Preface

Creating an interactive business environment that intelligently assists workers and managers as they respond to threats, needs, and opportunities is a possibility that can be realized as never before. However, as business systems advance, they leave in their wake a myriad of pitfalls, inefficiencies, and potential confusion, especially if the design and implementation, managerial concerns, and daily interactions are not properly understood. Often, to gain the best understanding of these exchanges, the only proper teacher is experience and first-hand interaction. While it would be impossible to put this invaluable asset into a book, this collection of cases attempts to do just that by presenting a useful distillation of the context, actions, and results of innovations applied by business professionals.

This casebook, made up of 20 cases, provides an active look into the successes and failures which shape the modern business. It couples the theory and planning required before designing and implementing a system or technological solution. It presents managerial pitfalls that were addressed as well as the opportunities that these systems opened up. And lastly, it outlines the daily interaction, frustration, and success of endeavors as they are fully adopted and become integral to the operations or outcome of the organization as a whole.

The first section is “Innovation and Design” and covers the beginning stages of understanding problems that technology can address, finding the opportunities for innovation, and ensuring that the technological solutions can and are implemented at a procedural level. The first chapter, *Technology Innovation Adoption and Diffusion: A Contrast of Perspectives*, organizes and summarizes the literature on technology innovation adoption and diffusion, which is vast. Some of the major perspectives from this body of literature, contrasting various theoretical perspectives on how innovations are adopted and shaped by organizational processes and structure are presented. The authors first introduce the technology acceptance model, and innovation diffusion theory; and then they categorize viewpoints about organizational innovativeness. Drawing from this framework, for their case study background they introduce adaptive structuration theory, redefining some of its conceptual relationships in “structuration agency theory,” putting primacy on the actions of agents and
the means by which they operate through and around institutional structures. The authors then present a case study example of an expert decision support system, and conclude with a discussion of implications for managers and entrepreneurs.

The second chapter, *IT/IS Readiness Maturity Model*, explains the concept of an IT/IS readiness maturity model including particular requirements in terms of four domains, embracing nine attributes: IT infrastructure (top management perception, systems and communication), people (skills, roles and responsibility of IT staff, user involvement), process, and work environment (organization behaviour, IT department, leadership). Each of the attributes consists of 14 factors: top management perception (drivers, systems requirements definition), systems and communication (focus, network communication), skills (type of skills, capability building), roles and responsibility of IT staff (position of IT/IS heads, roles of IT staff), user involvement, process (practices), organizational behaviour (characteristics), IT policy (control of IT/IS activities), and leadership (communication, participation). The following section describes the concept of readiness and maturity, the resources used for element extraction/adooption and the description of the model.

Faced with increasing competitive pressures, a logistics company in the United States sought to reduce its cost structure by implementing two information systems. The Labor Management System (LMS) was specifically designed to improve warehouse worker efficiency and the Radio Frequency Identification (RFID) system tracked the movement of products, pallets, and shipment. Chapter 3, *RFID and Labor Management Systems Selection in the Logistics Industry*, presents an overview of the logistics industry, background on the business need to consider new systems, and the requirements of the company in its system selection. Details of the technologies considered are included. After analyzing this case study, the reader should be able to, define logistics functions, supply chain management, and third party logistics (3PL) services; describe LMS and RFID systems; identify the expected costs and benefits of the proposed technologies; develop a multi-factor evaluation for vendor selection; and make a recommendation based on the evaluation, financial data, and other considerations.

Chapter 4, *Adoption of a New Online Travel Management System for FED-AK*, describes the implementation of an online travel management system at FED-AK, the Alaska office of a U.S. government agency. The previous system was intended to accomplish the same functionality, but due to employee resistance, it was used only as a forms generator in conjunction with a paper- and mail-based process. The new system is integrated, which compels employees to use all the functionality provided. It also incorporates many lessons learned from the old system—in particular, extensive training and online help functions. The system is expected to significantly reduce the cost of travel by minimizing errors, enforcing policies, and reducing transaction costs. The system will also lead to faster reimbursement of employee travel expenses.
Chapter 5, *ICT and Web 2.0 Technologies as a Determinant of Business Performance*, provides detailed definitions of technology-enhanced learning, Web 2.0 technologies and technical terms related to it, its scope and the process of organizational learning, as well as a method for business performance assessment. Special attention is given to the findings related to the observed correlations between the aforementioned constructs.

The next chapter, *Inventory Management Process: Problems in an Indian Convenience Store* captures inventory management process in an Indian convenience store. Unlike retail stores in developed countries, Indian convenience stores are a special format of organized retailing, where retailers open multiple smaller stores in a town instead of one big centralized store. An excellent inventory management process is the key to make such stores perform well. This case describes inventory management problems faced by an Indian convenience store chain and asks students to propose solutions to these problems. This case illustrates how processes realities and their IT solutions differ in an emerging economy. Using inventory management process as an example, this teaching case can introduce students to the process and technological realities in an Indian context and differences between India and the West.

The next section, “Managerial Approaches and Practices,” explores the role that management plays in the success or failure of many innovations. The first case in this section, *Path to Success: Innovative Managerial Approach*, discusses the various reasons for implementing different organizational strategies, such as responsiveness to customers, adaptability to market, and competitiveness with other competitors. It explores the factors that encourage a company to diversify its organizational structure in different countries. Further, it highlights the important differences between organizational structure at headquarter as compared to that in foreign subsidiaries.

*Building a Knowledge Management System in a Design Firm: The Case of XYZ Structural Department* shows how knowledge management represents a strategic vision for developing an organization’s performance and its likelihood of success in dealing with future challenges in its industry. This case starts by discussing the importance of knowledge management in improving the competitive edge of firms in general and of consulting firms in particular. Then, the case discusses the process of building a knowledge management system in the structural engineering department at a leading engineering design consulting firm, based in the Republic of Lebanon. The knowledge, both tacit and explicit, needed during the design phase is identified and mapped according to the adopted design process, and an expert system was built to capture some of the tacit knowledge needed in the conceptual design stage of the process. In addition, an intranet Web-based knowledge management system was developed with the aim of helping diffuse both explicit and tacit knowledge.

Chapter 9, *Multilayered Distribution System in India: Practice and Issues*, presents several case studies of the multilayered system in India and shows how
the prevalent distribution system preclude any means of cost reduction and making these supply chains efficient. Supply chains of perishable goods, electronic products, FMCG products, and pharmaceutical products are discussed in this chapter. Each of these supply chains present unique challenges and issues that need attention.

Current severe competition in the market forced senior management to give much care to acquiring quick and efficient Information Systems that enable the company not only to manage its operations but to provide on-the-fly performance measurement through a variety of tools. Chapter 10, *Implementing Business Intelligence in the Dynamic Beverages Sales and Distribution Environment*, explains how the ERP system was used as the backbone by BI systems to help Sales and Marketing units in Transnational Company subsidiary in Egypt successfully meet the demands for nimble information services.

Lastly in this section, Chapter 11 *IS Strategic Processes: Benefitting from People’s Competencies in a Geographically Dispersed Organization - A CIO’s Challenge*, provides rich descriptions of IS strategic processes, as well as the CIO’s thoughts on the pros and cons, as told through the CIO. In large, geographically dispersed organizations, achieving a successful Information Systems (IS) strategy can prove very challenging. This case describes how a CIO in such an organization met that challenge by focusing on actions rather than plans, and on bottom-up processes rather than top-down decisions. The CIO keyed on benefitting from employees’ competencies. The organization, here called “NorConstruct,” has few long-term IS strategic plans. Instead, it has developed five different IS strategic themes on a general level. It’s actual IS strategy takes place through different IS projects. Throughout the case, several relevant reflections are described.

Section three, Implementation and Interactions, describes some of the necessary “growing pains” of successful implementation of IS strategies. This sections provides a broad sampling from many different types of enterprises and organizations working to achieve long-term benefits from the technological possibilities. For example, Chapter 12, *ICT and Web 2.0 Technologies as a Determinant of Business Performance*, examines key issues surrounding the management and implementation of health information systems (HIS) outsourcing in Taiwanese hospitals and identify issues that are crucial in managing and implementing HIS outsourcing in hospitals. Four key issues and problems were identified in the HIS outsourcing process: lack of implementation in IS investment evaluation process, problems in managing HIS outsourcing contracts, lack of user involvement and participation in HIS outsourcing process, and failure to retain critical HIS contract management skills and project management capabilities in-house.

Many benefits from implementation of e-business solutions are related to network effects which means that there are many interconnected parties utilizing the same or compatible technologies. The large-scale adoption of e-business practices in public sectors and in small and medium enterprises (SMEs)-prevailing economic
environments will be successful if appropriate support in the form of education, adequate legislative, directions, and open source applications is provided. This case, Chapter 13, Methodology and Software Components for E-Business Development and Implementation: Case of Introducing E-Invoice in Public Sector and SMEs, describes the adoption of e-business in public sectors and SMEs by using an integrated open source approach called e-modules. E-module is a model which has process properties, data properties, and requirements on technology. Therefore e-module presents a holistic framework for deployment of e-business solutions and such e-module structure mandates an approach which requires reengineering of business processes and adoption of strong standardization that solves interoperability issues. E-module is based on principles of service-oriented architectures with guidelines for introduction into business processes and integration with ERP systems. Such an open source approach enables the spreading of compatible software solutions across any given country, thus, increasing e-business adoption. This paper presents a methodology for defining and building e-modules.

Chapter 14, Premium International for Credit Services: Application of Value-Based Management, proposes the implementation of the Value-Based-Management approach as a tool to monitor performance and improve decision making. It thoroughly explains the business model of Premium International Credit Card Services Company (PICS), a well-established Egyptian consumer credit card service provider. PICS has been undertaking a restructuring process to overcome its financial and operational problems. The company’s management has been presented with a proposal to apply value based management to improve the company’s performance and create value to stakeholders.

The next chapter, Use of the Concern-Task-Interaction-Outcome (CTIO) Cycle for Virtual Teamwork, introduces the CTIO (Concern-Task-Interaction-Outcome) Cycle as a means of studying team member interaction using face-to-face and virtual interaction media in retail banking. The type of interaction is discussed in terms of different conceptual cycles having a linkage in the framing of the CTIO Cycle. In the past, routine teamwork using face-to-face communication was important. Today, with emerging technologies for retail banking organizations, teamwork through virtual communication has been gaining importance for increased productivity.

Organizations today are looking for new ways to support knowledge-sharing and learning activities among their employees by the use of IT. The case Sharing Work Practice in the Distributed Organization describes how inspectors share their work experiences, reflect upon them, and learn from each other at a distance by using stories, pictures, and documents, which is made possible by the GoToMeeting™ tool. In this case the GoToMeeting™ tool supports learning activities across geographical and organizational boundaries and contributes to efficient conditions for sharing inspection practices. The issues covered are learning activities facilitated by IT as well as the limitations of the tool in use.
In Chapter 17, *Investigating the Online Interactions of a Team of Test Developers Working in a Wiki Environment*, we get to take a close look at the online collaboration of experts developing a test in order to (1) compare the online, asynchronous communication to face-to-face, and (2) uncover how expertise is displayed online. Filipi and Lissonet use the method of conversation analysis to get at matters of structure and identity in the online interactions of experts working together.

The authors of Chapter 18, *A Use Case for Ontology Evolution and Interoperability: The IEC Utility Standards Reference Framework 62357*, provide two use cases on semantic interoperability in the electric utility industry based on the IEC TR 62357 seamless integration architecture. The first use case on semantic integration based on ontologies deals with the integration of the two heterogeneous standards families IEC 61970 and IEC 61850. Based on a quantitative analysis, the authors outline the need for integration and provide a solution based on our framework, COLIN. The second use cases points out the need to use better metadata semantics in the utility branch, also being solely based on the IEC 61970 standard. The authors provide a solution to use the CIM as a domain ontology and taxonomy for improving data quality. Finally, this chapter outlines open questions and argues that proper semantics and domain models based on international standards can improve the systems within a utility.

Yannis Kalfoglou and Bo Hu in Chapter 19, *Streamlining Semantic Integration Systems*, argue for the use of a streamlined approach to integrate semantic integration systems. The authors elaborate on the abundance and diversity of semantic integration solutions and how this impairs strict engineering practice and ease of application. The versatile and dynamic nature of these solutions comes at a price: they are not working in sync with each other neither is it easy to align them. Rather, they work as standalone systems often leading to diverse and sometimes incompatible results. Hence the irony that we might need to address the interoperability issue of tools tackling information interoperability. Kalfoglou and Hu also report on an exemplar case from the field of ontology mapping where systems that used seemingly similar integration algorithms and data, yield different results which are arbitrary formatted and annotated making interpretation and reuse of the results difficult. This makes it difficult to apply semantic integration solutions in a principled manner. The authors argue for a holistic approach to streamline and glue together different integration systems and algorithms. This will bring uniformity of results and effective application of the semantic integration solutions. If the proposed streamlining respects design principles of the underlying systems, then the engineers will have maximum configuration power and tune the streamlined systems in order to get uniform and well understood results. The authors propose a framework for building such streamlined system based on engineering principles and an exemplar, purpose built system, CROSI Mapping System (CMS), which targets the problem of ontology mapping.
Lastly, Chapter 20, *The Interplay between Practitioners and Technological Experts in the Design Process of an Archaeology Information System*, describes the design and development process of a computer-based information system for the management of archaeological finds and related documents. Adaptive Structuration Theory is used as the conceptual framework to analyze the role and actions of different people involved in the design and development process, during the different stages of the case. The case addresses key issues, such as an initiative taking place in an organizational context where users show different needs, profiles and levels of information technology literacy. It focuses primarily on the interactions between practitioners and technological experts during the design and development process. Another matter of interest comes from the fact that, in this sector, no other information system for finds management was already available. Moreover, this case targets the domain of archaeology that has not received so much attention by Information Systems literature to date.

When considered as a whole, these cases provide a collection of insights and real-world examples for guiding any professional or future professional on the design, implementation and management of technology related innovation. With the understanding that is available in these cases one can capitalize on the many improvements to productivity and the opportunities uniquely possible with today’s technology.

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