Big Data and Analytics: Why an IT Organization Requires Dedicated Roles to Drive Sustainable Competitive Advantage

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ABSTRACT

Big Data and Analytics have become key concepts within the corporate world, both commercially and from an information technology (IT) perspective. This paper presents the results of a global quantitative analysis of 400 IT leaders from different industries, which examined their attitudes toward dedicated roles for an Information Architect and a Data Scientist. The results illustrate the importance of these roles at the intersection of business and technology. They also show that to build sustainable and quantifiable business results and define an organization’s competitive positioning, both roles need to be dedicated, rather than shared across different people. The research also showed that those dedicated roles contribute actively to a sustainable competitive positioning mainly driven by visualization of complex matters.

KEYWORDS


INTRODUCTION

Technologies including the Internet of Events, the Internet of Things, Telematics, and Radio Frequency Identification (RFID) create massive amounts of personal and business data at any given moment in time: data that can make a significant contribution to business success (Mayer-Schonberger & Cukier, 2013; Wahi, Medury, & Misra, 2015). The research area falls under the term Analytics but is nowadays usually referred under the term Big Data (McAfee & Brynjolfsson, 2012). Researchers and practitioners have begun to pursue initiatives seeking to shed light on how best to create a sustainable commercial advantage by leveraging information drawn from Big Data. Furthermore, the importance of that information for decision-making processes has been the focus of additional research around the possible organizational implications of data insight (Davenport & Dyché, 2013). Davenport & Dyché (2013) state that Big Data has the potential to revolutionize management by speeding up decision making and improving its accuracy in support of sustainable business growth. Nevertheless, there is consensus among authors that the right organizational model needs to be in place, with the right capabilities provided by the right type of employee (Accenture, 2012; Kundu & Garg, 2015).

Multiple papers have analyzed the importance of organizational roles and processes in different business departments (Kundu & Garg, 2015; Mayer-Schonberger & Cukier, 2013; Nair & Narayanan, 2012; Xia, 2015) but this paper analyzes the influence of Analytics and Big Data on the organizational structure of an IT organization. It looks specifically at whether dedicated IT roles are required to
manage Analytics and Big Data, or whether sharing responsibilities across existing roles is sufficient. The research builds on a qualitative study conducted by Krimpmann (2015), which analysed the organizational dimensions that need to be assessed when designing an IT organization capable of handling the new challenges of a digital world. Research from van der Aalst (2014), who was one of the first authors to define the role of Data Scientist, and Wusteman (2013), who in parallel was one of the first to discuss the role of an Information Architect, was used as a starting point for this paper, which is based on responses from 400 global IT leaders who were asked if the two roles should be dedicated, shared across existing roles, or even shared across an entire organizational function.

THEORY

The massive amount of data now available raises the question of how companies can make efficient use of what lies behind their business processes. Interactions between IT and business structures within the organization would appear to be necessary. This paper investigates how a dedicated Data Scientist and a dedicated Information Architect could add a new and connective strategic element to the organizational structure.

Being in a dedicated role means identifying with specific stereotypes and integrating with an organizational classification that has a positive influence on the task at hand (Ashforth & Mael, 1989). Attributing accountability helps the work flow operate more efficiently. Yet these dedicated roles as the sustainable force for handling Analytics and Big Data are scarcely discussed in either the literature or within the IT organization. To date, such work has been largely handled by a shared group with different roles within the company. A well-balanced alignment between IT strategy and business strategy has been shown to be a decisive factor in successful IT governance (Wu, Straub, & Liang, 2015). This governance structure also has a positive impact on organizational performance. The authors therefore believe that the dedication of roles within IT is conducive to better organizational performance. This research investigates the importance of dedication and what its integration into a conceptual model might look like.

Information Architect

As part of the unit that connects business and IT, Wusteman (2013) positions the Information Architect close to the understanding of user needs via an appreciation of IT. The role is especially important when it comes to business decisions based on data outcomes and customer demands.

The Information Architect’s primary role is to mediate between internal information and external concerns by considering information obtained from data analyses (Rosenfeld & Morville, 2002). His or her principal focus is on improving users’ experiences and helping users find information in a complex environment as quickly and easily as possible: hence the importance of closeness to the user.

Organizing information and understanding the customer’s point of view requires the Information Architect to change the point of view for several tasks. Furthermore, because the structuring and labelling of information is a competitive aspect in the technology industry, IT is able to change the competitive force in different ways; for example by differentiating from new entrants in the market (Galiers & Leidner, 2014). In general, the architecture in business information systems should be structured to encourage the creation of products. The process chain supports the business information system significantly (Scheer, 2012). An effective information system can support processes and people working with them. This results in different tasks for an Information Architect, depending on external activities or handling processes within the company.

Ward & Peppard (2016) identify four types of strategic systems that are important for handling information within an organization: systems “that share information via technology based systems with customers/consumers and/or suppliers and change the nature of the relationship”; systems that “produce more effective integration of the use of information in the organization’s value-adding processes”; more product-based systems “that enable[…] the organization to develop, produce,
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