

Chapter 5

Understanding the Influence of Business Intelligence Systems on Information Quality: The Importance of Business Knowledge

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ABSTRACT

The IS literature has long highlighted the positive impact of information provided by Business Intelligence Systems (BIS) on decision-making, particularly when organizations operate in highly competitive environments. The primary purpose of implementing BIS is to utilize diverse mechanisms to increase the levels of the two Information Quality (IQ) dimensions, namely information access quality and information content quality. While researchers have traditionally focused on assessing IQ criteria, they have largely ignored the mechanisms to boost IQ dimensions. Drawing on extant literature of BIS and IQ, the research sought to understand how, at its present level of development, BIS maturity affects IQ dimensions, as well as the role that business knowledge may exert in mobilizing this link. The authors test the hypotheses across 181 medium and large organizations. Interestingly, the data describe a more complex picture than might have been anticipated.

INTRODUCTION

In a decision-support context, business intelligence systems (BIS) emerged as a promising technological solution with a wide range of analytical capabilities to provide stakeholders at various

organizational levels with valuable information for their decision-making. When properly used, BIS assist management in developing a data-based decision-making environment that provides more consistent results compared to non-business intelligence (BI) methods. Although business value of

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BIS can only result from changes and innovations in ways of working (Peppard, Ward, & Daniel, 2007), it can be achieved indirectly through the utilization of improved (quality of) information. Hence, it is crucial to understand the means by which BIS improve information quality (IQ) and the factors that affect the ability to increase the success of BIS initiatives in terms of IQ improvement.

While implying that the biggest problems of providing quality information for knowledge-intensive activities relate to information content quality rather than information access quality (Davenport, Jarvenpaa, & Beers, 1996; Strong, Lee, & Wang, 1997), it was previously suggested that at the current level of development BIS implementation projects do not adequately address the information content quality problems (Popovič, Coelho, & Jaklič, 2009). Thus, there still exists a gap between the quality information provided by BIS and the IQ expectations of knowledge workers when using information. Clearly, in order to improve the information content quality organizations need to primarily identify as accurately as possible knowledge workers' needs. This is a difficult task due to the non-routine and creative nature of knowledge workers' activities and requires an in-depth understanding of managerial business processes, knowledge of contemporary managerial concepts, and capabilities of BI technologies to improve the managerial and operational business processes.

Our research aims to address the question of how can business knowledge for BI initiatives contribute to narrow the previously mentioned IQ gap. The purpose of this work is therefore to explore the role that business knowledge may play in mobilizing the link between BIS maturity and resulting IQ dimensions.

The outline of the paper is as follows: In the next Section we introduce the fields of BIS maturity, IQ, and the role of business knowledge in development of BIS. Next, we develop the hypotheses and present the methodological framework for the study. The proposed research model and

hypotheses are then tested. Lastly, we conclude with a discussion of the main findings and future research directions.

Business Intelligence System Maturity, Information Quality, and the Role of Business Knowledge

While the significance of organizational performance is widely recognized in the literature (Richard, Devinney, Yip, & Johnson, 2009), empirical studies suggest business strategies are an important determinant of organizational performance (McAdam & Bailie, 2002; Singh, Darwish, Costa, & Anderson, 2012). Successful business strategies are inherently dependent on the skills of the "company management team's ability to implement the strategies" (Herring, 1992, p. 54). However, the strategy can be no better than the information from which it is derived. The more complete and farsighted the information, the more likely the strategy is to be successful. According to Herring (1992), two basic categories of information are required for formulating the strategy: 1) information and data about the organization's resources and capabilities; and 2) relevant information about the organization's business environment, including customers, competitors, the industry structure, and other competitive forces that shape the markets in which the organization competes. Nevertheless, literature warns against the considerably varying quality of the two presented sets of information. As Herring has already suggested, organizations possess relatively complete "information about their own capabilities and resources", but "only a few firms allocate sufficient resources to collect and analyze the information" (1992, p. 54) about their business environment.

Business Intelligence

To service knowledge workers' complex information needs, BIS emerged as a technological solution offering organizations the required data

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