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How information-sharing values influence the use of information systems: An investigation in the business intelligence systems context

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ABSTRACT

Although the constituents of information systems (IS) success and their relationships have been well documented in the business value of information technology (IT) and strategic IS literature, our understanding of how information-sharing values affect the relationships among IS success dimensions is limited. In response, we conduct a quantitative study of 146 medium and large firms that have implemented a business intelligence system in their operations. Our results highlight that in the business intelligence systems context information-sharing values are not directly linked to IT-enabled information use, yet they act as significant moderators of information systems success dimensions relationships.

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Introduction

The potential of information systems (IS) to improve decision-making and advance organizational performance has been emphasized in the information technology (IT) business value literature for quite some time (Davern and Kauffman, 2000; Melville et al., 2004; Mithas et al., 2011; Nevo and Wade, 2011). In firm performance studies, IS have been found to support timely decisions, provide information that enhances comparative advantage, promote innovation, and offer a means to manage the uncertainty inherent in the business environment (Daft and Lengel, 1986; Dewett and Jones, 2001; Melville et al., 2004; Thong, 1999). High quality information, i.e. information that is relevant, reliable, accurate, and timely (Low and Mohr, 2001; Popovič et al., 2012; Wixom and Todd, 2005), enables improvements in decision quality and can, in turn, promote improvements in firm performance (Raghunathan, 1999). To leverage the benefits of high quality information, firms are therefore increasingly investing in IT and infusing different technologies into firms' processes.

In the IS and business intelligence (BI) literature business intelligence systems (BIS) are well recognized as contributing to decision-making, especially when firms operate in highly competitive environments (Popovič et al., 2012). BIS are most commonly identified as technological solutions holding quality information in well-designed data stores, connected with business-friendly tools that provide users – incumbents of executives, managers, business analysts and other roles within a firm

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utilizing BIS-enabled information for analytical decision making – with timely access to as well as effective analysis and insightful presentation of the information generated by enterprise-wide applications, enabling them to make the right decisions or take the right actions (Elbashir et al., 2008; Popovič et al., 2009). In investigating the business value of BIS, existing studies suggest BIS enable enhancements in firms' strategic planning and business processes, improvements in performance, and the building of competitive advantage (Negash and Gray, 2008; Popovič et al., 2012; Shanks et al., 2012) whereas time savings and better information for supporting decision-making are considered the main direct benefits of implementing BIS (Watson et al., 2002). BIS are typical complex IS and are rated among the top 10 strategic technologies (Gartner, 2012). They have also been identified as the most important key issue for CIOs (Luftman and Ben-Zvi, 2010). Firms devote significant resources and effort to implementing BIS to leverage their business value and enhance competitive advantage (Davenport et al., 2010; Negash and Gray, 2008).

Researchers increasingly claim that leveraging such performance benefits depends less on possessing the technology and more on the ability to best use the information in decision-making processes (Bosilj Vukšić et al., 2013; Davenport and Beers, 1995; Diamantopoulos and Souchon, 1999; Rindfleisch and Moorman, 2001). From a BIS perspective, a key form of information use is instrumental utilization, which refers to the range of organizational outcomes and impacts that are a direct result of the applications of information (Todd, 1999). Failing to utilize BIS-enabled information may lead to strategy blindness (Arvidsson et al., 2014) when a firm is unable to effectively exploit its available system capability (Arvidsson et al., 2014). Thus, BIS management activities that will increase the use and utilization of BIS need to become a part of the mainstream activities of executives (Galliers, 1991) in order to achieve a strategic impact. The successful implementation of the strategic change associated with system use is a critical challenge (Arvidsson et al., 2014), yet research addressing strategic BIS management issues, such as system adoption, its acceptance, and utilization for long-term success, is still scarce (Alhyasat and Al-Dalahmeh, 2013). The business value of IT/IS, IT/IS impacts on organizational and individual performance, IT/IS management, IT/IS implementation, and IT/IS adoption were identified in the past as key areas in the field of strategic IS research (Gable, 2010; Galliers et al., 2012). Recently, BI was identified as a promising research area in strategic IS milieu (Gable, 2010) and broader IS research (Chen et al., 2012). Although considered a topical area in the strategic IS field (Gable, 2010), to date only a handful of studies (e.g. Dinter, 2013; Işık et al., 2013) deal with "strategies for IS issues" in the BIS context. By emphasizing the role of employees' trust in information sharing and, consequently, its impact on effective BIS exploitation, this study fits into the strategic IS research agenda where works concerning trust-related issues have been encouraged (Gable, 2010). In addition, this study answers the call by Besson and Rowe (2012) to explore how the mechanisms of organizational transformation as certain behaviors, in our case varying levels of information sharing, result in the wider routinization of fact-based decision-making within organizations (i.e. the effective use of information).

Studies on the relationships between IS quality, information quality and their respective use have produced equivocal findings (e.g. Auster and Choo, 1993; Bokhari, 2005; Menon and Varadarajan, 1992; Todd and Benbasat, 1992). Scholars have therefore highlighted the role within firms of organizational factors that drive these relationships. One such increasingly considered organizational factor is information culture (Choo, 2013; Curry and Moore, 2003; Ginman, 1988). We understand information culture as a subset of the overall organizational culture *in which the value and utility of information in achieving operational and strategic success is recognized* and *where information forms the basis of organizational decision-making* (Curry and Moore, 2003). Information culture encompasses socially shared behaviors, norms, and values that define the importance, management, and utilization of information in a firm (Choo et al., 2008). To profile a firm's information culture, researchers emphasize various information behaviors and values, namely information integrity, information formality, information control, information sharing, information transparency, and proactiveness (Choo, 2013; Marchand et al., 2000). These behaviors and values are able to explain significant parts of the variance in information-use outcomes (Choo, 2013).

Existing studies indicate information sharing plays an instrumental role in BIS implementation and later in the realization of intended capabilities because BIS are inherently data-centric systems with a particular focus on data integration and sharing (Popovič et al., 2012) at either the departmental/process or enterprise level. The prevalent information-sharing values are believed to be inherently good (Gupta and Govindarajan, 2000) as they help reduce uncertainty (Galbraith, 1974) and may increase the motivation to use information (Hwang et al., 2013). Emphasis is therefore increasingly placed on the underlying mechanisms that link investments in IS, the quality of their information and the firm's information-sharing values to information use (Marchand et al., 2000). In contrast, the most common cause of resistance to information sharing is the fact that it may also lead to an increased sense of being under control (Crant, 2000).

Despite growing recognition of the value BIS utilization can bring to firms and the recent developments in the BIS discipline in both the academic and the business communities (Chen et al., 2012), our understanding of how information sharing influences BIS use and information use remains limited (Choo, 2013; Popovič et al., 2012). To address this gap, we conducted an empirical investigation using key informants, specifically decision-makers (i.e. incumbents of professions like managers, information analysts, strategists, and executives) in medium and large firms that use BIS to inform their decisions. We explored: *How do information-sharing values guide decision-makers' intended use of BIS-enabled information?*

We make two contributions to the BI and IT business value literature. First, we find that the greater the perceived quality of information provided through BIS, the greater the intended use of information in decision-making, while the improved BIS quality is not directly reflected in the increased use of information. Second, we recognize information-sharing values as a significant information-culture dimension shaping the BIS value relationships.

The remainder of this paper is organized as follows. We first set out the theoretical background of our research. More specifically, we examine existing studies on BIS, information use, and information-sharing literature. We then outline the