



Chapter VIII

Expanding Business Intelligence Power with System Dynamics

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ABSTRACT

This chapter explores the opportunities to expand the forecasting and business understanding capabilities of Business Intelligence (BI) tools with the support of the system dynamics approach. System dynamics tools can enhance the insights provided by BI applications — specifically by using data-mining techniques, through simulation and modeling of real world under a “systems thinking” approach, improving forecasts, and contributing to a better understanding of the business dynamics of any organization. Since there is not enough diffusion and understanding in the business world about system dynamics concepts and advantages, this chapter is intended to motivate further research and the development of better and more powerful applications for BI.

INTRODUCTION

Currently, Business Intelligence (BI) tools make it possible to analyze big amounts of data to get important conclusions about business processes, customer behavior, etc. The main concern is that such conclusions are presented as data correlations following a “straight-line thinking” paradigm (i.e., an outcome is expressed as a function of one or more independent variables); however, many real-world experiences show that this assumption is not always valid.

This chapter explores the opportunities to expand the forecasting and business understanding capabilities of BI tools with the support of the system dynamics approach. System dynamics tools can enhance the insights provided by BI applications — specifically by using data-mining techniques — through simulation and modeling of real world under a “systems thinking” approach, improving forecasts, and contributing to a better understanding of the business dynamics of any organization.

BACKGROUND

Business Intelligence (BI) is a term that has been defined from several perspectives, though all share the same focus. For example, Brackett (1999) defines BI as “a set of concepts, methods, and processes to improve business decisions using information from multiple sources and applying experience and assumptions to develop an accurate understanding of business dynamics.”

From a management perspective, BI involves a proactive process of information analysis focused on strategic decision making, and actually it is a critical discipline to gain business insight, as Brackett (1999) also mentions:

Business Intelligence involves the integration of core information with relevant contextual information to detect significant events and illuminate cloudy issues. It includes the ability to monitor business trends, to evolve and adapt quickly as situations change and to make intelligent business decisions on uncertain judgments and contradictory information. It relies on exploration and analysis of unrelated information to provide relevant insights, identify trends and discover opportunities.

As a discipline to empower a “forward-thinking” view of the world, one of the most valuable concepts within BI is the “knowledge discovery in

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