Chapter 6
Modelling in Support of Decision Making in Business Intelligence

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ABSTRACT

Modelling in support of decision making in business intelligence (BI) starts with exploring the BI systems, driven by artificial intelligence (AI). The purpose why AI will be the core of next-gen analytics and why BI will be empowered by it are determined. The role of AI and machine learning (ML) in business processes automation is analyzed. The benefits from AI integration in BI platforms are summarized. Then analysis goes through predictive modeling in the domain of e-commerce. The use of ML for predictive modeling is overviewed. Construction of predictive and clustering models is proposed. After that the importance of self-services in BI platforms is outlined. In this context the self-service BI is defined and what are the key steps to create successful self-service BI model are sketched. The effects of potential threads which are the results of the big data in the business world are examined and some suggestions for the future have been made. Lastly, game-changer trends in BI and future research directions are traced.

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INTRODUCTION

Modeling is a process that includes several steps: identification of the real problem, data gathering from authentic sources, and applying data mining techniques for converting data into meaningful knowledge. Knowledge could be presented in the form of tables, graphics, charts, infographics and is used for supporting the business leaders, business consultants or business users to take the right decisions, to plan the correct strategy or to solve an emerging issue. A wide variety of models – analytical and predictive could be prepared through different statistical and Artificial Intelligence (AI) techniques that show the past situation, current problem state or future events.

This chapter discusses the importance of data for business improvement and how to empower the self-service capabilities for the decision makers to analyze data and to find meaningful knowledge about their business. The cycle of data preparation, transformation, analysis and presentation for advanced analytics or descriptive analytics are almost the same, but how to model the data in such a way that the business users can embrace the opportunity to make data-driven decisions by themselves. The knowledge about the business process in the organizations is in sales, accounting, marketing and inventory departments. So, what if they have a powerful Business Intelligence (BI) system in which they prepare complex analysis and data explorations and they gain meaningful new information by analyzing huge amounts of data. This can be accomplished when the BI tool has the right user interface and the development team of the BI system prepares data modules for self-service.

Furthermore, in this chapter the importance of self-service BI for business users is proved. In organizations, private or public, most of the decisions are based on domain knowledge, experience and available information in the systems. But this approach leads to ineffective decision making and nowadays with the rapid economic development of the world, organizations cannot rely on intuitive and subjective approaches. The decision making in progressive organizations must be based on analytical methodologies and mathematical models. The main purpose of BI systems is to provide capabilities that allow business users to make effective and timely decisions. And this can be accomplished by letting them do the real analytics jobs, to dig deep into trusted, organized data and extract meaningful information and then make data-driven decisions.

The aim of this chapter is to present several techniques and methods for models creation in the area of Business Intelligence through four case studies: (1) modeling in the context of Artificial Intelligence based Business Intelligence systems; (2) modeling the domain of e-commerce to predict the future events; (3) modeling with aim to afford business users at self-services usage in the Business Intelligence platforms; (4) tracing game-changer trends in BI.

BACKGROUND

Business Intelligence had become a thought leadership function through, among other factors, procuring highly skilled employees to research their respective industries, technologies and geographies and to inform executive decision makers. Many team members were working closely with their stakeholders, gaining a great deal of insights and efficiency in their function.

In order to better communicate their ideas and capabilities to their stakeholders, as well as continuously learn, BI decided to implement a knowledge management system that would make processes, methodologies, best practices and information sources easily accessible to all members of the organization. BI