

Chapter 8

Data Analytics Supporting Knowledge Acquisition

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ABSTRACT

This chapter aims to make the case that analytics methods must respond to the significant changes that big data challenges are bringing to operationalizing the production of information and knowledge. More specifically it discusses the analytics dimension of big data challenges and its contribution for value creation. It shows that data analytics tools and methods offer strong support in knowledge acquisition and discovery. This suggests that the effectiveness of an analytics method must be measured based on how it promotes and enhances knowledge, how it improves patterns and understanding of the decision makers, and thereby how it improves their decision making and hence organization performance. This chapter explores the synergies between big data analytics and knowledge discovery by identifying challenges and opportunities in data analytics applications for knowledge acquisition.

INTRODUCTION

Modern information technology, incremental computing power, and online digitalization have opened up new options for utilizing automatically collected and stored data from various sources in multiple formats. According to IBM, the proliferation of web pages, image and video applications, social networks, mobile devices, apps, sensors, and so on, able to generate more than 2.5 quintillion bytes per day, to the extent that 90% of the world's data have been created over the few

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past years (Cukier & Mayer-Schoenberger, 2013a, 2013b; Dietrich et al., 2014; Foster et al., 2017). The traditional way of formatting information from transactional systems to make them available for ‘statistical processing’ does not work in a such situation, where data is arriving in huge volumes from diverse sources, and where even the formats could be changing (Sedkaoui, 2017).

Traditional analysis methods have been based largely on the assumption that we can work with data within the confines of their own computing environment. But the growth of the amounts of data is changing that paradigm, especially which ride of the progress in computational data analysis. Faced with this volume and diversification, it is essential to develop analytics tools and techniques to make best use of all of these stocks in order to extract the maximum amount of information and knowledge. The use of big data requires rethinking the process of collecting, processing and the management of data. It’s the “analysis” that will be applied to data which will justify big data, not the collection of data itself (Sedkaoui, 2017).

Data Analytics is a rapidly developing field which already shows early promising successes. Nowadays companies are starting to realize the importance of using and analyzing more data to extract knowledge and support their decision strategies. Conceptually, it is easy to comprehend how analytics can be thought of as an integral component of knowledge management (KM) and hence decision making. The key is applying proper analytics and statistics methods to different kind of data. Thus, from this data derive information and then producing knowledge, or which it called the target paradigm of “knowledge discovery”, described as a “knowledge pyramid” where data lays at the base (see Ackoff, 1989).

From this, it should be noted that there are considerable synergies between data analytics and KM: both have the goal of improving decision-making, fostering innovation, fueling competitive edge and economic success through the acquisition and application of knowledge. Both operate in a world of increasing deluges of information, with no end in sight (Crane and Self, 2014). These synergies help author to go further to answer this question: *How analytics methods, in the big data context, allow companies to get more value out of the available data and optimize their knowledge acquisition in such a way that it will be more frequently used for better decisions?* In another word: *how knowledge acquisition process can conceptually and operationally use and integrate analytics methods to extract value for better decision-making?*

Exploring the role of big data analytics and its relationship with knowledge discovery process and decision-making is of utmost importance. This paper has the objective of identifying some of the synergies and similarities between the rapidly developing field of big data analytics and the well-established field of KM. The main goal of this study is to show how big data challenges are changing analytics to enhance knowledge acquisition and discovery and support decision-making process.

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