Organizational improvisation and the reduced usefulness of performance measurement BI functionalities

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ABSTRACT

Firms are increasingly turning to business intelligence (BI) systems to support their management control activities, while management accounting researchers are increasingly focused on studying beneficial roles of such systems. The extant research focusses on how performance-enhancing effects of BI systems occur via enhanced managerial learning and knowledge creation. The research has however failed to consider how managerial learning and knowledge creation processes can be shaped by fundamental organizational contingencies. This paper ventures into this unexplored space to consider how organizational improvisation may moderate beneficial roles played by BI. We derive the concept of “semi-structuring heuristics” and apply it to theorize that the impact of BI functionalities on performance measurement capabilities is negatively moderated by organizational improvisation. Our hypotheses include two BI constructs (BI-planning functionality and BI-reporting functionality) and two organizational improvisation competences (strategic momentum and organizational flexibility). We test our hypotheses with partial least squares procedures using survey data from 324 top-level managers. We find that BI-planning functionality has a positive effect on performance measurement capabilities that is negatively moderated by both organizational improvisation competences. The only significant effect of BI-reporting functionality is as a positive moderator of the effect of BI-planning functionality. Organizational improvisation competences are quite common and entail managers using only “minimal forms” of performance measurement information. By implication, if the term BI “functionality” connotes usefulness and fitness-for-purpose, then this term appears a misnomer in contexts reliant on organizational improvisation.

1. Introduction

Management accounting researchers have increasingly focused on the role of business intelligence (BI) in packaging and enhancing management control systems.\textsuperscript{1} The emerging literature links BI to positive organizational outcomes via beneficial roles in performance measurement capabilities and interrelated organizational learning processes (Elbashir et al., 2008, 2011, 2013; Lee and Widener, 2016; Peters et al., 2016; Prasad and Green, 2015). The overarching emerging perspective is that BI functionality provides

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\textsuperscript{1}The term business intelligence (BI) refers broadly to management support systems for gathering, storing, and accessing data for decision making (Clark et al., 2007). BI systems are distinct from executive information systems, knowledge management systems and decision support systems (Clark et al., 2007). In this paper we use the term BI in reference only to the category that is specific to business unit performance measurement (Chaudhuri et al., 2011). Other types of BI – such as data mining, predictive analytics and text analytic engines (Chaudhuri et al., 2011) – are outside the scope of this research.

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more performance measurement data, which enables more managerial processing of performance measurement information, which leads to more managerial and organizational learning (e.g., Peters et al., 2016). However, research has not addressed the lingering issue of whether such beneficial roles of BI functionality vary in conditions of heightened strategic and adaptive action (Chapman and Kihn, 2009; Orlikowski, 1991).

The purpose of this study is to examine whether the usefulness of BI functionality is altered by competences for organizational improvisation. We study two specific competences for organizational improvisation: strategic momentum (for enacting strategic action) and organizational flexibility (for enacting adaptive action). In the domain of practice it is often argued (for example by BI software vendors) that such competences are enhanced by BI functionality (Kiron et al., 2012), while in academic literature remains an open question (Chapman and Kihn, 2009). These two competences also warrant study because they are important: they can be sources of competitive advantage and can lead to substantial organizational development over time (Argote, 2013; Crossnan et al., 2005; Orlikowski, 1996).

This research is grounded in organizational improvisation theory (Bingham and Eisenhardt, 2011; Brown and Eisenhardt, 1997; Crossnan et al., 2005; Cunha et al., 2015; Kanoche and Cunha, 2001). Organizational improvisation is a polymorphous concept of which we focus on semi-structured forms, as they have the clearest links to performance measurement capabilities (Brown and Eisenhardt, 1997; Cunha et al., 2015). We conceptualize strategic momentum (Miller and Friesen, 1980) and organizational flexibility (Volberda, 1996) as the creativity and spontaneity variants of semi-structured organizational improvisation respectively (Crossnan et al., 2005; Cunha et al., 2015). We derive and apply the concept of semi-structuring heuristics: managerial hierarchies learn competences for semi-structured improvisation (Cunha et al., 2015), including heuristics (Bingham and Eisenhardt, 2011) used when processing performance measurement information. When applying semi-structuring heuristics managers process only minimal forms of performance measurement information. These minimal forms provide minimal structures for the processes of enacting improvisation (Kanoche and Cunha, 2001; Weick, 1989).

Our hypotheses examine the effects of BI-planning functionality and BI-reporting functionality separately (Peters et al., 2016). The prior research has studied BI functionality as a higher-level construct that combines BI-planning with BI-reporting. In this study these two types of BI are disentangled, because of potential differential effects in light of organizational improvisation, and also in case of potential implications for BI adoption decisions for practitioners. For each type of BI, functionality ranges from “low” (spreadsheet-based) to “high” (specialist applications). Our theorizations lead to hypotheses in which positive effects of BI-planning functionality and BI-reporting functionality are expected to be negatively moderated by competences for organizational improvisation.

We test the hypotheses with survey data from top management team members representing 324 business units, using structural equation modeling–partial least squares (SEM–PLS) procedures. We find that BI-planning functionality has a positive main effect on performance measurement capabilities, and that this effect is negatively moderated by both strategic momentum and organizational flexibility. BI-reporting functionality exhibits no such main or moderated effects. We also find a positive joint effect of BI-planning functionality and BI-reporting functionality. In summary, we find that the positive effect of BI-planning functionality is reduced by organizational improvisation, and enhanced by BI-reporting functionality.

This study extends the performance measurement capabilities and BI functionality section of the theoretical model put forth in Peters et al. (2016) in two important ways. First, this study separately examines the effects of BI-planning functionality and BI-reporting functionality on performance measurement capabilities. The prior literature views these functionalities as working in concert, but ignores the differences across the two aspects of functionality as organizational contingencies vary. BI systems are not a monolith and clarifying conceptual distinctions is important, not least because clear concepts are fundamental to strong and clear theories (Suddaby, 2010). This study clarifies that BI-reporting functionality only impacts performance measurement capabilities by positively moderating the effect of BI-planning functionality. Thus, this study enhances our understanding of how BI-based management control systems design concepts relate to performance measurement capabilities.

The second way that this study extends Peters et al. (2016) is by contributing a moderating-effects logic based on competence-based heuristics. With the semi-structuring heuristics notion we develop a moderating-effects logic that helps mature the literature beyond its sole reliance on mediation models (Chapman and Kihn, 2009; Elbashir et al., 2008, 2011, 2013; Lee and Widener, 2016; Peters et al., 2016; Prasad and Green, 2015). This moderating-effects logic embraces contemporary views that perceive heuristics as rational rules of thumb that guide organizational processes and competences, and rather than being just cognitive shortcuts such heuristics can be more effective than information-intensive approaches to organizing (Bingham and Eisenhardt, 2011). This is in step with the broader referral literature where contingency factors are evolving from traditional entitative (i.e., ‘static’) views of structure to processual competences for structuring (McGrath, 2006). This theory advancement also provides a complementary perspective to Lee and Widener (2016) who articulate how managerial cognition is shaped by the qualities and quantities of data available from BI systems. Competence-based heuristics explain how the cognitive processes involved in using BI systems can also be socially constructed from the process experiences of the organization (Bingham and Eisenhardt, 2011).

This study also has implications for practice. Vendors often assert that high functionality BI systems provide higher quality information for strategic decision making and organizational flexibility (Kiron et al., 2012). Yet, as Elbashir et al. (2013) note, there are many reports of disappointment following BI systems implementations in practice. The results of this study indicate that high functionality BI systems are of very limited usefulness for performance measurement capabilities in contexts where organizational improvisation is prevalent. By implication, the potential importance of BI functionality for enhancing organizational performance (e.g., Peters et al., 2016) is also much reduced in contexts where organizational improvisation prevails. Our data shows that competences for organizational improvisation are quite common. In firms that are in the early stages of developing competences for organizational improvisation, managers need to learn to select and process only minimal forms of performance measurement
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