

Handbook of Research on Enterprise Systems

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Section I

Enterprise Systems: Technologies, Solutions, and Strategic Perspectives

Section I of this handbook starts with the growing importance of increasing agility in the organization and then focuses understanding the technologies available to develop and deploy Enterprise Systems (ES) in organizations. In the current global and competitive business environment, it is essential to be flexible and agile simultaneously. Appropriate design and alignment of enterprise systems with business strategies can enable a business to create a competitive advantage in the global markets, at least in the short-term. Various chapters in this section discuss the technologies for enterprise systems' integration, solutions such as SAP Business Blueprint, and the strategic perspective of implementing and using enterprise systems for providing sustained competitive advantage.

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The first chapter of this handbook presents a holistic approach for Enterprise Agility and explains why the term “enterprise agility” has been adopted for characterizing this capability. Furthermore, it provides a holistic approach for analyzing enterprise agility that is based on a viewpoint-oriented Enterprise Architecture. The ultimate purpose of this chapter is to provide the means for researchers to explore enterprise agility in a systematic way and to identify a number of important issues regarding the attainment of such capability.

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<i>Hossana H. Aberra, Enterprise Integration, Inc., USA</i>	

This chapter discusses the concepts behind SAP Business Blueprint. It views the ERP solution as an integral component of the design process. It argues that the modernized approach for SAP Business Blueprint may be driven by the technical configuration of the solution landscape; hence the layout and foundation for the organizational design are set from the start. The chapter concludes that such an integrated environment simplifies the enterprise design process during SAP implementation and facilitates the transition, support, and maintenance of the new enterprise environment.

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<i>Rogério Atem de Carvalho, Federal Center for Technological Education of Campos, Brazil</i>	

This chapter introduces the key aspects of Free/Open Source Enterprise Resources Planning systems (FOS-ERP). The chapter highlights (a) the differences between FOS-ERP and their proprietary equivalents (P-ERP) in terms of business models, selection, customization, evolution and maintenance; and (b) the challenges and opportunities that they offer to adopters, vendors, researchers, and individual collaborators. The chapter also identifies the challenges and opportunities that the open source enterprise systems offer to stakeholders and developer communities.

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<i>Brian H. Cameron, The Pennsylvania State University, USA</i>	

The chapter discusses the Business Process Modeling (BPM) concepts and evolving modeling standards and technologies that have the potential to dramatically change the nature of phases of the systems development life cycle (SDLC). Although the notation is still in working draft format, this chapter suggests that the system architects and designers should consider incorporating the concepts of BPM into their current and future systems analysis and design procedures.

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This chapter discusses the Enterprise Resource Planning system's effects and strategic perspectives in organizations. The focus of the chapter is on how information technology and ERP, together, facilitate aligning the business to achieve excellent productivity. Because the ERP systems are large and complex, taking years to implement, the inclusion of today's strategic choices into the enterprise systems may significantly constrain future action. By the time the implementation of an ERP system is completed,

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This chapter describes an Executive Information Systems (EIS) as a software system designed to support the informational needs of senior management. The EIS is characterized by an easy to use and maintainable graphical user interface; integrated capabilities for data access, analysis, and control; analysis and report generation across multiple files; and on-request “drill down” capability. By understanding the concept and functionality of traditional executive information systems, readers will be able to better understand how EIS has adapted to meet the requirements of senior management in an enterprise system environment.

Section II

Enterprise Systems: Risks, Performance, and Business Value

Section II discusses the risk and performance issues related to enterprise systems. Business operations are composed of a collection of business processes. The enterprise system is an approach to integrate business processes people, applications and systems; in essence integrating the business, for business transformation and business value creation. Studies have proven that integration is not only a key reason for the adoption of Service Oriented Architecture (SOA) but also for improving business value. However, in doing so, it is important to assess the risk of implementing enterprise systems and the performance gains that can be achieved. Further, it is important to consider integration in a wider concept, including the entire supply chain and the customer relationships. Various chapters in this section are devoted to the discussion of relevant topics to enable the reader to understand the relationship between risks, performance, and business value while developing, implementing and deploying integrated enterprise systems.

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<i>Joseph Bradley, University of Idaho, USA</i>	

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<i>Andrea Masini, London Business School, UK</i>	

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<i>Ronda R. Henning, Harris Corporation, USA</i>	

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This chapter explores a model of transforming ES data into knowledge and results by comparing two case studies that examine the impact of enterprise systems information on organizational functions and processes leading to realization of business value. A qualitative research methodology is used to explore how firms can leverage ES technologies to realize improved business value. These findings suggest that the ongoing transformation of an organization to extract value from data, distribute results from analysis, apply knowledge, and establish decisions for strategic organizational benefits will lead the path towards business success.

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This chapter discusses the alignment of enterprise systems with business strategy and its impact on the business value that enterprise systems generate. It reports the results of an empirical investigation conducted by the authors to ascertain the impact of enterprise systems' strategic alignment on business performance. The chapter provides guidelines to help researchers and practitioners to incorporate the strategic alignment of enterprise systems in their research and practice respectively.

Section III

Enterprise Systems: Small, Medium, and Large Organizations

The initial developments in enterprise systems in the form of enterprise resource planning (ERP) systems concentrated on their deployment in large business firms. However, in the modern competitive landscape, it is essential to apply these systems in small to medium enterprises. ERP requirements, investments, and challenges for small and medium enterprises (SMEs) are different from large organizations. Skeptics argue that heavy investments in ERP implementation in SMEs may not bear the same fruits as large organizations. It is thought that SMEs may take a great deal of time, money, and effort to understand the business processes restructuring and technology, and may never effectively customize enterprise systems due to nature of its small and medium size. The chapters in Section III of this handbook discuss the issues related to the development, implementation, and use of enterprise systems in SMEs. The final chapter in this section explores the impact of organization size on the benefits of enterprise systems.

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The purpose of this chapter is to gain insights into what is a typical case of enterprise systems (ES) implementation and to understand how current implementations in the SME sector differ from the earlier implementations in the large enterprise sector through a perspective of ES vendors, ES consultants, and IT research firms in a NZ context. The chapter further discusses the implications for practice in the implementation processes, implementation models, and organizational contexts.

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This chapter investigates the use of knowledge processes and knowledge methods for SMEs. The learning objectives of this chapter are to assess the role of knowledge management and knowledge processes in SMEs. Based on the results of several empirical studies, an integration concept for knowledge processes, knowledge methods, and knowledge software tools for SMEs is introduced. In concluding their chapter, the authors propose a three-dimensional theoretical framework for successful knowledge diffusion in SMEs.

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This chapter discusses the challenges and issues faced in implementing integrated enterprise systems in small and medium sized enterprises (SMEs). Using the observations from eight SMEs in the German manufacturing sector, the study provides valuable insights towards understanding ES implementations and their peculiarities in the German manufacturing sector. Results reported in this chapter suggest that further exploration of these topics, preferably related to the experiences of companies in regions and countries other than North America and Germany will be useful.

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Darshana Sedera, Queensland University of Technology, Australia

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Section IV

Enterprise Systems: Implementations and Applications

The implementation and application of enterprise systems is a complex technical and organizational process. Lack of understanding of the issues involved in successful application development and implementation is responsible for many enterprise system failures in practice. However, utilizing appropriate implementation and application development methodologies, tools, and techniques can significantly increase the chances of success in beneficial use of enterprise systems. Various chapters in this Section IV of this handbook discuss the issues involved and the possible approaches that can be taken for application development and successful implementation of enterprise systems in various industrial sectors.

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This chapter examines what ERP implementation projects involve, what the best of breed strategy is, when it is used, and what advantage adopting companies seek. Utilizing examples of best of breed implementations, differences in critical success factors in “vanilla” and best of breed projects are identified, and future trends in the best of breed strategy are suggested. The chapter argues that the best of breed strategy offers firms the opportunity to maintain or create competitive advantage based on unique business processes while “Vanilla” ERP implementations may result in all competitors adopting the same business processes leaving no firm with any advantage.

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<i>Ganesh Vaidyanathan, Indiana University, USA</i>	

This chapter discusses ERP implementation procedure using the SAP implementation. ERP implementations in recent years have raised a number of questions regarding its success. Many companies regard ERP as their one and only savior, and many others despise that ERP as a single-system that has brought them to their knees. Regardless, many more companies, small to medium size companies in particular, are beginning to invest in ERP. An industrial practitioner from such small to medium companies needs to understand how to implement ERP. This chapter provides the necessary tools and background for the industrial practitioner to implement not only ERP systems but implement the next generation of enterprise applications as well.

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<i>Călin Gurău, GSCM – Montpellier Business School, France</i>	

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This chapter describes and analyzes how ES implementation within a hospital affects the interests of stakeholders and which specific problems may arise as a result. It uses the evidence from a case study to reveal important dimensions of the organizational change issues related to ES implementation within hospitals. The author suggests that an understanding the possible impact of ES on particular stakeholder

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This chapter discusses the experience from two projects on designing to deploying ERP systems for two different organizations engaged in education and construction. Reporting on various processes, practices, techniques, and methods employed through the projects, and the lessons learnt from them, the chapter argues that time has come for designing and deploying industry-neutral generic ERP systems cost effectively. It proposes that through a combination of appropriate technologies, innovative tools, techniques and strategies, highly adoptive and customizable ERP systems can be designed and deployed at affordable costs and within reasonable timeframes.

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<i>Mateja Podlogar, University of Maribor, Slovenia</i>	
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This chapter introduces the ERP systems, their complexity, and especially their integration in higher education as a significant challenge for many institutions. Information society paradigm, globalization, and the rapidly changing environment affect both the contents and the organization of higher education. In the always-conservative academic world, the organizational structure is very hierarchical and the knowledge transfer is fragmented. This chapter illustrates a way to develop training programs in higher education on an integrated ERP platform from a regional perspective.

Section V

Enterprise Systems: ERP and Beyond

ERP is already the mainstay of present business applications. The next generation enterprise applications will focus on supply chain management, customer relationship management for collaborative decision-making while encompassing more domains of business and other public organizations. Also, the drivers for future enterprises would be applications with open and flexible architectures. Thus the enterprise architecture will move towards service-oriented architecture (SOA) and will include a wider range of applications and scope of enterprise systems. Various chapters in the final section of this handbook discuss these aspects and look beyond ERP to suggest a wider scope and role for enterprise systems including e-government and knowledge distribution.

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<i>Valentin Nicolescu, Technische Universität München, Germany</i>	
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This chapter provides an overview of past and present development in technical platforms of ERP systems and their use in enterprises. Taking into consideration the two layers of application and technology, the chapter presents the classical scenario of an ERP system as a monolithic application block. The chapter highlights how ERP is shifting towards more flexible architecture like the service-oriented architecture (SOA) in modern companies. The chapter not only discusses the historical development of ERP system landscapes but also presents its application and technology view.

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This chapter discusses the evolution of ERP and salient features of ERP II including the disruptive technologies which will help reengineer ERP systems rapidly. The results of an international survey pertaining to the embedding of intelligence in the modern day ERP are also presented. The common causes for the failure of ERP implementation are included to shed light on aspects which are of utmost importance to ERP implementation. The example of placing order remotely over Internet by a sales clerk sitting away from the factory forms a part of this chapter to benefit the readers in better understanding the functioning of an ERP system.

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The chapter introduces the essence of ERP in Government as a tool for integration of government functions which provides the basis for citizen services. It discusses the challenges faced in modernization of government “businesses” and the strategies available for ERP implementation. Acknowledging the basis of Enterprise Resource Planning (ERP) solutions as integration of functions which capture basic data through transactions to support critical administrative functions such as budgeting and financial management, revenue management, supply chain management and human resources management, the author argues that Enterprise solutions (ES) today go beyond ERP to automate citizen-facing processes.

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This chapter empirically tests eleven of the most common user-focused identity management frameworks that are emerging, and their associated technologies. The chapter also discusses issues and challenges with domain-centric identity management paradigm and presents unique value propositions of user-focused frameworks. The chapter does provide a comprehensive and cohesive coverage of common user-focused identity management frameworks. The chapter provides useful insights and understanding

to users, technologists, and systems and security managers about frameworks and associated technologies relating to user-focused identity management. The authors suggest that a user-focused approach to identity management is a very promising way to improve the user experience and the security of online interactions that are often necessary in the deployment of enterprise systems.

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The chapter provides a review of advanced information technologies (IT) being proposed for supporting knowledge distribution processes. Even though they are not mainstream technologies nowadays, they are expected to materialize in future generations of IT for knowledge distribution. The chapter suggests that knowledge management (KM) strategies refinement is an essential issue, which is currently being explored by researchers and practitioners.

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