

Preface

More than 2300 years ago Aristotle said that:” *All men by nature desire knowledge*”. No doubt Aristotle was right because until now with all advanced sciences that we have today in the 21st century human beings are still looking for knowledge.

Business Intelligence and Agile Methodologies for Knowledge-Based Organizations: Cross-Disciplinary Applications is one of the first essays that highlight the “marriage” between business intelligence and knowledge management through the use of agile methodologies.

In 1996, the Chinese Organization for Economic Cooperation and Development (OECD) redefined “knowledge-based economies” as: *economies which are directly based on the production, distribution and use of knowledge and information*. According to the definition, data mining and knowledge management, and more generally Business Intelligence (BI), should be the foundations for building the knowledge economy.

Business Intelligence applications are of vital importance for many organizations and can make the difference in any organization. You can collect, clean and integrate all your data, you can also, analyze, mine and dig more into your data, and you can make right decision, at the right time by using BI dashboards, alerts and reports.

Business Intelligence can also help organizations managing, developing and communicating their intangible assets such as information and knowledge. Thus, it can be considered as an imperative framework in the current knowledge-based economy arena. Organizations such as Continental Airlines have invested in Business Intelligence generate increases in revenue and cost saving equivalent to 1000% return on investment (ROI).

Business Intelligence can be also considered as a strategic framework, as it is becoming increasingly important in strategic management, and in supporting business strategies. IT-enabled strategic management addresses the business intelligence role in strategy formulation and implementation processes. Drucker, the pioneer of “management by objectives”, was one of the first who recognized the dramatic changes IT brought to management.

However, Business Intelligence applications still face failures in determining the process model adopted. As the world becomes increasingly dynamic, the traditional static modeling may not be able to deal with it. Traditional process modeling requires a lot of documentation and reports. This makes traditional methodology unable to fulfill dynamic requirement changes in our rapidly changing environment.

One solution is to use agile modeling that is characterized by flexibility and adaptability. On the other hand, Business Intelligence applications require greater diversity of technology, business skills, and knowledge than the typical applications, which means it may benefit a lot from features of agile software development.

To successfully implement Business Intelligence applications in our agile era, different areas should be examined in addition to considering the transition into knowledge-based economy. The areas to be examined in this book are: methodologies, architecture, components, technologies, agility, adaptability, tools, strategies, applications, knowledge and history.

In *Business Intelligence and Agile Methodologies for Knowledge-Based Organizations: Cross-Disciplinary Applications*, Business Intelligence is discussed from a new point of view, as it will tackle, and for the first time, the agility character of Business Intelligence applications. This book highlights, through its fifteen chapters, the integration between: process modeling, agile methodologies, business intelligence, knowledge management, and strategic management.

Now, the main question is: why our book will create added value in the field? Our response is:

- Most organizations are using business intelligence and data mining applications to enhance strategic decision making and knowledge creation and sharing.
- Data mining is at the core of business intelligence and knowledge discovery.
- Most of current business intelligence applications are unable to fulfill the dynamic requirement changes in our complex environment.
- Finally, knowledge is the result of intelligence and agility...

Though, the overall objectives of this book are: to provide a comprehensive view of business intelligence and agile methodologies, to provide cutting edge research on applying agile methodologies on business intelligence applications by leading scholars and practitioners in the field, to provide a deep analysis for the relationship between business intelligence, agile methodologies and knowledge management, and to demonstrate the previous objectives through both theory and practice.

The book caters the needs of scholars, PhD candidates, researchers, as well as graduate level students of computer science, Information Science, Information Technology, operations research, business and economics disciplines. The target audience of this book is academic libraries throughout the world that are interested in cutting edge research on business intelligence, agile methodologies, and knowledge management. Another important market is Master of Business Administration (MBA), Master of Executive Business Administration (EMBA), and Master of E-Business programs which have Information Systems components as part of their curriculum.

The book encompasses 15 chapters. On the whole, the chapters of this book fall into six categories, while crossing paths with different disciplines. The 1st category, *business intelligence*, concentrates on business intelligence theories, tools, architecture, and applications. The 2nd category, *agile methodologies*, concentrates on agile theories, methods, and characteristics, while the 3rd concentrates on *knowledge management in agile methods context*, whereas the 4th concentrates on knowledge discovery and business intelligence *process modeling*, surveying all the used processes used from traditional till agile methodologies. The 5th category tackle the main focus of this book, the use of *agile methodologies for business intelligence*. This category was highlighted by more than six chapters. The last and 6th category discusses the *application of agile methodologies and business intelligence* in different areas including: higher education, e-government, public regional management systems, risk management, e-marketing, IT governance, and web engineering.

Chapter 1, *Business Intelligence: Body of Knowledge*, provides an overview of the business intelligence history, definitions, architecture, goals, and components including: data mining, data warehousing,

and data marts. It also highlights the close relationship between business intelligence and knowledge management.

Chapter 2, *Agile Software: Body of Knowledge*, provides an overview of the agile methodology history, principles, techniques, characteristics, and methods. The chapter explains in details the main agile methods including: eXtreme Programming (XP), Scrum, Crystal, Feature-Driven Development (FDD), Adaptive Software Development (ASD), and DSDM. For each agile method, the author explains its lifecycle, its principles and techniques, and its roles and responsibilities.

Chapter 3, *Knowledge Management in Agile Methods Context: What Type of Knowledge is Used by Agilests?* provides an overview on the knowledge management techniques used in different software development processes with focus on agile methods. In this chapter, the author has demonstrated the results of email-based panel of experts' survey. The survey was published in July 2008 on Scott Ambler's website www.ambysoft.com. More than 300 agile practitioners was asked about the mechanisms used to exchange and document knowledge and in which context every mechanism is applied

Chapter 4, *Knowledge Discovery Process Models: From Traditional to Agile Modeling*, provides a detailed discussion on the Knowledge Discovery (KD) process models that have innovative life cycle steps. It proposes a categorization of the existing KD models. The chapter deeply analyzes the strengths and weaknesses of the leading KD process models, with the supported commercial systems and reported applications, and their matrix characteristics.

Chapter 5, *Agile Methodologies for Business Intelligence*, explores the application of agile methodologies and principles to business intelligence delivery. The practice of business intelligence delivery with an agile methodology has yet to be proven to the point of maturity and stability; this chapter outlines agile principles and practices that have emerged as best practices and formulate a framework to outline how an agile methodology could be applied to business intelligence delivery.

Chapter 6, *BORM: Agile Modeling for Business Intelligence*, proposes a new business intelligence model based on agile modeling. The proposed model named BORM (Business and Object Relation Modeling) is described in details by explaining its fundamental principles and its most important concepts. The chapter will then explore the three areas of BORM modeling in Model-Driven Approach (MDA) perspective. The chapter will also describe the business model, scenarios, and diagram. Finally, the model validation will be explained using one of the recent BORM applications of organizational modeling and simulation. The aim of the project is the improvement of decision-making on the level of mayors and local administrations. It offers the possibility to model and simulate real life situations in small settlements.

Chapter 7, *Agile Approach to Business Intelligence as a Way to Success*, presents an overview of several methodological approaches used in business intelligence and data warehousing projects. In this chapter, the authors have presented and analyzed the Critical Success Factors of Business Intelligence projects. On the other side, the authors have collected all Agile Principles that guide Agile development methodologies. Finally they have analysed the relationships between these two sources, respectively BI success factors and agile principles, to evaluate how adequate may be to use an Agile Approach to manage Business Intelligence projects. As a result, the authors show a strong relationship between the so-called Critical Success Factors for BI projects and the Agile Principles. Hence, based on sound analysis, concluding that successful BI methodologies must follow an agile approach.

Chapter 8, *Enhancing BI Systems Application through the Integration of IT Governance and Knowledge Capabilities of the Organization*, reports the results of an empirical examination of the effect of IT governance framework based on COBIT and Organizational Knowledge Pillars in enhancing the IT

Governance framework (Business / IT Strategic alignment, Business value delivery, risk management, Resource management, performance measurement) to enhance the Business Intelligence Application and Usability within the organization. Quantitative method is adopted for answering the research questions. Using confirmatory factor analysis techniques, the effects of the combination between IT governance factors seen by ITGI and organizational knowledge pillars of the firm on BI Systems application in it were tested and confirmed and the models were verified.

Chapter 9, *ASD-BI: A Knowledge Discovery Process Modeling Based on Adaptive Software Development Agile Methodology*, proposes a new knowledge discovery process model named “ASD-BI” that is based on Adaptive Software Development (ASD) agile methodology. ASD-BI process model was proposed to enhance the way of building Business Intelligence and Data Mining applications. The main contribution of this chapter is the demonstration that ASD-BI is adaptive to environment changes, enhances knowledge capturing and sharing, and helps in implementing and achieving organization’s strategy. ASD-BI process model will be validated by using a case study on higher education.

Chapter 10, *Measurement of Brand Lift from a Display Advertising Campaign*, describes an advanced Business Intelligence System; built at Yahoo to measure the lift in brand awareness driven from the display advertising campaigns on Yahoo network. The author describes the methodology to measure the lift in Brand Awareness from a Display Ad campaign and a system to compute this metric. This system is a great help to any sales team, when they are working with advertisers to show them the value of their marketing investments and want to get bigger return business.

Chapter 11, *Suggested Model for Business Intelligence in Higher Education*, describes a data mining approach as one of the business intelligence core components for possible use in higher education. The importance of the model arises from the reality that it starts from a system approach to university management, looking at the university as input, processing, output, and feedback, and then applies different business intelligence tools and methods to every part of the system in order to enhance the business decision making process. The suggested model was validated using a real case study at the Arab International University.

Chapter 12, *Business Intelligence and Agile Methodology for Risk Management in Knowledge-Based Organizations*, discusses and explores the role of Business Intelligence and Agile methodology to manage risks effectively and efficiently. The authors describe, highlight and investigate the different techniques and tools that are mostly used in Risk Management giving the focus for the Business Intelligence based on providing examples on some of the mostly used tools. The authors also shed lights on the role of agile in managing risk in this knowledge based economy.

Chapter 13, *Towards a Business Intelligence Governance Framework within E-Government System*, presents a BI governance framework within E-Government system derived from an empirical study with academics and experts from public and private sector. An analysis of the findings demonstrated that the business/IT alignment is very important to E-Government success and the important role of BI use in E-Government system.

Chapter 14, *Business Intelligence in Higher Education: An Ontological Approach*, presents an ontology-based knowledge management system developed for a Romanian university. The ontologies were implemented using Protege. The results are very encouraging and suggest several future developments.

Chapter 15, *Web Engineering and Business Intelligence: Agile Web Engineering Development and Practice*, highlights the main issues related to Web engineering practices and how they support business intelligence projects. It also explains the need for Web engineering, and the development methods used in Web engineering.

In conclusion, the book is one of the first attempts to highlight the importance of using agile methodologies for business intelligence applications. Although, the research direction is new, the book's chapters raise very important research results in different areas. The editors are proud of the book's research methodologies and the high level of work provided.

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