Preface

This edited book argues that new innovative practices from domains relating to Knowledge Management (KM) paradigm can offer solutions to healthcare institutions allowing them to face the challenge of transforming large amounts of medical data into relevant clinical information. This can be achieved by integrating information using workflow, context management and collaboration tools to provide a mechanism for effectively transferring the acquired knowledge as and when required.

This edited book establishes the interrelationship between KM and the healthcare sector by stating that both have been redefined by the ICT revolution and that both are bringing about fundamental changes which are redefining the work place of these organisations. Another common point is that both KM and the healthcare industry are concerned with dissemination of information in a manner which ensures that information is available when required. The contemporary focus is only on how best to disseminate the information, which could be fatal for the future of the healthcare applications (i.e. current use is static). Rather than creating or disseminating contextual knowledge, healthcare applications are being used to disseminate data and information. Future healthcare industry applications would have to support the transfer of information with context (i.e. such schemes would have to become dynamic in nature).

Such a scenario is likely to lead to a situation where healthcare institutions would be flooded with large amounts of clinical data. The introduction of the KM paradigm would enable these institutions to face the challenge of transforming large amounts of medical data into relevant clinical information. Future healthcare systems would have to shift their emphasis to deal with the intangibles of knowledge, institutions and culture. Healthcare institutions require a framework which would help to assess how best to identify and create knowledge from internal and external organisational experiences and how best to disseminate it on an organisation-wide basis in a manner which ensures that the acquired knowledge is available for preventive and operative medical diagnosis and treatment when required.

This would call for the contextual recycling of knowledge which has been acquired from the adoption of healthcare industry trials. KM can assist the healthcare industry
to become viable by giving healthcare information context, so that other healthcare providers can use the healthcare industry to extract knowledge and not information.

**ORGANISATION OF THIS BOOK**

Chapter 1, titled “A Review of the Use of Mobile-Based Tools in Self-Management and Care,” by Misra notes that evidence suggests that self management program is an effective intervention tool that can improve health status, reduce hospitalization costs, and reduce the providers workload. The terms “self-care” and “self-management” have been used interchangeably to imply the actions and decisions that people make in dealing with their health and illnesses. Self care in this context refers to the activities that the patients’ undertake without the help of professionals in promoting their own health, preventing their own diseases, limiting their own illness, and restoring their own health. Increasingly, health experts agree that self-management is a strong determinant of positive health outcomes in illnesses such as chronic diseases. There is also a growing public interest in self-care because of epidemiological factors, personal responsibility for health, availability of self-care information and technology, etc. It is concluded that in order for self-management programs to be successful, patients have to achieve the skills and confidence to manage their own health, which means a shift from management by their healthcare provider to management by the patient themselves.

Chapter 2, titled “A Transaction Cost Economics Perspective for Pervasive Technology” by Wickramasinghe, Troshani, and Goldberg, observes that numerous mobile technology solutions are being developed and implemented today to address a myriad of healthcare problems. However, it remains unclear what the true cost/benefit of these solutions is and who benefits from them. To investigate this we apply a transaction cost economics framework to a pervasive mobile solution that has been designed and developed to enhance diabetes self-care. Diabetes is one of the leading chronic diseases and its prevalence continues to rise. The solution examined in this paper relies on pervasive wireless technology and is designed to facilitate the effective management of diabetes in the context of gestational diabetes, a condition that affects up to 8% of pregnant women. A transactions cost assessment of this solution is provided.

Chapter 3, titled “Constructive eHealth Evaluation: Involving the End-User” by Høstgaard, notes that despite the existence of an extensive body of knowledge about best practices and factors that contribute to the successful development and adoption of eHealth, many eHealth development-projects still face a number of problems - many of them of an organizational nature. This chapter presents a new method: “The Constructive eHealth evaluation method” aimed at supporting real end-user
participation - a well-known success factor in eHealth development. It provides an analytical framework for achieving real end-user participation during the different phases in the eHealth lifecycle. The method was developed and used for the first time during the evaluation of an EHR planning process in a Danish region. It has proven effective for providing management at more levels on-going information and feedback from end-users, allowing management to change direction during eHealth development in order to achieve the most successful adoption and implementation of eHealth in healthcare environments.

Chapter 4, titled “Expanding Role of Telephone Systems in Healthcare: Developments and Opportunities” by Shi, Erdem, and Liu, observes that the telephone systems in healthcare settings serve as a viable tool for improving the quality of service provided to patients, decreasing the cost, and improving the patient satisfaction. It can play a pivotal role for transformation of the healthcare delivery for embracing personalized and patient centered care. This chapter presents a systematic review of new developments of healthcare telephone system operations in various areas such as tele-health. Current research on topics such as tele-diagnosis, tele-nursing, tele-consultation is outlined. Specific issues associated with the emerging applications such as underreferral, legal issues, patient acceptance, on-call physician are discussed. Meanwhile, the architecture and underlying technologies for healthcare telephone systems are introduced, and the performance metrics for measuring the system operations are provided. In addition, challenges and opportunities related with improving the healthcare telephone systems are identified, and the potential opportunities of optimizing these systems are pointed out.

Chapter 5, titled “Evaluating and Managing Electronic Commerce and Outsourcing Projects in Hospitals” by Lin, Jalleh, and Huang, notes that despite the huge popularity of outsourcing in electronic commerce/IT in the past two decades, many hospitals have failed to realize the expected benefits from their outsourcing projects. Not surprisingly, the management of electronic commerce/IT outsourcing contracts has become one of the top management issues for hospitals executives in recent years. Hence, the purpose of this study was to provide an overview of outsourcing in electronic commerce/IT investment evaluation and benefits realization processes and practices in Australian and Taiwanese hospitals. Inherent in this study was the opportunity to compare such practices between a developed economy (Australia) and a newly industrialized economy (Taiwan). Several key electronic commerce/IT investment evaluation and outsourcing issues and challenges faced by Australian and Taiwanese hospitals will be presented. The results will assist hospital executives to develop their own approaches and strategies to better manage the opportunities and threats that exist in undertaking electronic commerce/IT outsourcing projects in Australian and Taiwanese hospitals.
Chapter 6, titled “Waseda University’s E-School: 10 Years of E-Education in Japan” by Nishimura and Scott, comments that in 2003, the School of Human Sciences, Waseda University (Japan), established the e-School, Japan’s first complete undergraduate program enabling students to earn their bachelor degrees solely through e-learning. Supported by the availability of high-speed Internet connections, it has become possible to economically transmit high-quality videotaped lectures across Japan and throughout the world. Waseda’s e-School has many features that contribute to its success, among these are that lecture contents are transmitted with an image quality that allows students to easily read what is written on the blackboard. In addition, online classes are relatively small—21 students on average—and new classes are created to respond to students’ needs and interests. This chapter outlines the e-School’s first 10 years of operation: Its history, curriculum, administration, and management learning system. Data are also presented for student engagement with the e-School system for the first ten years of operation from 2003 to 2012.

Chapter 7, titled “From Healthcare Services to E-Health Applications: A Delivery System-Based Taxonomy” by Spinelli and Benevolo, estimates that the increasing adoption of ICT – and especially Internet-based technologies – in healthcare has been very fruitful and has led to the innovative approach to healthcare practice commonly known as e-health. However, the boundaries of this new approach to healthcare are not clear, as it is reflected by the various properties and taxonomies of e-health applications which have been proposed. In this chapter, we first review the definition of e-health and the main taxonomies for its constituents. Then we propose an original taxonomy for e-health applications, based on the structural features of the delivery system of the services which are digitalized: the need for a physical interaction between the subjects involved in the service provisioning and the possibility of delivering the services through Internet-based technology.

Chapter 8, titled “Semantic Interoperability Enabled Architecture For Connected Health Services” by Taweel, argues that with the increasing availability of connected health organisations, key medical information is expected to be accessible at the point of care. However, the high sensitivity of the clinical data and the large heterogeneity in health information systems pose a great interoperability challenge, including solutions that rely solely on the use of data exchange standards. Due to low adoption of these standards, such solutions will not sufficiently scale to achieve this objective. This chapter presents a service-based approach that utilises domain models combined with extensible problem models, enriched with domain terminology and knowledge services to enable autonomous data governance and semantic interoperability. The chapter addresses the resulting requirements, describes the proposed a solution and reports the results from the prototype of the approach.

Chapter 9, titled “SOA Governance in Healthcare: Beyond Early Ideas to a Structured Framework” by Koumaditis and Themistocleous, depicts the gradual
development of a conceptual SOA Governance Framework tailored for healthcare organisations. The proposed framework presented herein is based on the authors’ previous research and includes nine SOA Governance elements that need to be considered during the SOA process. The identification and conceptualisation of the elements were grounded in the normative literature and further developed to include healthcare specific aspects. This comes as a method to overcome the limitations identified in normative literature and enhance the elements’ conceptualisation.

Besides, the authors propose a unique design combining nine elements of SOA Governance with SOA Critical Success Factors (CSFs) and Healthcare Information Systems (HIS) challenges. This proposal aims to pinpoint attributes and guidelines for each element, required to successfully govern SOA and tackle longstanding HIS challenges. The framework is intended to be used as a decision supporting tool for SOA Governance in a healthcare setting.

Chapter 10, titled “Healthy 3.0: Healthcare Digital Dimensions” by Tiago, observes that over the past few years, healthcare practice has evolved to include new forms of information and communication technologies, and healthcare providers have begun to leverage IT solutions and the internet to reach consumers in transformative ways. There is a common thought both in business and academia that the technology adoption process is a key component of success and allows firms to achieve and sustain competitive advantages. Therefore, this research attempts to reinforce the assessment of ICT impacts on healthcare, analyzing it from two different perspectives: 1) firm performance, which is measured as a combination of induced and intangible benefits beyond the traditional financial benefits; and 2) healthcare providers’ acceptance and adoption of ICT tools. To assess the first perspective, a structural equation model was applied to a large database sample covering firms from 17 European countries. The results reinforce the importance of induced and structural benefits in firms’ overall performance. The second perspective was analyzed only for the Portuguese healthcare providers sample. These results can be a starting point for rethinking the healthcare models emphasizing the perspectives of Healthy 2.0 and considering that patients’ technological pattern evolution will lead to Healthy 3.0 in the short term. Nevertheless, some questions remain unanswered regarding the impacts of the ICT acceptance process on overall benefits; therefore, future research will focus on this domain.

I hope that academics, clinical and non-clinical practitioners, managers, and students will find some issues of interest and value in the ensuing pages.

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