

Chapter 19

Business Intelligence System Design and its Consequences for Knowledge Sharing, Collaboration, and Decision–Making: An Exploratory Study

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ABSTRACT

This exploratory study analyses the effects of the technical and organisational characteristics of business intelligence systems (BIS) on knowledge sharing, collaboration, and decision-making processes. The authors conducted a two-phase multi-method investigation. First, we surveyed 30 enterprises using BIS on a regular basis; then, we engaged in an in-depth case study with one of the respondent companies. Our results show that, on average, the technical and organisational characteristics of the BIS are positively associated with an increase in knowledge sharing, leading to an improvement in internal collaboration that subsequently brings improvement in the quality of decision-making. This case study adds that the way the BIS is designed and appropriated in organisations is important in obtaining such results is. A BIS being designed so that it can be appropriated by the general employee base is key in obtaining the desired organizational impacts. This suggests some requirements for BIS design that we will discuss in terms of theoretical and managerial implications.

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INTRODUCTION

Business intelligence was first defined as “the ability to apprehend the interrelationships of presented facts in such a way as to guide action towards a desired goal” (Luhn, 1958, p. 315). Even in this new era of big data,¹ this definition still holds true today, for the way business intelligence systems (BIS) are perceived, interpreted and used, in the large majority of organisations (that are not ready nor need big data analysis). Business intelligence covers several processes and technologies (data mining, data warehouses and online analytical processing [OLAP]), and involves the tools and systems that play a vital role in information dissemination, knowledge sharing and action guiding in organisations (Barakat, et al., 2013). These systems allow a company to gather, store, access and analyse corporate data to aid decision-making. As highlighted by Parry and Graves, “knowledge is a fluid mix of experiences, value, contextual information and expert insight offering a framework to evaluate and integrate new experiences and information” (2008, p. 429). BIS help organisations generate meaningful knowledge shared across the whole organisation, in order to perform short and long-term strategic planning (Williams & Williams, 2006).

However, the fact that BIS—as the systems that support and provide business intelligence—focus so heavily on the interrelationship of facts has clearly influenced the way the applications and databases have been built—namely, to provide cross-functional, cross divisional, interrelated data analysis. Over time, BIS have become more complex, and have started to include knowledge management systems and executive information systems (Clark, et al., 2007). In turn, the interrelated nature of the data analysis has increased the expectation for interrelated results. Indeed, BIS have often been assumed, in theory and practice, to take the role of the collaboration processes facilitators (Clark et al., 2007). This is achieved through the ability of BIS to promote a knowledge-sharing process, defined as the actual process of sharing information, skills and expertise across the members of different groups or organisations (Barakat et al. 2013). Computer-based systems help facilitate such activities (Tsui, 2003), and BIS, in particular, tend to emphasise these aspects. In other words, knowledge sharing can be considered the ability to transform the information into an asset, shared across different levels and departments of the organisation independently, by the person or organisation unit where the information was created.

Over time, the study of the effect of technology on organisational and decision processes has become very varied, including multiple types of technologies (Leidner & Kayworth 2006; Bailey, Leonardi & Chong, 2010). The result of this evolution has been that the role of BIS—as systems that allow increased knowledge sharing, enable an increased level of collaboration and favour quality decision processes—has been often equalised to that of all other information technologies. Whether by design, research or simple wishful thinking, the relationship between BIS and collaboration and knowledge sharing has been black-boxed, in favour of the rather deterministic view that BIS, if simply implemented correctly, will lead to improved decision-making processes.

The phenomenon of black boxing information technology is well known, and surprisingly common in information systems research (Orlikowski & Iacono, 2001; Leonardi & Barley, 2008). Only recently have researchers attempted to unpack the relationship between technology and collaboration, knowledge sharing and decision-making processes in organisations (Bailey et al., 2010; Chen, et al., 2012). However, relatively few studies directly address the relationship between BIS technical features and organisational demands, and their effect on decision-making processes. This problem appears to be increasingly serious in this period in which big data, as the latest incarnation of BI, is slowly rising as the new analysis paradigm. Organisations are experiencing a transitional period between traditional

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