



EXECUTIVE DIGEST

Managing the transition to the new agile business and product development model: Lessons from Cisco Systems

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Abstract Through an in-depth case study of Cisco Systems, this Executive Digest finds that companies face two broad challenges when transitioning to the agile product development model. The first is identifying and helping business units and engineering teams adopt this method; the second is developing new management practices that are compatible with and can sustain the agile development practices. Although extant literature has conducted many analyses on these two challenges, there still exist gaps in the research of the agile development method. Herein, we explore how Cisco Systems addressed these two challenges followed by a discussion of the broad implications of adopting the agile development method. This research deepens our understanding of how to adopt and lead the agile development process.

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1. Introduction and literature review

Since the publication of the *Manifesto for Agile Software Development* (Beck et al., 2001), the agile development model has been adopted by many companies and received increased attention in academic research. Organizations incorporating agile development face two major challenges: managing the transition for the company or business units, and

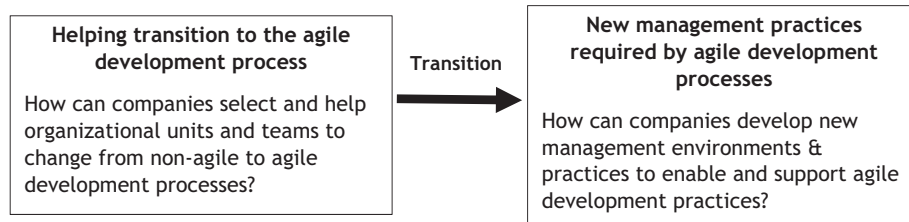
developing new organizational environment and management practices that will sustain and support agile development practices once the transition to agile development practices is complete. Figure 1 depicts these two major challenges.

Existing research has reported on many studies on the agile development method. Regarding the first challenge, prior research has proposed various frameworks to help companies make the transition from a traditional to an agile development process. Boehm and Turner (2003a) defined five decision factors—size, criticality, personnel, dynamism, and cultural—to help companies decide whether they should adopt a traditional method, an agile development method, or some combination of the

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Figure 1. Key management challenges for organizational transition to an agile development model



two. Qumer and Henderson-Sellers (2008) developed the agile adoption and improvement model (AAIM), which defines six levels of agile adoption—including agile infancy, agile initial, agile realization, agile value, agile smart, and agile progress. More recently, Gandomani and Nafchi (2015) used the grounded theory approach to develop an agile transition and adoption framework that includes five components: practice selection, adaption, assessment, retrospective, and adjustment.

Regarding the second challenge of developing new management practices to enable and sustain the agile development process, many studies discussed the impact of adopting agile development on management practices. Nerur, Mahapatra, and Mangalaraj (2005) analyzed the impact of the agile method on management style, organizational control, communication, and customer role. Hoda, Noble, and Marshall (2011) explained all required roles in an agile self-autonomy team. Moreover, previous studies argue that project managers, especially those who are experienced in traditional software development, need to transition from a traditional commander role to a leadership role. For example, Ambler (2005a) indicated that in agile teams, managers need to act as the team coach. Other studies analyzed the impact of the agile development method on additional management functions and practices, including planning (Ambler, 2005b; Boehm & Turner, 2003b), management coordination (Strode, Huff, Hope, & Link, 2012), and task design (James, 2010; Thomke & Reinersten, 1998). Scholars have also discussed characteristics of the customer in the agile method (Cohen, Lindvall, & Costa, 2004; Turner & Boehm, 2003), which has important implications for how agile teams operate.

In sum, many studies on the agile development method have examined topics pertaining to our two research questions or challenges; however, most of these studies focus on software companies or software products. It is unclear if the frameworks from these studies apply to companies offering system products that include both software and hardware components. Furthermore, the arguments and findings of the existing literature are drawn from

different sources, ranging from mini cases, to theory papers, to professional opinion posts; few studies have examined the intricacies and complexities of how these factors and frameworks work holistically in the context of one company. In fact, scholars have called for a comprehensive and disciplined approach for companies to manage the transition to the agile method (Gandomani, Zulzalil, Ghani, & Sultan, 2013). In response, we conducted an in-depth case analysis of Cisco, a company that offers system products involving both software and hardware components, and the company in which some business units have transitioned to the agile development method while others have not. By focusing on the experience of one company, it allows us to validate some of the arguments, deepens our insights into the transition from traditional to agile development methods, and allows us to explore new management practices required to support and sustain agile development methods. Our analysis is organized as follows: we first introduce the case company, Cisco Systems, and our research method, and then present our findings and discussion of each research question.

2. Case company and research method

2.1. About the case company: Cisco Systems

We analyzed the two challenges depicted in Figure 1 through an in-depth case analysis of Cisco Systems Inc. Cisco is a leading global network equipment company that offers a wide range of products—such as routers, switches, and networking solutions—designed for enterprises and small businesses across a variety of industries. Cisco has traditionally used the waterfall method to develop new products. In the waterfall method, tasks and deliverables are clearly visible at each stage of the product development process; however, the entire development process can be lengthy. Waterfall methods typically start with various analysis reports (e.g., a business requirement document, product requirement

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