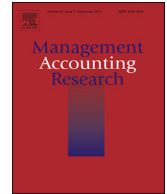




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## An exploratory study of the reciprocal relationship between interactive use of management control systems and perception of negative external crisis effects

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### ABSTRACT

The use of management control systems (MCS) is shaped by perceptions of the environment. Next to this traditional view, some studies suggest that MCS use simultaneously shapes environmental perceptions. In other words, there is a reciprocal relationship between MCS use and environmental perceptions. We investigate this relationship in the 2008–2010 economic crisis. This study examines whether the perception of negative external crisis effects affects the interactive use of MCS on the organizational level. It also explores whether an interactive use of MCS during an economic crisis influences the perception of negative external crisis effects. The direction of causality is difficult to assess from cross-sectional data. Thus, we apply a cross-lagged panel design using data from two (time-lagged) surveys. The results show that perception of negative external crisis effects leads to more interactive use of MCS. Moreover, our findings support a positive effect of the interactive use of MCS on senior managers' perception of negative external crisis effects. Furthermore, we provide practitioner statements that illustrate the interactive use of MCS in times of economic crisis.

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### 1. Introduction

A crisis is usually associated with a substantial threat to an organization (Weick, 1988), a lack of resources to respond to it (Khandwalla, 1978), little time for response (Hermann, 1963), a high degree of uncertainty (Pearson and Clair, 1998) and an ill-structured situation (Turner, 1976). Organizations encounter such challenges during crises like the worldwide economic downturn of 2008–2010 (Magnan and Markarian, 2011; Mangena et al., 2012; Van der Stede, 2011). The 2008–2010 economic crisis led to unexpected drops in demand within a few months, posing a threat to many organizations (Federal Statistical Office, 2011; Guillen, 2009; James et al., 2011; *The Economist*, February

19, 2009). Moreover, the extremely volatile business conditions also created an ill-structured and uncertain situation (Guillen, 2009; Muurlink et al., 2012; Parnell et al., 2012; Van der Stede, 2011; Zona, 2012). The crisis enveloped economies on a global scale and was not confined to a single industry or organization in contrast to, for instance, failed strategies, succession issues, shifts in technology or catastrophes (Grewal and Tansuhaj, 2001).

In the literature, external crises are typically defined by originating outside an organization – such as economic downturns, cash flow problems or political turmoil (James et al., 2011; Mitroff et al., 1988). The 2008–2010 economic crisis allows analysis of simultaneous responses to an external crisis for a large number of organizations.

Scarce knowledge exists on the changes that management control systems (MCS) undergo as a result of externally induced organizational crisis situations, particularly for economic crises (Collins et al., 1995; Ezzamel

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and Bourn, 1990; Hopwood, 2009).<sup>1</sup> In a qualitative study of a Swedish organization, Olofsson and Svalander (1975) find that the reporting of internal financial information broadens as a consequence of an external crisis associated with an economic downturn. Further, a single case study of a UK university facing threatening prospects caused by drops in external financing indicates that the use of the accounting information system (AIS) shifts from an “answering machine” to an “idea generating machine” in a crisis (Ezzamel and Bourn, 1990). Results of quantitative studies suggest that firms following a prospector strategy use their budgeting to a greater extent in times of perceived external crisis (Collins et al., 1997). Moreover, in young firms, the experience of externally caused cash flow crises is correlated with the introduction of cost management methods (Reid and Smith, 2000). Both of these quantitative studies consider potential reciprocal causal effects, hinting that the MCS may affect the perception of negative external crisis effects. Collins et al. (1997) find evidence of such a reciprocal relationship between crisis perceptions and strategy. Furthermore, using correlation analysis, Reid and Smith (2000) mention that their study design cannot determine whether implementing cost management methods followed a cash flow crisis or if it simply brought the crisis to light. Reciprocal relationships are similarly identified by Khandwalla (1978, p. 170): “In the absence of longitudinal data, the issue of whether crisis generates certain organizational responses or vice versa remains open and invites further research.” Hence, on the one hand prior research provides evidence that organizations might change their MCS use in the wake of an external crisis and corresponding crisis perceptions (e.g. Ezzamel and Bourn, 1990). On the other hand, MCS use might have implications for the perception of negative external crisis effects (e.g. Collins et al., 1997; Reid and Smith, 2000).

We investigated this reciprocal role of MCS during the 2008–2010 economic crisis (Magnan and Markarian, 2011) by considering two questions:

- (1) How does the perception of negative external crisis effects in terms of sales declines affect the interactive use of MCS on the organizational level?
- (2) What are the consequences of interactively used MCS in terms of senior managers’ perception of negative external crisis effects?

We chose the 2008–2010 economic crisis because it offers opportunities for research that are not present in times of “normal” change (Van der Stede, 2011). In addition, the interactive use of MCS is an important and frequently analyzed variable in management accounting research (e.g. Abernethy et al., 2010; Davila et al., 2009; Marginson, 2002; Mundy, 2010; Schäffer et al., forthcoming). The interactive use of MCS is recognized to foster organizational capabilities like market orientation,

innovativeness, entrepreneurship and organizational learning (Henri, 2006; Widener, 2007). However, it is also associated with the cost of consuming managerial attention (Widener, 2007), and its importance is driven by crisis and by uncertain contexts (e.g. Simons, 1991; Widener, 2007). So far, quantitative studies have not analyzed the reciprocal effects between interactively used MCS and related variables (Luft and Shields, 2007). One potential explanation is that most management accounting survey studies are cross-sectional (Luft and Shields, 2007), whereas analysis of reciprocal causal relationships necessitates longitudinal study designs (Van der Stede et al., 2007). However, assuming merely unidirectional causal effects is often overly simplistic (Berry, 1984). Kober et al. (2007) support this view in their qualitative study describing a reciprocal relationship between interactively used MCS and strategy as a related variable.

To test the reciprocal role of interactively used MCS, we analyzed panel data from two time-lagged surveys, an approach that allowed estimating cross-lagged effect models (CLEM). These models provide simultaneous tests of reciprocal causal relations (Zapf et al., 1996). Thus, they compensate for some of the drawbacks of cross-sectional studies which cannot demonstrate cause-and-effect relationships (Khandwalla, 1978; Widener, 2007).

The contributions of this study are threefold. First, our quantitative analysis supports anecdotal evidence from prior research on a time-delayed increase in interactive use of MCS in times of externally induced crises. Thus, the limited knowledge about the change of MCS in organizations facing an economic crisis is expanded. We can answer Hopwood’s (2009) question of whether uniform patterns of MCS change can be observed in such times. Second, by applying CLEM we simultaneously test a reciprocal relationship between interactively used MCS and perceptions of the environment; in this case, the perception of negative external crisis effects. Our findings provide support for a causal effect of interactively used MCS on the perception of negative external crisis effects. Hence, MCS use is not only shaped by perceptions of the environment, but it also shapes environmental perceptions. Many studies hold the traditional view that environmental perceptions are given; however, several other studies indicate that this view is too limited (Collins et al., 1997; Reid and Smith, 2000). Our results support the idea that the perceived environment is shaped by human actions and cognitive efforts to make sense of the available information (Smircich and Stubbart, 1985). Moreover, this finding underlines the risk inherent in drawing conclusions about causal directions from cross-sectional data. Third, this study is a response to calls for longitudinal research in quantitative management studies (e.g. Pierce and Aguinis, 2013; Ployhart and Vandenberg, 2010; Van der Stede et al., 2007). To the best of our knowledge, CLEM represent a new method for survey panel data analysis in management accounting research, and this method enables stronger causal interference (Zapf et al., 1996).

The remainder of this paper is organized as follows. In the next section we present the theory and derive our hypotheses. Section 3 gives an overview of the study design and the methodology. Our study’s results are shown and

<sup>1</sup> MCS are formalized procedures and systems that use information to maintain or change patterns in an organizational activity (Henri, 2006; Tuomela, 2005) and which are used by managers and other organizational participants (Bisbe and Otley, 2004).

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