Chapter 69
Business Applications of Big Data:
Considerations for Not-for-Profits

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ABSTRACT

Twenty-first century organizations face a challenge and an unprecedented opportunity: to build a new model of relationship with current and potential clients which is more efficient and innovative. And this necessarily implies to acquire a completely new corporate culture in which the collection, management and interpretation of information will inspire the entire business. Under this new business scenario, the data is not understood as part of a process but instead to be part of the core business as a decision tool. Only if companies can manage this flood of information will be able to understand what we do and where they are going; identify the tastes and preferences of consumers and, more importantly, anticipate their decisions to adapt the services in real time and in a personalized way. The Big Data points companies beyond the facts: transforms the actions into predictions.

INTRODUCTION

There is a trend in technological development that have created a new era in the understanding and decision-making, which is used to-develop new business and increase profitability using Big Data applications (See Vidal, Vidal-García & Hernandez Barros, 2016, p. 140).

The computational business intelligence and Big Data is applied to all that information that cannot be processed by traditional methods. A database is a collection of interrelated data. When speaking of

relational database reference is made to the theory of relational data model of IBM researcher Edgar Codd in 1970 and has a strong mathematical basis. The relational model is characterized for providing that all the information should be contained in tables and the relationships between data must be represented an explicit reference in the same way. What is achieved with this model is always work on interrelated tables. Avoiding duplication of records and ensuring the referential integrity is to say if you delete a record, you delete all related records. The great disadvantage is the time required to handle large amounts of data, but this is achieved thanks to Big Data. On the other side, what is achieved when working with databases is to combine different types of data in a formalized manner.

The use of Big Data is used in all economic activities and generating new business opportunities for companies worldwide, this was inconceivable just a decade ago. Exploiting the potential of Big Data is an important challenge for companies as they have to adjust the way they make decisions about their business operations. Companies should leave the intuition when making decisions and learn to examine reliable information, creating structures and new roles that will transform organizations (Hartmann, Zaki & Feldmann, 2014).

The top performing companies are in a good position in the learning curve and technological development with regard to the development of analytical competence, although a lot of companies are still discovering the process and have to overcome different challenges to become technological competitive. The difficulties identified as the most important depend on the source of the information. Some of these studies indicate technical barriers associated with the use of software for managing Big Data

In this chapter we will explain the major challenges associated with the use of Big Data and computational business intelligence in business organizations and examine the case of Capital One, which has managed to implement a successful strategy based on Big Data. We will use this example to show the characteristics of a company that clearly favors the development of its analytical capacity, the ability of the company to use Big Data and computational business intelligence to improve performance. Finally, we will discuss how the development of analytical capacity is not restricted to few companies, but instead traditional companies and relatively small ones can incorporate Big Data analysis into their business operations, with benefits for their performance (Kruschwitz, 2001).

BACKGROUND

The term Big Data refers to all those datasets whose size exceeds the ability to search, capture, storage, management, analysis, transfer, display or legal protection of conventional tools. Under that name it also includes infrastructure solutions and models needed to extract value from these groups of information in the most economical way, fast and flexible as possible for intelligent decision-making (Lazer, Kennedy, King & Vespignani, 2014).

The data sets included under this concept are characterized also by its variety in both origin and formats; the speed at which they occur; and the veracity or implied to their nature and mode of use.

In essence, the Big Data enables intelligent study and exploitation of millions of bytes of information on all kinds of events and activities-from atmospheric variations to daily patterns of consumption -, produced, disseminated or stored through mobile phones, social networks or, for example, machines connected to the Internet of Things (Mian, Rao, & Sufi, 2013). In 2012, and in around two-year period, it is estimated that humanity had generated by these means about 2.5 zetabytes information, ie, the ninety percent of all produced throughout his history.

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