

HOW BUSINESS INTELLIGENCE AND ANALYTICS SHAPE MANAGEMENT CONTROL SYSTEMS. A SYSTEMATIC LITERATURE REVIEW.

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ABSTRACT

Academic discourse on IT-based developments and their connection to management control systems (MCS) has grown substantially over the last two decades. Business intelligence & analytics (BI&A) are considered technologies that enable companies to plan and control processes even more precisely, which is why their use should lead to massive changes in management control systems. This article aims to identify concrete links between BI&A and MCS, as well as to analyze how BI&A affect MCS, and what consequences result from their use in order to identify potential change trends for MCS. This systematic literature review is based on 38 publications and uses the MCS framework of Malmi and Brown (2008) to cluster its key findings. The paper identifies various connections between MCS and BI&A, assigning them to the elements of the MCS framework. Although this allows first concrete statements about the effects of BI&A and the consequences for MCS, the insights gained must be interpreted against the background of a wide variety of contextual factors and the fact that many conceptual papers provide normative statements, specific conclusions about massive change trends for MCS cannot be drawn at present. This study is the first literature review that establishes the connection between MCS and BI&A from the perspective of a widely accepted MCS framework and therefore enables focused statements, based on the typology of Malmi and Brown (2008), regarding the effects and consequences of BI&A on MCS.

Keywords: management control systems, business intelligence, business analytics, literature review

1. INTRODUCTION

Research at the interface between management control systems (MCS) and information technology is interested in the potential impact of big data and related analytical technologies (Payne, 2014) and their role in improving MCS (Peters *et al.*, 2018). Existing studies dealing with business intelligence and analytics (BI&A) in management control cover a wide range of topics such as organizational performance, performance management, planning, process control, and skills (Alnoukari and Hanano, 2017; Elbashir *et al.*, 2008; Elbashir *et al.*, 2013; Oesterreich *et al.*, 2019; Oesterreich and Teuteberg, 2019; Vukšić *et al.*, 2013). Although some publications have recently addressed the intersection of MCS and BI&A, research in this area is still in its infancy, being very heterogeneous and unstructured (Möller *et al.*, 2020). This is shown especially by the reviews that have already been identified in this field, which can be criticized in some aspects.

Maroufkhani *et al.* (2019) give a large descriptive overview of publications on big data analytics and firm performance, but their review lack attention to concrete implications for MCS. Cockcroft and Russell (2018) focus mainly on the possibilities of big data in the finance and accounting sector, without addressing MCS. The review by Moll and Yigitbasioglu (2019) highlights four different technologies (cloud computing, big data, block chain, and artificial intelligence) and their connection to three distinct accounting areas (management accounting, financial accounting and auditing), but it can be criticized that articles from consulting firms were also included in the analysis. Such articles mostly argue that big data and analytics technologies are going to transform business and finance departments as much as possible (Payne, 2014), especially whenever this is relevant for gaining new business (Brivot *et al.*, 2017). Rikhardsson and Yigitbasioglu (2018) is the only review that focuses solely on management accounting, but only A* and A-Ranked journals are analyzed, thereby risking a certain bias against specific topics and methods (Summers