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Big Data Analytics Assimilation: The Role of Institutional Pressures

Research-in-Progress

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Abstract

Big Data Analytics has received considerable attention in recent years. However little is known concerning the usage and dissemination of big data analytics in organizations. This research-in-progress study tries to explore the impact of institutional pressures on the big data analytics assimilation as a three-stage process including initiation, adoption, and routinization.

Keywords

Big data analytics, institutional pressures, big data analytics assimilation.

Introduction

Big Data Analytics (BDA) and the related field of business intelligence have been embraced in academia and industry during the past two decades (Fichman et al. 2014; Ghasemaghaei et al. 2017, 2018; Raguseo and Vitari 2018). However, research on understanding the antecedents of BDA assimilation is scant. Hence, investigating the factors that influence BDA assimilation warrants further research. This study defines BDA assimilation as a three-stage process including (1) an organization's initial evaluation of BDA at the pre-adoption stage (initiation), (2) its formal adoption, and (3) its wholly implementation at the post-adoption stage in which BDA is an integral part of an organization's activities (routinization). Previous studies argue that external factors have a significant contribution in the process of assimilation of new technology (Wen et al. 2009; Zhu et al. 2003, 2006). However, there is still a lack of understanding of the impact of external factors on BDA assimilation stages; this study is an attempt to address this "unknown" in the literature.

While discussing the influence of external factors, institutional theory especially draws attention (Liang et al. 2007). Based on the institutional theory, mimetic, coercive, and normative pressures could have critical roles in BDA assimilation. Therefore, the first objective of this study is to explore the effect of each pressure on the process of BDA assimilation. Previous studies also argue that when understanding the technology is difficult for organizations, mimetic pressures can have the more significant impact on adopting that complex technology (Barczak et al. 2007; DiMaggio and Powell 1983; Teo et al. 2003). Therefore, the second objective of this study is to investigate the moderating role of big data complexity in the impact of mimetic pressure on BDA assimilation.

Theoretical Background

Institutional Theory

Based on the institutional theory, the primary purpose when organizations make decisions is attaining greater legitimacy from the stakeholders in its environment (DiMaggio and Powell 1983; Hirsch 1975; Meyer and Rowan 1977). To the best of our knowledge, in the context of BDA, there is not any study that investigates the impact of institutional pressures on BDA assimilation. Hence, in this study, we use the institutional theory as a theoretical lens to investigate the impact of mimetic, normative, and coercive forces as the institutional pressures on BDA assimilation.

Diffusion of Innovations Theory

Diffusion is the process through which an innovation technology disseminates among organizations over time (Rogers 2003). Consistent with the Information Technology (IT) literature, an important motivation for an organization to adopt IT innovation is its potential to increase the performance within the organization value chain (Ghasemaghaei 2018; Porter 1985). Employing this perspective to BDA, the present study considers initiation, adoption, and routinization as three stages of BDA assimilation.

Drawing on the institutional, and diffusion of innovations theories (DiMaggio and Powell 1983; Rogers 2003) we conduct a study to explore the role of external institutional pressures on BDA assimilation within organizations.

Methodology

Research Methodology

We will use a cross-sectional survey of IT professionals at the managerial level to evaluate the impact of institutional pressures on the process of BDA assimilation. The research will consider control variables such as industry type, data analytics type, firm size, firm age, IT department size, IT budget size, BDA awareness, and firm profitability. The survey instrument will be provided by incorporating appropriate measurement scales from the literature. For all constructs, we will assess convergent validity and discriminant validity (Fornell 1994). The study will validate a research model using structural equation modeling techniques.

Conclusion

This study makes both theoretical and practical contributions to the nascent body of knowledge in BDA assimilation. The research utilizes the institutional theory and diffusion of innovation theory to explore the effects of institutional pressures on BDA assimilation through the process of initiation, adoption, and routinization. The findings of this study also help firms' managers to identify the most critical institutional pressures that affect the BDA assimilation within their firms. Moreover, the moderating impact of big data complexity enables organizations to understand better whether the complexity of processing and integrating big data have any vital role in the impact of mimetic pressure on BDA assimilation.

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