with Self-Optimization Capability for Supporting Enterprise Applications	137
<i>Shuchih Ernest Chang, National Chung Hsing University, Taiwan</i>	
Chapter IX	
The Impact of Culture on the Perception of Information System Success.....	156
<i>Hafid Gourram, Bishop's University, Canada</i>	
Chapter X	
Achieving System and Business Interoperability by Semantic Web Services.....	172
<i>John Krogstie, Norwegian University of Science and Technology (NTNU), Norway & SINTEF ICT, Norway</i>	
<i>Csaba Veres, Norwegian University of Science and Technology (NTNU), Norway</i>	
<i>Guttorm Sindre, Norwegian University of Science and Technology (NTNU), Norway</i>	
<i>Øyvind Skytøen, Norwegian University of Science and Technology (NTNU), Norway</i>	
Chapter XI	
Integrated Research and Training in Enterprise Information Systems	195
<i>Cheng-Yang Cheng, Penn State University, USA</i>	
<i>Vamsi Salaka, Penn State University, USA</i>	
<i>Vittal Prabhu, Penn State University, USA</i>	
Chapter XII	
Service-Oriented Middleware for Managing Inter-Enterprise Collaborations	209
<i>Lea Kutvonen, University of Helsinki, Finland</i>	
<i>Toni Ruokolainen, University of Helsinki, Finland</i>	
<i>Sini Ruohomaa, University of Helsinki, Finland</i>	
<i>Janne Metso, University of Helsinki, Finland</i>	
Chapter XIII	
Training and User Acceptance in a University ERP Implementation: Applying the Technology Acceptance Model.....	242
<i>Joseph Bradley, University of Idaho, USA</i>	
<i>C. Christopher Lee, Pacific Lutheran University, USA</i>	

Chapter XIV	
Measuring and Diffusing Data Quality in a Peer-to-Peer Architecture	261
<i>Diego Milano, Università degli Studi di Roma, Italy</i>	
<i>Monica Scannapieco, Università degli Studi di Roma, Italy</i>	
<i>Tiziana Catarci, Università degli Studi di Roma, Italy</i>	
Chapter XV	
Modeling Buyer-Supplier Relationships in Dynamic Supply Chains	288
<i>Vipul Jain, Indian Institute of Technology Delhi, India</i>	
<i>S. Wadhwa, Indian Institute of Technology Delhi, India</i>	
<i>S. G. Deshmukh, Indian Institute of Technology Delhi, India</i>	
Chapter XVI	
Enterprise Systems, Control and Drift.....	317
<i>Ioannis Ignatiadis, University of Bath, UK</i>	
<i>Joe Nandhakumar, University of Warwick, UK</i>	
Compilation of References	344
About the Contributors	372
Index	379

Detailed Table of Contents

Preface	xiv
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Chapter I

Examining the Factors Affecting Project and Business Success of ERP Implementation	1
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Responding to the need for a better understanding of the factors that explain ERP systems implementation success, this chapter used a field study to collect data from managers working in Bahraini enterprises that use ERP systems to examine the influence of some selected factors on two perspectives: project and business success of such systems. Results support previous research findings in this area concerning the impact of factors such as project planning, organizational resistance, and ease of use on ERP project success metrics. Also the study results show that project planning; business process reengineering; and organizational fit have significant influence on business success metrics. However, no significant impact was found for some classical success factors such as top management support, technical fit, training, competitive pressure, and strategic fit on both project and business success. The chapter ends with implications for these findings and possible extensions for the study.

Chapter II

Evolution of Enterprise Resource Planning	17
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Business needs have driven the design, development, and use of the enterprise-wide information systems we call Enterprise Resource Planning (ERP) systems. Intra enterprise integration was a driving force in the design, development, and use of early ERP systems. Changing business needs have brought about the current business environment, wherein supply chain integration is desirable, if not essential, thus current and evolving ERP systems demonstrate an expanded scope of integration that encompasses limited inter-enterprise integration. This chapter explores the evolution, the current status, and future of ERP, with the objective of promoting relevant future research in this important area. If researchers hope to play a significant role in the design, development, and use of suitable ERP systems to meet evolving business needs, then their research should focus at least in part on the changing business environment, its impact on business needs, and the requirements for enterprise systems that meet those needs.

Chapter III

Information Technology Usage in Maquila Enterprises	32
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The build-up of export-oriented companies since 1990s on the Mexico-USA boarder, and their recent decline, is no surprise to many policy analysts. The focus on the use of low-wage employees, neglecting skills, and infrastructure creation was doomed to fail. Much of the Mexican maquila operations and jobs have gone to China and other low-wage countries. Are maquiladoras technologically competent to ward-off competitive forces from China and other parts of the world? This chapter presents an exploratory study of IT usage and managerial perceptions of IT-related costs and benefits in maquiladoras. The relevant data was gathered through a survey questionnaire. The results show that IT had a positive impact on maquila business performance. These findings will be useful to managers in assessing their organization and taking corrective actions to become further competitive.

Chapter IV

Performance and Cost Analysis of Service-Oriented Enterprise Architectures.....	49
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In this chapter the authors address the integration of functional models with non-functional models in the context of service-oriented architectures. Starting from the observation that current approaches to model-driven development have a strong focus on functionality, we argue the necessity of including non-functional aspects as early as possible in the service design process. We distinguish two modelling spaces, the design space and the analysis space, which can be integrated by means of model transformations. Quantitative results obtained in the analysis space, using special-purpose analysis techniques, can be related back to the design models by means of a reverse transformation. This provides a framework for incorporating non-functional analysis into methodological support for e-service development. While, for detailed design models, quantitative analysis is more or less covered by existing techniques, there is still a gap at the architectural overview level. Therefore, we propose an approach for performance and cost analysis of layered, service-oriented architecture models, which consists of two phases: a “top-down” propagation of workload parameters, and a “bottom-up” propagation of performance or cost measures. By means of an example, the authors demonstrate the application of the approach, and show that a seamless integration with detailed quantitative analysis methods (e.g., queueing analysis for performance predictions) can be achieved.

Chapter V

Significance of Analytical Hierarchy Process (AHP) and Nominal Group Technique (NGT) in ERP Implementation	74
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Enterprise Resource Planning (ERP) system is an integrated software system reflecting the business processes of an enterprise. Enterprise Resource Planning (ERP) system is a generic term for integrated systems for corporate computing that supersedes concepts such as Materials Requirements Planning (MRP) of the 1970s and, later, Manufacturing Resource Planning (MRP II) of the 1980s. The objective of

customization in ERP implementation is to achieve a fit between the ERP system and the business process that the system supports. A literature review reveals that the customization is the major annoyance in most of the ERP projects. A solution is proposed using a process framework that incorporates participatory learning and decision-making processes based on Nominal Group Technique (NGT) and the evaluation methodology adopting the Analytical Hierarchy Process (AHP). A case study is presented to illustrate its applicability in practice. The upshot of the study is the identification of various customization possibilities for ERP implementation. This study is meant to help managers think about the various feasible customization options available to them. Future research work that can be done in ERP software customization is also indicated.

Chapter VI

Specifying Software Models with Organizational Styles 91

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Organizational Modeling is concerned with analyzing and understanding the organizational context within which a software system will eventually function. This chapter proposes organizational patterns motivated by organizational theories intended to facilitate the construction of organizational models. These patterns are defined from real world organizational settings, modeled in i* and formalized using the Formal Tropos language. Additionally, the chapter evaluates the proposed patterns using desirable qualities such as coordinability and predictability. The research is conducted in the context of Tropos, a comprehensive software system development methodology.

Chapter VII

Towards Identifying the Most Important Attributes of ERP Implementations 114

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Enterprise resource planning (ERP) systems have been implemented in various and diverse organizations. The size of companies, their industry, the environment, and the number of implemented modules are examples of their heterogeneity. In consequence, a single procedure which leads to the success of implementation does not appear to exist. Therefore, there have been many implementations that have failed during, and also after, the implementation process. As a result, a considerable amount of research has been trying to identify issues influencing ultimate project success and also to recognize the best implementation projects. The aim of this work is to identify the most important characteristics of ERP implementation which affect project success. This study builds on data gathered using a questionnaire directed toward people playing leading roles in ERP implementations in a few dozen companies. Twelve attributes were identified and divided into three sets representing: effort, effect, and the synthetic measure of success calculated on the basis of the obtained data. Two agglomeration methods were employed to identify exemplar and anti-exemplar groups and objects. These elements were thoroughly analyzed, which led to identifying the most and the least desired attributes of an ERP implementation project. The findings are discussed and related with the results of prior research. Finally, implications for practitioners and concluding remarks summarise the chapter.

Chapter VIII

A Voice-Enabled Pervasive Web System with Self-Optimization Capability for Supporting Enterprise Applications	137
<i>Shuchih Ernest Chang, National Chung Hsing University, Taiwan</i>	

Other than providing Web services through popular Web browser interfaces, pervasive computing may offer new ways of accessing Internet applications by utilizing various modes of interfaces to interact with their end-users, and its technology could involve new ways of interfacing with various types of gateways to back-end servers from any device, anytime, and anywhere. In this chapter, mobile phone was used as the pervasive device for accessing an Internet application prototype, a voice-enabled Web system (VWS), through voice user interface technology. Today's Web sites are intricate but not intelligent, so finding an efficient method to assist user searching is particularly important. One of these efficient methods is to construct an adaptive Web site. This chapter shows that multimodal user-interface pages can be generated by using XSLT stylesheet which transforms XML documents into various formats including XHTML, WML, and VoiceXML. It also describes how VWS was designed to provide an adaptive voice interface using an Apache Web server, a voice server, a Java servlet engine, and a genetic algorithm based voice Web restructuring mechanism.

Chapter IX

The Impact of Culture on the Perception of Information System Success.....	156
<i>Hafid Agourram, Bishop's University, Canada</i>	

Research has showed that social and socio-technical concepts are influenced by culture. The objective of this chapter is to explore how the socio-technical concept of information system success is defined and perceived by a group of French managers. The results show that culture does influence IS success perception. The study has many implications for both academic and practice communities. The results are especially important to multinational organizations that standardize IS in different cultures including France. The research case is a multibillion dollar Canadian multinational organization which decided to standardize an Enterprise Resource Planning (ERP) system in all its worldwide subsidiaries.

Chapter X

Achieving System and Business Interoperability by Semantic Web Services.....	172
<i>John Krogstie, Norwegian University of Science and Technology (NTNU), Norway & SINTEF ICT, Norway</i>	
<i>Csaba Veres, Norwegian University of Science and Technology (NTNU), Norway</i>	
<i>Guttorm Sindre, Norwegian University of Science and Technology (NTNU), Norway</i>	
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Much of the early focus in the area of Semantic Web has been on the development of representation languages for static conceptual information; while there has been less emphasis on how to make Semantic Web applications practically useful in the context of knowledge work. To achieve this, a better coupling is needed between ontology, service descriptions, and workflow modeling, including both traditional production workflow and interactive workflow techniques. This chapter reviews the basic technologies involved in this area to provide system and business interoperability, and outlines what can be achieved by merging them in the context of real-world workflow descriptions.

Chapter XI

Integrated Research and Training in Enterprise Information Systems 195

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The success of implementing Enterprise Information System (EIS) depends on exploring and improving the EIS software, and EIS software training. However, the synthesis of the EIS implementation approach has not been investigated. In this chapter, the authors propose an integrated research and training approach for students and employees about enterprise information systems (EIS) that are encountered in an organization. Our integrated approach follows the different stages of a typical EIS project from inception to completion. These stages, as identified, are modeling, planning, simulation, transaction, integration, and control. This ensures that an employee who is trained by this plan has an acquaintance with the typical information systems in an organization. Further, for training and research purposes the authors developed prototype information systems that emulate the ones usually found in organizations. This ensures the EIS software logic is consistent with the business logic. This chapter also discuss some of the case studies conducted with the prototype systems.

Chapter XII

Service-Oriented Middleware for Managing Inter-Enterprise Collaborations 209

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Participation in electronic business networks has become necessary for the success of enterprises. The strategic business needs for participating in multiple networks simultaneously and for managing changes in these networks are reflected as new requirements for the supporting computing facilities. The Pilarcos architecture addresses the needs of managed collaboration and interoperability of autonomous business services in an inter-organisational context. The Pilarcos B2B middleware is designed for lowering the cost and effort of collaboration establishment and to facilitate the management and maintenance of electronic business networks. The approach is a federated one: All business services are developed independently, and the provided B2B middleware services are used to ensure that technical, semantic, and pragmatic interoperability is maintained in the business network. In the architecture and middleware functionality design, attention has been given to the dynamic aspects and evolution of the network. This chapter discusses the concepts provided for application and business network creators, and the supporting middleware-level knowledge repositories for interoperability support.

Chapter XIII

Training and User Acceptance in a University ERP Implementation: Applying the
Technology Acceptance Model..... 242

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Training is still a neglected part of most ERP implementation projects. This case study investigates the relation between training satisfaction and the perceptions of ease of use, the perception of usefulness, effectiveness and efficiency in implementing an ERP system at a mid-sized organization. We view training satisfaction as a necessary condition for technology acceptance. Our surrogates for training satisfaction are (1) training level prior to implementation, (2) training level when measured after implementation, (3) understanding of features and functions, and (4) perceived need for more training because these factors contribute to perceived ease of use and usefulness. A survey of 143 employees involved in the implementation of ERP in a mid-sized university was conducted. ANOVA and t-tests were used to explore differences in training satisfaction among groups of users by gender, job type, and education level. We found that training satisfaction differed based on job type and gender but not education level. Multiple regression analysis suggests that (1) post implementation training satisfaction is related to ease of use and (2) current training satisfaction and user participation are related to our variables for usefulness, which are perceived efficiency and effectiveness of the ERP systems in doing respondents' jobs

Chapter XIV

Measuring and Diffusing Data Quality in a Peer-to-Peer Architecture 261

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Data quality is a complex concept defined by various dimensions such as accuracy, currency, completeness, and consistency. Recent research has highlighted the importance of data quality issues in various contexts. In particular, in some specific environments characterized by extensive data replication high quality of data is a strict requirement. Among such environments, this article focuses on Cooperative Information Systems.

Chapter XV

Modeling Buyer-Supplier Relationships in Dynamic Supply Chains 288

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The key part of dynamic supply chain management is negotiating with suppliers and with buyers. Designing efficient business processes throughout the supply chain, and controlling their speed, timing, and interaction with one another, is decisive factors in a competitive and dynamic environment. Coordination is essential for successful supply chain management. Therefore, in this chapter, a novel Negotiation-to-Coordinate (N2C) mechanism is proposed to explore the interactive nature of the buyer-supplier relationships for dynamic environments. The proposed N2C mechanism uses prioritized fuzzy constraints to represent trade-offs among the different probable values associated with the negotiation issues and to signify how agents should make concessions. Supervisor agent in the N2C mechanism takes into account the conflicts of interest of buyer's agent and supplier's agent and the proposal and plan generated by supervisor agents helps in resolving the true and potential conflicts of interests for buyer's agent and supplier's agent. The proposed computational framework based on fuzzy constraints

is suited for capturing the dynamics by modeling trade-offs between different attributes of a product leading to a fair and equitable deal for both suppliers and buyers. The proposed approach models the intricacies in the face of the imprecise, uncertain and conflicting nature of objectives. The efficacy of the proposed approach is demonstrated through an illustrative example.

Chapter XVI

Enterprise Systems, Control and Drift..... 317

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Enterprise Systems are widespread in current organizations and seen as integrating organizational procedures across functional divisions. An Enterprise System, once installed, seems to enable or constrain certain actions by users, which have an impact on organizational operations. Those actions may result in increased organizational control, or may lead to organizational drift. The processes that give rise to such outcomes are investigated in this chapter, which is based on a field study of five companies. By drawing on the theoretical concepts of human and machine agencies, as well as the embedding and disembedding of information in the system, this chapter argues that control and drift arising from the use of an Enterprise System are outcomes of the processes of embedding and disembedding human actions, which are afforded (enabled or constrained) by the Enterprise System.

Compilation of References 344

About the Contributors 372

Index..... 379