A Longitudinal Investigation on the Economic Impact of Organizational Big Data Analytics Implementation

TREO Talk Paper

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Abstract

Despite the buzz over the potential of big data analytics (BDA), few empirical research has confirmed how BDA implementation activities affect firm profitability. In this study, we investigate the economic impact of three aspects of BDA implementation (i.e., BDA implementation scope, frequency, and objective) on firm’s profitability. In addition, we examine the role of BDA human competency in moderating the economic impact of BDA implementation. To perform credible causal evaluation, we construct a panel dataset by collecting related information about enterprise BDA and profits from major news sources, Compustat databases, and LinkedIn between 2010 and 2018. Through our longitudinal study, we aim to contribute to knowledge-based view, complementarity theory, and big data literature. Practical insights from this research will be generated for decision makers looking to implement BDA.

In particular, this study will make the following contributions to research. First, this is among the first studies to longitudinally examine the value creation of enterprise BDA implementation. To our best knowledge, it is the first research that scrutinizes BDA implementation features and reveals their different effects on firm economic outcome. Second, it is the first time to involve both BDA technical and human resources in a longitudinal study and investigate the moderating role of BDA human competency. Third, this research applies complementarity theory to a new area (i.e., big data context), which broadens the application range of the theory and strengthens its position as explanation for the enhancement of resource value. Forth, our longitudinal study provides rationale for KBV as a theory of strategy (Eisenhardt and Santos, 2002) by linking BDA implementation scope and frequency (which facilitate knowledge creation, integration, and utilization) with profitability and empirically testing whether sustained competitive advantage exists.

Although we are still in the process of data collection, we expect this study to have useful implications for practice. First, this study may provide managers with insights into how to arrange the scope, frequency, and goal emphasis of BDA implementation to improve firm profitability. Additionally, it may inform decision makers pertaining to investments in complementary BDA resources such as human competency to enhance the benefits of implementing BDA technologies.

References