Chapter 82
Business Analytics and Big Data:
Driving Organizational Change

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ABSTRACT

Big Data Analytics has changed the way organizations make decisions, manage business processes, and create new products and services. Business analytics is the use of data, information technology, statistical analysis, and quantitative methods and models to support organizational decision making and problem solving. The main categories of business analytics are descriptive analytics, predictive analytics, and prescriptive analytics. Big Data is data that exceeds the processing capacity of conventional database systems and is typically defined by three dimensions known as the Three V's: Volume, Variety, and Velocity. Big Data brings big challenges. Big Data not only has influenced the analytics that are utilized but also has affected technologies and the people who use them. At the same time Big Data brings challenges, it presents opportunities. Those who embrace Big Data and effective Big Data Analytics as a business imperative can gain competitive advantage.

INTRODUCTION

Generations of technological innovations have evolved since the 1970's. Decision support systems (DSS) have emerged as one of the earliest frameworks intended to assist complex decision making through user-friendly interfaces, rudimentary database relationships, basic visualization capabilities, and predefined query proficiencies. A typical cycle of activities within a DSS network began with decision makers (Zeleny, 1987) defining a problem requiring a solution. After defining the problem and exploring possible alternatives, a decision model was developed that eventually would guide the decision makers

toward implementation. This model-building phase of the process was an iterative approach to resolving organizational problems (Shim, 2002).

As a logical progression, supplementary support systems were being funded within the C-suite. Executive support systems were developed to obtain timely access to information for competitive advantage. These inter-networking infrastructures became possible because of distributed computing services, online analytical processing and business intelligence applications.

Today, it is the demand for the application of analytics to Big Data that is driving an expansion of information technology that will continue at an accelerating rate (Davenport, 2014). Big Data and analytics, now possible because of advances in technology, have changed the way organizations make decisions, manage business processes, and create new products and services.

Informed Decision Making

In any organization, it is essential that strategic decisions have executive level support. Exploring Big Data using analytical support systems has strategic, as well as tactical importance. This is not a modernistic view, rather one of historic precedence and contemporary necessity (Bughin, 2010; Ewusi-Mensah, 1997; Jugdev, 2005; Poon, 2001). Furthermore, Vandenbosch (1999) clearly established a relationship between how organizations can enable competitiveness and use methods and techniques for focusing attention, improving understanding, and scorekeeping. In recent years, numerous studies have validated the premise that business analytics informs decision making. Davenport, Harris and Morison (2010) show that business analytics produces smarter decisions. Business analytics has changed the way organizations make decisions. Organizations are making informed decisions because business analytics enables managers to decide on the basis of evidence rather than intuition alone. While business analytics does not eliminate the need for intuition and experience, it changes long standing ideas about the value of experience, the nature of experience and the practice of management (McAfee & Brynjolfsson, 2012).

Improved Business Processes

Many large organizations are burdened with an array of process modeling intended to improve the decision making hierarchy (Dijkman, 2011). If an organization has been in business for several decades, managing these processes is time-prohibitive and expensive because a team is required to manage and refine them. As organizations adopt business process management systems to automate key business processes, integration with business intelligence remains equally important. Making data from business processes available for business intelligence in near real-time allows organizations to proactively manage business processes through improved insight into performance. Business analytics not only changes the way organizations evaluate business processes but also how they manage business processes.

Empowering Products and Services

Nothing more effectively moves change in the business environment as does competition. Products and services evolve as competitive information is obtained and analyzed. Data has become widely available at historical discounts allowing organizations to manage their employees. Data also allows vendors the ability to adjust pricing based on archival and real-time sales. Similarly, considerations for complementary

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