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# Challenges and Enablers for Rapid Product Development

Jordan Verrollot, University of Oulu, Oulu, Finland
Arto Tolonen, University of Oulu, Oulu, Finland
Janne Harkonen, University of Oulu, Oulu, Finland
Harri J. O. Haapasalo, University of Oulu, Oulu, Finland

## ABSTRACT

This article describes how new product development (NPD) is critical to maintaining a strong market position. However, full-scale NPD may consume too much time and resources when necessary to react quickly to customer needs or emerging business opportunities. Rapid development (RaDe) is a type of incremental product development complementing the organizations' existing NPD process. In RaDe, new sales items are created by redesigning or upgrading existing products inexpensively, and in a timely manner. This article aims at clarifying the challenges and enablers relating to RaDe implementation in four case companies and by the means of reviewing literature. The identified challenges include the difficulty of differentiating between product developments models, the lack of clear definition for RaDe and issues in product data management. The enablers include structuring and managing projects differently compared to NPD, the utilization of existing supply-chain capabilities and the designed products fitting the current business processes to enable rapid product ramp-ups.

## KEYWORDS

Challenges, Enablers, New Product Development Process, NPD, RaDe, Rapid Development, Rapid Product Development

## INTRODUCTION

The development and launch of successful new products are increasingly critical to allow market leadership, healthy market share, and sustained growth (Barczak & Kahn, 2012; Unger & Eppinger, 2009; Wheelwright & Clark, 1992). New products are created using New Product Development (NPD) processes, which have been designed to be repeatable in order to reduce risks, cost and non-quality (Cooper, 1986; Ulrich & Eppinger, 2000). However, milestone-driven NPD projects have been criticised to be too linear, too rigid and too planned for small and dynamic projects (Cooper, 2014) that require reacting quickly to sudden product development needs. Phases and milestones may also stop the project for unnecessary long times (Ottosson, 2004) hindering the possibilities of conducting the development rapidly. One single development concept is not enough to fit all the various ranges of development needed in terms of cost, time or risk (Becker, 2006; Cooper, 2008; Ward, 2007).

Organisations that are slow in developing new products and are unable to meet sudden demands in a timely fashion often lose against those with a more agile development process (Cohen et al., 1996; Smith, 1990). Therefore, shorter lead times and customer responsiveness are seen as key elements that influence the firm's success and performance (Jayachandran et al., 2004; Krasnikov

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& Jayachandran, 2008; Sousa et al., 2010). Companies are facing pressures to supply new products constantly and rapidly to the market while the ability to react to specific customer needs through the product range is seen vital to succeed in global competition (Forza & Salvador 2008). Due to the growing importance of innovation and product development in establishing and maintaining a strong position in the increasingly competitive business area (Moreno-Moya & Munuera-Aleman, 2016; Smith & Reinertsen, 1998), the demands on product development performance, in terms of speed and efficiency have become more stringent (Cedergren et al, 2010; Van Echtelt et al., 2008; Yadav & Singh, 2008). Therefore, the importance of the companies' capabilities to evaluate their product development performance has increased (Johnson & Kirchain, 2011).

Many techniques and approaches have been studied in the literature to reduce lead-time of product development (Langerak & Hultink, 2008). Companies increasingly utilize shortened NPD models to reduce the development lead-times of small projects; 75 percent of top performing businesses use some form of scalability in their product development processes. (Cooper & Edgett, 2012). Cooper (2008) has proposed to scale down his famous milestone driven product development model in order to suit different project needs. The lightest version is meant to address very small projects requiring minor changes to existing products such as simple customer requests (Cooper, 2014). Despite the extensive research on the methods to improve the process of developing new products, limited attention has been paid to small and fast product development projects, especially in the business-to-business environment (Cooper et al., 2004; Kaikkonen et al. 2016). The previous studies on the topics (e.g. Cooper, 2008; Hänninen et al., 2014; Kaikkonen et al., 2017; Niskanen et al., 2015; Vigna et al., 2015) do not comprehensively examine the challenges and enablers related to implementing and running those kinds of product development projects.

The motivation for the study arises from the growing significance of small-scale and rapid incremental product development to fulfill the unexpected market and customer needs (Cooper, 2008; Kaikkonen et al., 2017). In this study, the rapid product development (RaDe) projects are defined as fast product development activities, noticeably smaller in scope and size than projects requiring multiple stages and gates. Based on minor modifications of existing products, new sellable items are created to complement the company's product portfolio. Although organizations may not have defined and organized RaDe, product development needs that require quick product creation do emerge suddenly. Therefore, this paper aims at examining and clarifying the related challenges and enablers. The study is realized as a combination of reviewing the literature and analyzing the practices of companies operating in Finland and Sweden.

The paper is organized as follows. The following section focuses on identifying how the literature conveys the small-scale product development model. The research process and method and the results section follow. The results explain the challenges related to RaDe and the enablers for its implementation. Finally, the last section presents the discussion and conclusions.

## LITERATURE REVIEW

Product development process is connected to the product portfolio management as it strategically and cost-efficiently determines the best set of products to create, sell, deliver and care (Georgiopoulos et al. 2002; Sadeghi & Zandieh, 2011). Correspondingly, product portfolio management affects the product development process and the supply chain processes by selecting the product to be created and delivered. Consequently, the introduction by the product development process of new products without removing existing ones from the product portfolio will generate an explosion of the portfolio (Tolonen et al., 2015). The product proliferation and cannibalization will lead to increased numbers of sales items, purchased components, suppliers as well as higher inventory levels and longer lead times (Abbey et al., 2013; Fisher et al., 1999).

Product development aims at moving new products, that meet the customer's needs and the strategic goal of the company, from idea generation into a market introduction, including product