An Empirical Investigation into Understanding the Business Value of Business Analytics

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Completed Research - Extended Abstract

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Motivation

As organizations venture into their digital transformation journey, Business Analytics (BA) plays a key role in making it successful. Leading companies are using their BA capabilities not only to improve their core operations but also to launch entirely new business models. Although data and BA are transformational, yet many companies are capturing only a fraction of their value (Manyika, 2017). In a survey conducted by McKinsey in 2016, among 500 executives from different industries and regions, more than 85% acknowledged that they were only *somewhat* effective in meeting goals for their analytics initiatives (Brown and Gottlieb, 2016). Identifying and quantifying the business value of analytics is paramount to understanding the business outcomes from BA investments (Costello, 2018). Through a survey of organizations deploying BA, we have arrived at Analytics Technology Assets, Analytics Capability and Analytics Capability Enhancers as the underlying factors for business value creation. These factors have been found to positively influence organization's business performance. These findings would enable organizations to identify and focus on appropriate factors to leverage their investments in BA.

Research Agenda

This study develops a testable model to understand business value creation from business analytics investments. From prior studies in IT, it has been found that IT capability plays a significant role in business value creation. We extend this work to business analytics and draw on the resource-based view of the firm, to develop a framework for understanding the mechanisms of business value creation using business analytics. As a way of framing this study, we have adapted Krishnamoorthi and Mathew's (2018) model of business value of business analytics as in Figure 1. In the research context framed by Figure 1, the research questions we seek to answer in this paper are: What are the antecedents of business value creation using BA? What are the paths and mechanism through which BA contributes to business value of firms? Through the answers to these questions, we will also be able to understand the mediating & moderating effects of Analytics Resources (Analytics Technology Assets and Analytics Capability) and Analytics Capability Enhancers on the business performance.

Method

To develop and test the theoretical model proposed by Krishnamoorthi and Mathew (2018), a number of constructs and their associated measures were identified from the extant literature. Research model consisted of three second order constructs, formed by 19 first order constructs, further containing a layer of indicators. Based on the instrument developed using these constructs and their validated measures, we created a survey targeted at CIOs, CAOs, and senior management of organizations deploying BA. Due to the nature of the audience targeted, we floated the survey in a popular professional networking site and reached out to known respondents first and then subsequently spread the request to complete the survey through virtual snowball sampling. We received 118 complete and valid responses. The model was tested empirically using partial least squares structural equation modeling (PLS-SEM) based on the survey data.
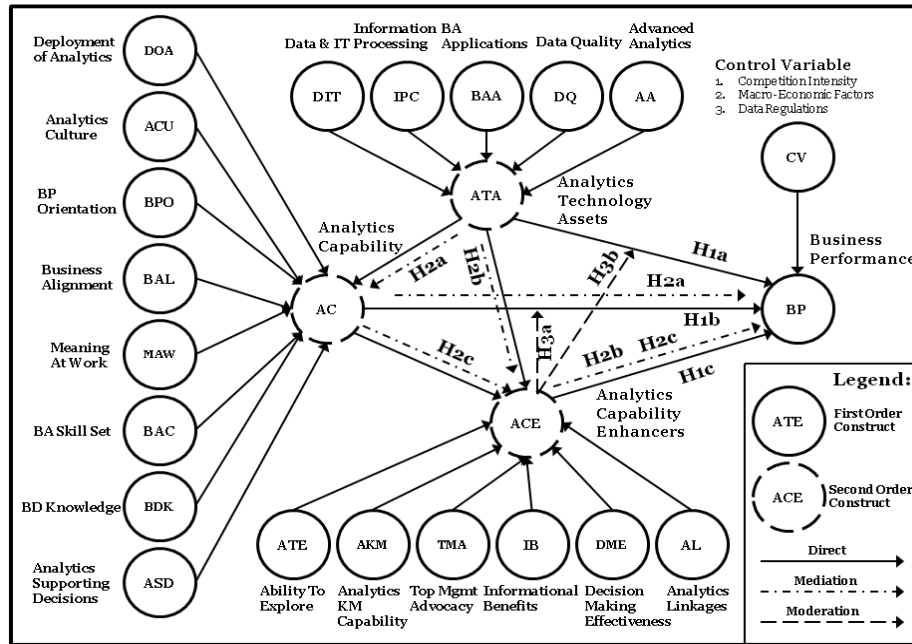
Figure 1. Research Model & Hypotheses

Results

The Analytics Capability ($R^2 = 0.716$) had an impact on the Analytics Capability Enhancers ($R^2 = 0.862$) as well as Business Performance. This again further positively influenced the Business Performance through Analytics Capability Enhancers, with Business Performance explained substantially ($R^2 = 0.721$). All of Analytics Technology Assets, Analytics Capability and Analytics Capability Enhancers were found to have positive influence on the Business Performance of the organization. They were all significant at $p < 0.001$ with β values 0.243, 0.6 and 0.507 supporting H1a, H1b and H1c respectively. Mediating effects of Analytics Capability and Analytics Capability Enhancers resulted in partial mediation for Analytics Technology Assets as well as Analytics Capability with none of the hypotheses (H2a, H2b and H2c) being supported. Moderation effects related to both Analytics Technology Assets and Analytics Capability were supported with Analytics Capability Enhancers playing the moderating role. The analysis supported H3a ($\beta = 0.097$, t = 2.321, $p < 0.05$) and H3b ($\beta = 0.122$, t = 2.817, $p < 0.05$).

Conclusion

This study has produced some very useful results for the academic as well as the practitioner community by validating the paths and establishing the mechanism of how the business analytics contributes to the business value of the organization, clearly confirming the antecedents of business value creation as analytics technology assets and analytics capability. It has also established that the analytics capability enhancers play a very influencing role in converting the effects of analytics technology assets and analytics capability into business performance, especially when organization's analytics capability maturity is advanced. Findings about enhancers is new and very important to organization's executive management for understanding and applying the levers for enhancing the business value derived from BA.

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