Preface

Our aim in editing this book was to present original research that advances knowledge on the production, discovery, recording, storage, representation, retrieval, presentation, interaction, dissemination, use and evaluation of information and on the tools, techniques and processes associated with such practices.

Traditional accounts of information science as a discipline relate it to the practice of information sense making and to the concrete ways in which information can be organised, searched, accessed and mediated through different technologies and techniques. Therefore, this field of research emphasises the micro and macro conditions and methods available for individuals and organisations to get hold of relevant information for their different activities (e.g. business, public administration, education and training, personal development, etc.).

The variety of understandings, platforms and problems introduced by different social actors, business models, behavioural patterns and technologies contributes greatly to the density of information science as a discipline and to the complexity of its implications: from the implementation and evaluation of retrieval systems to the strategies that operationalize the management of information resources; from the principles of knowledge and information organisation to the socio-technical fit and strategic alignment of systems designed to store, manage and share information effectively.

Departing from a definition of information science as the discipline that examines information systems in their social, cultural, economic, historical, legal and political contexts, this book seeks to take stock of innovative directions the discipline has developed into. The result, we hope, is an enhanced understanding of novel ways in which both users and the social systems they are embedded into change through the use of information and information technology.

The primary audiences are researchers, developers, managers, strategic planners, doctoral students and all others interested in state-of-the art knowledge in the field of information. A common concern with the future of information science and with the skills required to successfully navigate the contemporary digital contexts will be the element uniting these diverse audiences. Moreover, the multifaceted nature of the big questions of information science is of interest to a wide range of backgrounds such as management science, computer science, cognitive and behavioural science, education, etc.

In terms of structure and contents, there are six sections to the book. In Section One, we present developments in, and approaches to information retrieval. Using fully anonymized and highly aggregated cellular network data (e.g. call detail records - CDRs) as a starting point, Trestian, Raman and Muntean explore the possibility of connecting people, locations and certain types of events. More specifically the chapter explores the use of CDR data to detect exceptional spatio-temporal patterns of collective hu-
man mobile data usage and correlates these ‘anomalies’ with real-world events such as parades, public concerts, traffic congestions or riots. This is particularly relevant as the observations reported in the chapter can inform the further development of an intelligent system that detects exceptional events in real-time based on CDRs data monitoring. The potential areas of application are manifold and include smart cities and network resource allocation.

Amrollahi, Tahaei and Khansari focus on the analysis of Wikipedia as an information system. The chapter applies the DeLone& McLean model of information systems success to measure the effectiveness of Wikipedia articles. Given the popularity of Wikipedia and its large volume of users, the study is of great relevance, particularly as the findings confirm the impact of content quality and content presentation on Wikipedia user satisfaction.

Finally, Ibrahim and Murshed offer an insight into how learning to rank (LtR) for information retrieval has gained a lot of interest in the recent years. In a comprehensive and detailed chapter the authors introduce LtR and discuss how it relates to other information retrieval methods, situate LtR in relation to supervised machine learning tasks (e.g. classification, regression, ordinal classification), and discuss LtR algorithms.

In Section Two we take a closer look to theory, principles, and procedures in information analysis. Lahmire presents the use of intelligent systems for stock market predictions. More specifically, the chapter compares three artificial neural network architectures used for the prediction of next day individual stock price using past values. The three soft computing models compared are the adaptive neuro-fuzzy inference system (ANFIS), the time delay neural network (TDNN), and the adaptive time delay neural network (ATDNN).

Rankin raises the timely question of educators facing the widespread use of computerized data systems to manage, retrieve, and analyze student and teaching-related information without embedded usage guidance to ensure each data content is properly understood and appropriately used. As remedial action the chapter identifies formats through which data systems can embed data usage guidance in order to improve educators’ data analysis accuracy.

A final conceptual paper is presented by Cavalcanti, where the interrelations between analytics (discovery and communication of data patterns, with significance, in data) of big data (large volumes of structured and unstructured data), through the use of cloud computing is discussed. The argument coalesces around the proposed Architecture-Governance-Growth Model, which holds the key to the complex trade-offs between information technology and communication technology costs, which are common to contemporary organizations.

In Section Three we unpack the reciprocal relationship between information systems and organizations and the impacts that these relationships create. Henriques and O’Neill demonstrate that the interaction between human behavior and information systems continues to be an exciting area of research. Their chapter discusses how human behavior plays an essential role at every stage of the lifecycle of information systems, from development to adoption, deployment, and use. The emphasis however is on change management within the information technology department of a financial institution. Therefore, the chapter focuses on the associated opportunities and challenges, at individual, team, and organizational levels of analysis.
The engagement with challenging disciplinary and interdisciplinary perspectives in information systems research is further accomplished by Santos, Amaral, S. Mamede and Gonçalves, and their proposed framework for the embedding of creativity in Information Systems Planning. This topic is particularly relevant for information systems planning research, as achieving the right balance between creativity and control has always been problematic. The chapter describes the process of introducing creativity in information systems planning in detail and presents an action research case study where the framework was successfully applied to identify opportunities for the development of information systems at a large public sector organization.

In seeking a deeper understanding of stakeholder dynamics as a critical social component influencing information systems strategy alignment, Alghaith conducts an analysis of stakeholder saliency dynamics in a strategic information systems project within a Saudi public hospital. This analysis is attained through the innovative combination of stakeholder theory and appreciative systems concepts. The results indicate that information systems strategy and project management are not static. Indeed, in face of changing events in the context of the project stakeholders choose to maintain, elude, or modify relationships. This in turn causes them to lose or gain saliency and influence during the project’s trajectory.

In Section Four we consider the development and management of information systems with a particular focus on identifying effective project management practices. Taking the perspective of the reflective practitioner, Potes Barbas offers an engaging narrative where the implementation of an e-learning system at a Portuguese Higher Education Institution is critically appraised. The description of the implementation process is punctuated with a literature-informed discussion of the use of information and communications technologies in universities, as well as of the impacts of using e-learning systems in educational practice on learners and on educators. Situating the chapter within the research agenda of educational informatics, the author seeks to present practical knowledge that is of relevance to the design and facilitation of learning environments that are supported by e-learning systems.

In a refreshing position paper, Zhou and Baptista Nunes advocate the use of desk research methodology in information systems research, arguing that when conducted rigorously it can contribute to the identification of useful experiences, viewpoints and lessons, directly extracted from information systems management case studies. The chapter focuses particularly in the context of China, where the interest in information systems research is flourishing, yet where the use of qualitative research approaches is still in its infancy. The authors illustrate their proposed approach to conducting desk research with a structured presentation of two case studies: establishing information systems project risk checklist, and identifying knowledge sharing barriers in Chinese healthcare referral services.

Reinforcing the argument that research on information technologies in China is gaining increasing attention in the information systems community, Peng and Baptista Nunes examine the barriers and risks affecting long term enterprise resource planning (ERP) systems success, in the specific context of Chinese state-owned enterprises. The authors conducted an exhaustive exploration of potential cultural, operational, managerial, organizational and technical barriers and risks, which culminated in the identification of business-oriented and human-related challenges. These, associated with management deficiencies in Chinese state-owned enterprises, are the main triggers of a network of ERP systems exploitation barriers and risks.
In Section Five we reflect on the ways in which society is being reshaped in the ubiquitous presence of information systems. Walsh and McGrath explore the mechanisms of e-participation, i.e. the use of information technology-supported participation in government and governance processes. The specific context of the research reported in this chapter is the city of Limerick, Ireland, where the authors attempted to foster the engagement of disadvantaged communities with the formal politics sphere through the use of shared wiki spaces. The wiki spaces operated as a platform of engagement where participants contributed to the production of a strategy document, and in this sense the chapter enhances our understanding of management practices in relation to community digital strategy.

Moving into the substantive field of human computer interaction, Guerra Lopes presents a novel system that exploits human-machine interfaces based on the recognitions of hands static gestures to enhance the mobility of wheelchair occupants. The chapter details how the development of the system - based on video image capture, image segmentation, feature extraction, pattern recognition and classification – contributes to a model of interaction that is natural and intuitive, thus facilitating the experience of differently abled citizens.

Subsequently, Kasemsap discusses how information systems are not only changing the way organizations store and process information, but also the ways in which citizens interact with their governments. The chapter offers a conceptual discussion into how citizen-centered eGovernment services can be attained. A discussion of the relationship between business process modeling and government-based citizen satisfaction is the theoretical foundation for the proposition of business process reengineering in eGovernment services.

Finally, in Section Six we explore the concept of knowledge management as a set of practices related to the use of knowledge as a crucial factor to add and generate value. Kouassi, Martins and Molnar propose the use of organizational ambidexterity theory to frame the evaluation of a customer experience management system in a Higher Education Institution. Ambidexterity is presented as the organizational ability to remain aligned and efficient in current business demands while simultaneously being flexibly adaptive to environmental changes. Typically this requires achieving a balance between knowledge exploration and knowledge exploitation activities. The use of a student oriented customer experience management system is evaluated against this theoretical framework, in a context where the experience of students as customers is increasingly valued, and where the adoption of strategic information systems to guide decision making is growing.

Continuing with research on innovation and knowledge processes Bob Santos proposes to extend the open innovation paradigm to the analysis of public policy incentives. Mainstream research on open innovation tends to focus on the use of non-linear thinking and disruptive creative solutions in the context of firms. However, the availability of external knowledge for firms to assimilate is critical to open innovation. Using Portugal as a case study, this chapter proposes to analyse how public policy endeavours to promote organizations’ open innovation practices and proposes a conceptual framework for analyzing the degree of openness in public policy mechanisms.

A final conceptual chapter is presented by Pinho and Pinho, who put forward a reflection on the need to govern academic research knowledge. In times of increasing pressure to deliver high quality inputs and impactful research, and when multi-party interdisciplinary research consortia become commonplace, the article discusses academic research activity monitoring and evaluation and the need to strategically align the variety of knowledge and information management systems used by academics within Higher Education Institutions.
We owe particular thanks to the authors of this volume for the high level of the contributions, but also for their cooperation and patience, and for responding so generously to reviewers’ comments and editorial suggestions. Our heartfelt thanks are also extended to the reviewers who undertook anonymous assessment of the chapters.

In preparing this book we wanted to be forward looking and to develop the current theoretical and practical understanding of information science as a fascinating field that continually evolves into productive directions as individuals’ and organisations’ information needs and behaviours expand and grow in complexity. We trust that this volume will contribute in that regard.

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