

CAPABILITIES TO EXPLOIT THE OPPORTUNITIES OF DIGITALIZATION IN CAPITAL-INTENSIVE INDUSTRIES

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ABSTRACT

In discontinuous environments with high levels of uncertainty, such as those undergoing digitalization there are opportunities for innovation in processes, offerings, and business models. To exploit these opportunities, companies need transformation capabilities to drive the required transformations which do not take place automatically and are sometimes initiated hesitantly. These capabilities, as discussed in the literature, concern the organizational agility that enables short, binding, decision-making processes to determine the optimum path for transformation. However, in capital-intensive sectors in particular, the transition from present to future business must be managed by securing the foundations of the present business for as long as possible, and, at the same time, creating future business ahead of time. For this, the capability to optimize scale and scope economies is vital for safeguarding efficiency. Just as flexibility and efficiency are in opposition on the product/service level, so it is with organizational agility and the optimization of scale and scope economies on the capability level. Therefore, in this article, we tested the hypotheses that the goal conflicts between organizational agility and the capability to optimize scale and scope economies could be mediated by the impact of dynamic capabilities in capital-intensive industries, leading to improvements in processes, offerings, and business models. Transformation capabilities were empirically examined in this cross-industry study of 128 German companies, using a structural equation model. The empirical investigation confirmed the mediation effects of dynamic capabilities and the importance of a possible 'hybrid agility' (agility despite economies of scale and scope) for the improvement of processes, offerings, and business models through digitalization.

Keywords: Digitalization, hybrid agility, dynamic capabilities, organizational agility, economies of scale and scope.

1. INTRODUCTION

The long-term, far-reaching, and discontinuous changes caused by digitalization (e.g., Baker 2015) are having 'game-changing effects on economies' (cf. Benkenstein et al. 2017) and driving innovation (cf. Dwivedi et al. 2017, Whelan et al. 2010). They have transformed entire sectors, including the music, film, and newspaper industries (cf. Cozzolino and Rothaermel 2018) and are affecting capital-intensive sectors, such as the chemical and automotive industries (e.g., Dremel et al. 2017). As a result, it is vital that companies adopt digital technologies and change their business activities accordingly to remain competitive (cf. Meng et al. 2019). They must make greater innovations to improve processes, offerings, and business models (e.g., Kane et al. 2016), and they need to 'learn quickly, adjust accordingly and improve' (Teece et al. 2016: 25).

However, in discontinuous environments with high levels of uncertainty, such as this one, companies need 'transformation capabilities' on the operational level. This refers to the capabilities to 'drive the required transformation' (e.g., Legner et al. 2017: 307), also known as 'digital transformation capabilities' (Berman 2012: 21; Weill and Woerner 2018: 21). The adaptation of ordinary capabilities (Teece 2018b: 364) does not take place automatically, but is sometimes initiated hesitantly (Zahra et al. 2016: 947; Knobbe and Proff 2020).

One transformation capability necessary to manage high levels of uncertainty in times of discontinuous technological change is organizational agility (e.g., Pavlou and El Sawy 2011: 260). This enables short,