Chapter 12
Decision Framework for Engaging Cloud-Based Big Data Analytics Vendors

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ABSTRACT

Organizations face both opportunities and risks with big data analytics vendors, and the risks are now profound, as data has been likened to the oil of the digital era. The growing body of research at the nexus of big data analytics and cloud computing is examined from the economic perspective, based on agency theory (AT). A conceptual framework is developed for analyzing these opportunities and challenges regarding the use of big data analytics and cloud computing in e-business environments. This framework allows organizations to engage in contracts that target competitive parity with their service-oriented decision support system (SODSS) to achieve a competitive advantage related to their core business model. A unique contribution of this paper is its perspective on how to engage a vendor contractually to achieve this competitive advantage. The framework provides insights for a manager in selecting a vendor for cloud-based big data services.

INTRODUCTION

The proliferation of mobile devices and the ability of almost any electronic device to connect to the

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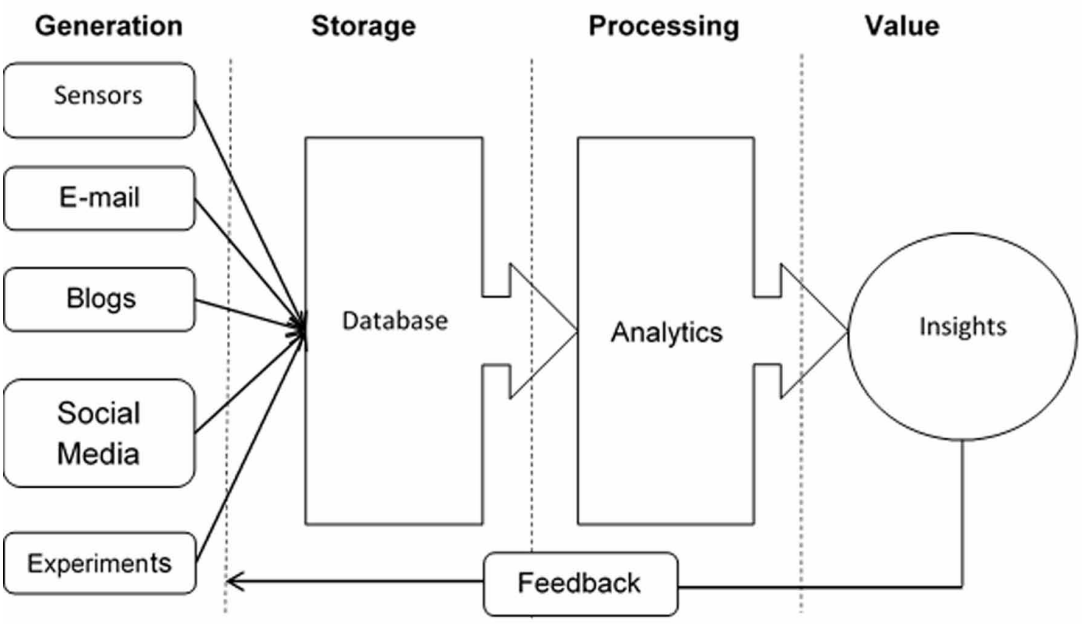
Internet have significantly increased the amount of data generated by businesses daily. This increase in the magnitude of data is called *big data* (Hashem et al., 2015); it is difficult to store, process, and analyze using traditional tools, such as relational databases. Big data is distinguished from traditional data by volume, velocity, variety, veracity, and value (Marr, 2015). These characteristics help business managers to make important decisions in real time (Höchtl, Parycek, & Schöllhammer, 2016). The nature and origin of these characteristics can be explained by the data life cycle where a business collects, stores, processes, and makes meaning out of the data at their disposal from generation to insight. Figure 1 illustrates a typical data life cycle where a business uses the insights obtained from the processed data to gather more data. The data life cycle process leads to challenges that typical businesses do not face in their daily operations in dealing with big data, often prohibiting insights if the business is unprepared to handle them.

Many organizations are unable to manage their existing smaller data, and big data adds a layer of complexity, as capabilities are necessary with analytics and storage (Troester, 2012). Thus, despite the pervasiveness of big data technologies, many e-business firms are unable to achieve the elusive status of success (Gupta & George, 2016).

Figure 1. Data life cycle



This study posits that one explanation for organizations missing out on the success of big data relates to the nature and effect of the contract between vendors providing cloud-based data analytic services and clients receiving those services. Among the opportunities for big data and analytics in the cloud is an ecosystem conceptually referred to as a *Service-Oriented Decision Support System (SODSS)*. Demirkan and Delen (2013) suggest that value can be created through the implementation of accrued knowledge from the interactions of service systems that involve people, technology, organizations, and shared in-

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