



## Contemporary performance measurement systems: A review of their consequences and a framework for research

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### ABSTRACT

The main purpose of this paper is to develop a conceptual framework for understanding the literature on the consequences of contemporary performance measurement (CPM) systems and the theories that explain these consequences. The framework is based on an in-depth review of 76 empirical studies published in high-quality academic journals in the areas of accounting, operations, and strategy. The framework classifies the consequences of CPM into three categories: people's behaviour, organizational capabilities, and performance consequences. This paper discusses our current knowledge on the impact of CPM, highlighting inconsistencies and gaps as well as providing direction for future research.

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### 1. Introduction

The use of performance measurement systems is frequently recommended for facilitating strategy implementation and enhancing organizational performance (e.g., Davis and Albright, 2004). Today, contemporary performance measurement (CPM) comprises the use of financial as well as non-financial performance measures linked to the organization's business strategy. For instance, balanced scorecards (BSC) (Kaplan and Norton, 2001) and multi-criteria key performance indicators (KPI) can be considered CPM systems (Cheng et al., 2007; Hall, 2008). The adoption of this type of system has increased steadily in the last two decades (Rigby and Bilodeau, 2009). Organizations are under great pressure to deliver value not only to their shareholders but also to other stakeholders, and they believe CPM systems can help them in this task (Ittner and

Larcker, 2001, 2003). This may explain why many organizations are investing heavily in the development and maintenance of CPM systems (Neely et al., 2008). From a research point of view, we have some knowledge about why organizations adopt these systems (e.g., Chenhall and Langfield-Smith, 1998; Henri, 2006a; Hoque and James, 2000). We are, however, less knowledgeable about their actual consequences (Lee and Yang, 2010).

Accounting, operations, and strategy researchers have examined the effects of CPM systems. Researchers have used an array of research methods, such as case study research (e.g., Bititci et al., 2006; Kolehmainen, 2010), survey research (e.g., Burney and Widener, 2007; Cheng et al., 2007; De Waal et al., 2009), quasi-experimental research (e.g., Davis and Albright, 2004; Griffith and Neely, 2009), and experimental research (e.g., Lipe and Salterio, 2000, 2002; Tayler, 2010). Researchers have focused on different levels of analysis. For instance, the work of Hall (2008, 2010) focuses on how CPM systems affect the behaviour and performance of individuals, whilst the work of Scott and Tiessen (1999) concentrates on how CPM systems affect team performance. Researchers have also investigated the effects of CPM systems taking into consideration aspects such as their particular design, implementation, or use (e.g., Speckbacher et al., 2003). Nevertheless, there is

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still a lack of consensus on the actual consequences of CPM. Furthermore, to our knowledge, no integration study has been conducted to better understand the diverse effects of CPM systems as well as how these effects occur. Integrating our research knowledge in this area is important to progress the CPM field and to support evidence-based management initiatives (Rousseau, 2006).

The aim of this paper is to integrate our knowledge on the consequences of CPM systems by conducting a review of the existing empirical evidence on this topic. Specifically, we pursue two objectives. Our first objective is to identify and categorize the consequences of CPM systems studied in the literature, providing a guiding framework that integrates them. We classify the consequences of CPM into three categories: people's behaviour, organizational capabilities, and performance consequences. This comprehensive yet parsimonious categorization allows us to accommodate the numerous variables that may be affected by CPM systems, thereby facilitating the understanding of this complex phenomenon. Our category encompassing people's behaviour refers to consequences related to the actions or reactions of employees (e.g., motivation, participation) and their underlying cognitive mechanisms (e.g., perceptions). Our organizational capabilities category refers to consequences associated with specific processes, activities, or competences that enable the organization to perform and gain competitive advantages (e.g., strategic alignment, organizational learning). Finally, our performance category comprises the different effects that CPM systems can have on financial and non-financial results at all levels of the organization (e.g., firm performance, managerial performance, and team performance).

Our second objective is to explain the different mechanisms by which CPM is presumed to affect people's behaviour, organizational capabilities, and performance. In the literature, several theories have been proposed to explain the consequences of CPM. Theories such as agency theory and goal-setting theory present strong arguments as to how the use of CPM affects behaviour and motivation. However, there are other less widely used theories that have also been adopted in the literature and deserve some attention. For instance, Schiff and Hoffman (1996) use attribution theory to explain how executives use multi-criteria performance measures and how these measures affect their decision-making processes. Another example is the work of Malmi (2001), who adopts neo-institutionalism theory to explain why companies adopt CPM systems and the consequences of these decisions. Understanding the underlying mechanisms that generate the different consequences of CPM is critical for determining how to maximize the effectiveness of these systems.

The remainder of this paper is structured as follows. In Section 2, we provide a definition of CPM and a full description of the three categories of CPM effects. In Section 3, we discuss our method of literature review, explaining in detail the process adopted and our research selection criteria. In Section 4, we present our framework for research, comprising the findings of our literature review. In Section 5, we discuss the findings of our review, along with their implications for practice and suggestions for further research.

We also outline here the limitations of our study. Finally, in Section 6, we draw our research conclusions.

## 2. Defining contemporary performance measurement systems

Before conducting a review of the consequences of CPM systems, we first need to clarify what we mean by CPM systems. Most scholars define CPM<sup>3</sup> systems in terms of their features. For example, Cheng et al. (2007) hold that “contemporary performance measurement systems, such as the balanced scorecard, advocate the use of an array of financial and non-financial performance measures” (p. 221). Other scholars have defined CPM systems not only in terms of their features but also in terms of their role or main processes. For instance, Hall (2008) defines CPM as a system that “translates business strategies into deliverable results [...] combining financial, strategic and operating business measures to gauge how well a company meets its targets” (p. 43). Similarly, Ittner et al. (2003b) suggest that CPM “provides the information [financial as well as nonfinancial] that allows the firm to identify the strategies offering the highest potential for achieving the firm's objectives, and aligns management processes, such as target setting, decision-making, and performance evaluation, with the achievement of the chosen strategic objectives” (p. 715). As there are different perspectives used to study CPM systems, the literature lacks an agreed definition. This issue creates confusion, limiting the potential for researchers to compare different studies in this field.

To overcome this limitation and facilitate our review, we follow the approach suggested by Franco-Santos et al. (2007). We clarify the definition of a CPM system by focusing on its necessary and sufficient conditions. We argue that a CPM system exists if financial and non-financial performance measures are used to operationalize strategic objectives. This definition is based on a number of assumptions. Firstly, the definition assumes that the role of CPM systems is to evaluate performance for either informational or motivational purposes (regardless of the organizational level at which performance is evaluated). Secondly, it assumes that CPM systems comprise a supporting infrastructure, which can vary from being a simple method of data collection and analysis (using, for example, Excel) to a sophisticated information system facilitated by enterprise resource planning platforms or business intelligence solutions. Finally, it assumes that CPM systems involve specific processes of information provision, measure design, and data capture, regardless of how these processes are conducted.

According to the definition proposed, systems such as those based on the BSC (Kaplan and Norton, 1992, 1996, 2001), the performance prism (Neely et al., 2002), or the

<sup>3</sup> It is important to note that in the literature, the phrase “contemporary performance measurement” is often used interchangeably with other phrases such as “integrated performance measurement” (Bititci et al., 1997), “comprehensive performance measurement” (Hall, 2008), “strategic performance measurement” (Burney and Widener, 2007; Ittner et al., 2003b), or “business performance measurement” (McAdam and Bailie, 2002).

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