Preface

The constantly changing landscape of Business Intelligence makes it challenging for experts and practitioners to stay informed of the field’s most up-to-date research. That is why Business Science Reference is pleased to offer this three-volume reference collection that will empower students, researchers, and academicians with a strong understanding of critical issues within Business Intelligence by providing both broad and detailed perspectives on cutting-edge theories and developments. This reference is designed to act as a single reference source on conceptual, methodological, technical, and managerial issues, as well as provide insight into emerging trends and future opportunities within the discipline.

Business Intelligence: Concepts, Methodologies, Tools and Applications is organized into eight distinct sections that provide comprehensive coverage of important topics. The sections are:

1. Fundamental Concepts and Theories;
2. Development and Design Methodologies;
3. Tools and Technologies;
4. Utilization and Application;
5. Organizational and Social Implications;
6. Managerial Impact;
7. Critical Issues; and

The following paragraphs provide a summary of what to expect from this invaluable reference tool.

Section 1, “Fundamental Concepts and Theories,” serves as a foundation for this extensive reference tool by addressing crucial theories essential to the understanding of Business Intelligence. Introducing the book is Text-Driven Reasoning and Multi-Structured Data Analytics for Business Intelligence by Lipika Dey and Ishan Verma; a great foundation laying the groundwork for the basic concepts and theories that will be discussed throughout the rest of the book. Another chapter of note in Section 1 is titled Trust-Based Knowledge Management System Building by Andrea Bencsik and Irma Rácz. Section 1 concludes, and leads into the following portion of the book with a nice segue chapter, Rules Extraction using Data Mining in Historical Data by Manish Kumar and Shashank Srivastava.

Section 2, “Development and Design Methodologies,” presents in-depth coverage of the conceptual design and architecture of Business Intelligence. Opening the section is A Perturbation Method Based on Singular Value Decomposition and Feature Selection for Privacy Preserving Data Mining by Mohammad Reza Keyvanpour and Somayeh Seifi Moradi. Through case studies, this section lays excellent groundwork for later sections that will get into present and future applications for Business Intelligence,
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Section 3, “Tools and Technologies,” presents extensive coverage of the various tools and technologies used in the implementation of Business Intelligence. Section 3 begins where Section 2 left off, though this section describes more concrete tools at place in the modeling, planning, and applications of Business Intelligence. The first chapter, Integrating Business Intelligence Services in the Cloud: A Conceptual Model by Volker Herwig and Kristof Friess, lays a framework for the types of works that can be found in this section. Section 3 is full of excellent chapters like this one, including such titles as Visualization of High-Level Associations from Twitter Data by Luca Caglieri and Naeem A. Mahoto; and Validating a Model Predicting Retrieval Ordering Performance with Statistically Dependent Binary Features by Robert M. Losee. The section concludes with Effectiveness of Visualization for Information Retrieval through Ontologies with Entity Evolution: The Impact of Ontology Modeling by Akrivi Katifori, Costas Vassilakis, George Lepouras, and Elena Torou. Where Section 3 described specific tools and technologies at the disposal of practitioners, Section 4 describes the use and applications of the tools and frameworks discussed in previous sections.

Section 4, “Utilization and Application,” describes how the broad range of Business Intelligence efforts has been utilized and offers insight on and important lessons for their applications and impact. The first chapter in the section is titled A Case Study of a Knowledge-Sharing Web-Based Platform for Energy Education written by Mei-Chen Chang and Yao-Ming Chu. This section includes the widest range of topics because it describes case studies, research, methodologies, frameworks, architectures, theory, analysis, and guides for implementation. The breadth of topics covered in the chapter is also reflected in the diversity of its authors, from countries all over the globe. Some chapters to note include: Enablers and Barriers of Knowledge Sharing for Offshore Outsource ISD Project: A Case Study by Hans Solli-Sæther and Jan Terje Karlsen; and A Proposal to Study of Cross Language Information Retrieval (CLIR) System Users’ Information Seeking Behavior by YooJin Ha to name a few. The section concludes with Applying the K-Means Algorithm in Big Raw Data Sets with Hadoop and MapReduce by Ilias K. Savvas, Georgia N. Sofianidou, and M-Tahar Kechadi, a great transition chapter into the next section.

Section 5, “Organizational and Social Implications,” includes chapters discussing the organizational and social impact of Business Intelligence. The section opens with From Tf-Idf to Learning-to-Rank: An Overview by Muhammad Ibrahim and Manzur Murshed. Where Section 4 focused on the broad, many applications of Business Intelligence technology, this section focuses exclusively on how these technologies affect human lives, either through the way they interact with each other, or through how they affect behavioral/workplace situations. Other interesting chapters of note include Predicting Student Academic Performance: Role of Knowledge Sharing and Outcome Expectations by M.M. Haris Aslam, Ahmed F. Siddiqi, Khuram Shahzad, and Sami Ullah Bajwa; and Chinese Cultural Values and Knowledge Sharing by Alan K.M. Au and Matthew C.H. Yeung. The section concludes with Organizational Barriers and Facilitators in Embedding Knowledge Strategy by Neeta Baporikar.

Section 6, “Managerial Impact,” presents focused coverage of Business Intelligence in a managerial perspective. This section serves as a vital resource for developers who want to utilize the latest research to bolster the capabilities and functionalities of their processes. The section begins with Knowledge Shar-
Comparative, Historical Perspective on the Analysis of Dynamic Job Scheduling in HPC by Chantal Philips, Wulystan P. Mtega, and Arja Vainio-Mattila. The chapters in this section offer unmistakable value to managers looking to implement new strategies that work at larger bureaucratic levels. The section concludes with QoS Oriented Enhancement based on the Analysis of Dynamic Job Scheduling in HPC by Reshmi Raveendran and D. Shanthi Saravanan.

Section 7, “Critical Issues,” presents coverage of academic and research perspectives on Business Intelligence tools and applications. The section begins with Data Mining and Business Intelligence: A Comparative, Historical Perspective by Ana Azevedo. Chapters in this section will look into theoretical approaches and offer alternatives to crucial questions on the subject of Business Intelligence such as An Investigation of BI Implementation Critical Success Factors in Iranian Context written by Ahad Zare Ravan and Sogol Rabiee Savoji. The section concludes with Modeling the Knowledge Sharing Barriers: An ISM Approach by B. P. Sharma and M. D. Singh.

Section 8, “Emerging Trends,” highlights areas for future research within the field of Business Intelligence, opening with The Data Machine: Identification in the Age of Data Mining by Nicholas A. Hanford. This section contains chapters that look at what might happen in the coming years that can extend the already staggering amount of applications for Business Intelligence. The final chapter of the book looks at an emerging field within Business Intelligence, in the excellent contribution, Biologically Inspired Techniques for Data Mining: A Brief Overview of Particle Swarm Optimization for KDD by Shafiq Alam, Gillian Dobbie, Yun Sing Koh, and Saeed ur Rehman.

Although the primary organization of the contents in this multi-volume work is based on its eight sections, offering a progression of coverage of the important concepts, methodologies, technologies, applications, social issues, and emerging trends, the reader can also identify specific contents by utilizing the extensive indexing system listed at the end of each volume. As a comprehensive collection of research on the latest findings related to using technology to providing various services, Business Intelligence: Concepts, Methodologies, Tools and Applications, provides researchers, administrators and all audiences with a complete understanding of the development of applications and concepts in Business Intelligence. Given the vast number of issues concerning usage, failure, success, policies, strategies, and applications of Business Intelligence in countries around the world, Business Intelligence: Concepts, Methodologies, Tools and Applications addresses the demand for a resource that encompasses the most pertinent research in technologies being employed to globally bolster the knowledge and applications of Business Intelligence.