

Chapter XIII

Business Analytics Success: A Conceptual Framework and an Application to Virtual Organizing

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ABSTRACT

The chapter presents a conceptual framework that identifies technological and organizational factors that impact the success of business analytics (BA) use in organizations in general and virtual organizations in particular. The framework explores BA success through three business disciplines: Decision sciences (DS), information systems (IS), and management. We believe that BA success comes from proper interaction between the three disciplines. Though the concept of BA has been around for a long time in business literature, its full potential use has not been realized in organizations for a variety of reasons. The information and communication technologies (ICT) that have made virtual organizations, and flattening of the world possible have also created a better infrastructure/environment for use of BA by providing the capability to collect massive amounts of data and by providing easier-to-use analytic tools. Currently, BA is being touted as the next information technology (IT) capability that will generate considerable value including competitive advantage to businesses. In this chapter we present and discuss our framework, discuss its viability through existing examples of BA success, and finally apply the framework to a special emerging context in organizations, virtual organizing. Implications of this framework for identifying and filling research gaps in this area and implications for managers interested in exploring BA use in their organizations are presented.

INTRODUCTION

Though the history of organizational/managerial decision-making is long, its movement from “decision-making as an art” to “decision-making as a science” is more recent. Parallel, and sometimes independent, developments in three fields have aided this evolution. Management theory focused on the typologies and processes of decision-making and the behavioral aspects (Henderson & Nutt, 1980; Kepner & Tregoe, 1965; Mintzberg *et al.*, 1976; Simon, 1977; Tydeman *et al.*, 1980)—the softer side. Decision Sciences (DS) as a field was formally defined in the early 1970s, and the field included the work done in management theory and extended it through the use of quantitative techniques—the harder side. Though quantitative techniques, mathematical and statistical, were available for use by organizations and managers, their use was not widespread due to the lack of availability and ease-of-use of the tools and data necessary for quantitative analysis. A parallel development in information systems (IS) that made the necessary tools and data available, and easier to use by most managers, made it possible for organizations to capture/collect/access massive amounts of data regarding the organizational processes and analyze them for decision-making through the use of quantitative analysis.

Business analytics (BA)—the use of analytic techniques (driven by data and quantitative analysis) for organizational/managerial decision-making, a new term that has been coined recently—is a result of the parallel developments in the three disciplines, Management, DS, and IS. History of analytic techniques and data to improve organizational decision-making can be traced to the 1960s to the development of the first decision support systems (DSS) (Power, 2001, 2002, and 2004). Analytics has also been defined to be a subset of business intelligence (BI). BI includes both data access and reporting, and analytics. More formal definitions of BI and its essential components can be found in Negash and Gray

(2003). The terms “data mining” and “business analytics” have also been used interchangeably in the literature (Kohavi, Rothleder, and Simoudis, 2002) to indicate the general process of investigation and subsequent analysis of data to identify the existence of new and meaningful trends.

Relatively few formal definitions of BA exist in the literature. Davenport and Harris (2007) define analytics as “the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions.” Davenport & Harris further state that the “analytics may be input for human decisions or may drive fully automated decisions.” While data access and reporting help businesses understand “what happened,” and “what actions are needed,” analytics helps them to understand “why is this happening,” “what if these trends continue,” and perhaps forecast “what will happen next” (Davenport & Harris, 2007).

Prior work related to the Management, IS, and DS aspects of BA is extensive in each area. Success in decision-making and problem-solving (including success of different phases) and its relation to different problem-solving methods and individual and group behavior has been studied extensively in the Management literature. Data collection, storage, and access issues have been addressed extensively in IS literature. Extensive work on building a variety of quantitative models exists in DS (sometimes also referred to as Management Science or Operations Research) literature. Some literature also exists that integrates two disciplines – for example, group decision support systems (GDSS) work that integrates Management and IS aspects of BA. Davenport’s (2006) work is the first attempt to link explicitly the three disciplines critical to BA success. Davenport identified three key attributes for organizations to be analytically competitive – (1) widespread use of modeling and optimization, (2) an enterprise approach, and (3) senior executive advocates. In the same work, the author argues that organizational success in BA can result if analytics-minded leaders actively

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