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The effect of new product development acceleration approaches on development speed: A case study

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ABSTRACT

This study investigates the impact of nine new product development (NPD) acceleration approaches on development speed. Our findings from 233 manufacturing firms show that 5 approaches (supplier involvement, lead user involvement, speeding up activities and tasks, training and rewarding of employees, and simplification of organizational structure) increase development speed, whereas 2 approaches (implementing support systems and techniques and stimulating inter-functional coordination) decrease development speed. Two approaches (i.e., reduction of parts and components and emphasizing the customer) have no effect on development speed. Our results further show that firms developing different types of new products should use different NPD acceleration approaches, as the speed impact of six out of nine approaches is dependent upon the degree of product innovativeness.

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1. Introduction

Research on new product development (NPD) practices reveals that firms have made substantial progress in reducing NPD cycle times (Ali, 2000). This reduction is often accredited to the implementation of specific acceleration techniques (González and Palacios, 2002). A closer look at the body of research on acceleration techniques reveals however, that there is limited empirical evidence

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as to if and how the use of acceleration techniques impacts NPD speed (Dröge et al., 2000). In addition, the current body of literature has not yet investigated if firms developing different kind of new products should implement the same NPD acceleration techniques to increase development speed. This is unfortunate given the potentially sweeping effects of the appropriate acceleration techniques on NPD cycle time (Millson et al., 1992; Nijssen et al., 1995).

The purpose of this study is to fill a part of this gap in extant knowledge by investigating the impact of nine NPD acceleration approaches on development speed. We also respond to Langerak et al.'s (1999) suggestion to address the potential intricacies of the relationships between these acceleration approaches and speed for firms developing different types of new products. Therefore, we also examine if and how product innovativeness moderates the effect of the acceleration approaches on development speed.

The remainder of this article is structured as follows. First, we review the literature on NPD acceleration techniques. Then, we present the conceptual framework and the proposed relationships. Next we explain the research design and review the findings from a sample of 233 manufacturing firms. In the final sections we will discuss the results and managerial implications, and propose suggestions for further research.

2. NPD acceleration approaches: literature review

Millson et al. (1992) developed the earliest knowledge on the use of techniques to accelerate NPD by suggesting a hierarchy of approaches. Each approach is composed of similar techniques aimed at (1) simplifying NPD operations; (2) eliminating unnecessary NPD activities; (3) paralleling NPD activities; (4) eliminating delays in the NPD process; (5) speeding up NPD operations. They concluded that if these five NPD approaches are employed in a thoughtful manner, “a firm’s time to develop important new products can be significantly reduced.” (p. 67). Unfortunately, they did not empirically investigate if the five NPD acceleration approaches reduce NPD cycle time. Nijssen et al. (1995) provided the first empirical support for the contention that the implementation of Millson et al.'s (1992) acceleration approaches has a positive effect on development speed. However, they do not specify the individual techniques that belong to each NPD acceleration approach. As a result, it is not evident which individual techniques new product teams can adopt to accelerate NPD.

Dröge et al. (2000) specified a set of 14 individual techniques and investigated their impact on NPD cycle time reduction. Following Millson et al. (1992) they subsequently clustered the 14 techniques into 4 groups: (1) human resource management; (2) synergistic integration; (3) supplier closeness; (4) design manufacturing interface, and investigated the impact of each group on NPD cycle time. Their rationale was that the study of approaches to accelerate NPD leads to a better understanding of the determinants of NPD cycle time reduction. Dröge et al. (2000) found that two of the four approaches (i.e., synergistic integration and supplier closeness) were significantly related to development speed. This is important because the composition of these two approaches, in terms of the individual techniques, is also known. This allows new product teams to select and adopt individual techniques from these two approaches to accelerate NPD. As such, Dröge et al. (2000) provided important empirical knowledge on the effectiveness of NPD acceleration approaches of which the composition was known (i.e., in terms of individual techniques that belong to each approach).

There are, however, more than 14 techniques that new product teams can use to accelerate NPD. Langerak et al. (1999), for example, identified 50 individual techniques that teams can adopt to achieve cycle time reduction. They formed nine NPD acceleration approaches by clustering similar techniques aimed at (1) supplier involvement; (2) lead user involvement; (3) speeding up activities and tasks; (4) reduction of parts and components in the new product; (5) training and rewarding employees; (6) implementing support systems and techniques; (7) stimulating inter-functional cooperation; (8) emphasizing value for customers; (9) simplifying the organizational structure. Langerak et al. (1999) did not investigate the impact of the nine NPD acceleration approaches on development speed. This is unfortunate as it would better inform new product teams about the effectiveness of the NPD acceleration approaches. Not surprisingly, Langerak et al. (1999) suggest that there is an opportunity to move the research field forward by empirically testing the impact of the nine NPD acceleration approaches on development speed.

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