



The influence of time-to-market and target costing in the new product development success

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ABSTRACT

This article uses recent research in new product development and target costing in order to test the relationship between the use of new product development firm practice and the product's development time and cost. Data were obtained from Portuguese manufacturing firms through a survey. In this study it was found that target costing and reduction of time-to-market together provide considerable advantages to users of these practices. Such companies can achieve reductions in new product development cycle time and cost without compromising quality and functionality. This paper offers a contribution to current literature by adding empirical evidence on the role of target costing in the process of new product development.

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1. Introduction

One emerging area of research in the literature is the impact of internal firm variables/organizational variables on the ability of firms to minimize the time and cost of new product development (NPD). As manufacturing innovations spread throughout leading organizations, product development becomes a more important source of competitive advantage. The reduction of NPD cycle time may create relative advantages in market share, profit, and long-term competitiveness (Cooper and Kleinschmidt, 1995; Ittner and Larcker, 1997; Griffin, 1997). However, a competitive product must also address factors such as cost, performance, schedule and quality (Lynn et al., 1999).

Moving cost-management efforts from the production phase to the product development stage implies larger profits because cost reduction advantages accrue from the first unit. Furthermore, managing costs during the development stage is usually easier and cheaper than after the product is introduced (Ulrich and Eppinger, 2000). Thus,

managing costs during product development emerges as an important step to increase the profitability of future products. In fact, using a multiple case study based on 10 German companies that adopted target costing (TC) practices, Horvath and Tani (1997) found that companies benefited from using cost-reduction practices and that cost reduction was perceived as the most important goal. This goal was followed by market-oriented product development, lead-time reduction for product development (time-to-market (TtM)), and high quality.

TC was developed by Toyota in the beginning of the 1960s and it has been used since that period by the Japanese automotive industry in general (Kato, 1993; Carr and Ng, 1995). TC or *genka kikaku* is a three-stage process (Cooper and Yoshikawa, 1994). Firstly, the target price is identified; secondly, a target margin is assumed; and thirdly, the target cost is calculated by subtracting its target margin from its target price (Cooper and Slagmulder, 1997). Value engineering (VE) and functional cost analysis (FCA) are used in order to eliminate excess of the current manufacturing cost over the allowable cost (Yoshikawa et al., 1994, 1995).

This article follows recent research in NPD and TC to test factors and variables that are associated with the NPD time and cost minimization abilities. Everaert and

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Bruggeman (2002) investigated the impact of using cost targets during NPD, in terms of design quality, product cost, and development time. Sánchez and Pérez (2003) analysed the relationship between the use of some practices at the level of the firm on the ability to reduce NPD time and cost in the Spanish Automotive Industry. On the other hand, Davila and Wouters (2004) identified alternative practices to TC during product development projects.

Drawing upon empirical evidence relating to the use of these practices in Portuguese manufacturing SMEs, this work tests the relationship between the use of NPD and the product's development time and cost. Data were obtained from Portuguese manufacturing firms through a survey. The questionnaire was designed to illustrate the role of TC and TtM within NPD in such firms.

This paper is structured as follows. Section 2 presents the literature review on NPD, TtM, and TC. Section 3 explains the research methodology used and the results of the survey are shown and discussed in Section 4. Section 5 highlights the main conclusions achieved in this research and presents opportunities for further research on this topic.

2. Literature review

The concepts of NPD, TtM and TC are of major importance in this work. The survey instrument was designed after an extensive literature review of published work in each of these areas. This section presents the main issues related to these concepts.

2.1. New product development

Proficiency in NPD can contribute to the success of many companies. According to Poolton and Barclay (1998), "if companies can improve their effectiveness at launching new products, they can double their bottom line. It is one of the areas left with the greatest potential for improvements." Many studies have focused on critical success factors (CSFs) associated with the success or failure of NPD. A selection of such research studies was reviewed.

Lynn et al. (1999) developed a model of the determinants of NPD success. They sent informants a series of cases and asked them to identify the key factors. Lester's (1998) study identified a range of potential problems that can derail well-intentioned NPD efforts. By working through these problems, Lester discovered the CSFs in five areas of NPD. Poolton and Barclay (1998) identified a set of six variables that have consistently been identified in the literature as being associated with successful NPD. Cooper and Kleinschmidt (1995) studied hundreds of cases to identify what makes the difference between winners and losers in the process of NPD. They extracted 12 common denominators of successful new product projects and seven possible reasons (blockers) to explain why success factors are invisible and why projects seem to go wrong or are otherwise not well executed.

The factors proposed by these four studies are not exactly the same, and it is in fact difficult to generate a common set of CSFs for NPD. It is even harder to generate these factors for any specific industry. There are many other studies on CSFs or drivers for NPD (e.g. Cooper and Kleinschmidt, 1995; Spivey et al., 1997; Montoya-Weiss and Calantone, 1994) reviewed 47 research studies on the determinants of new product performance and found that each of these studies attempted to identify the factors that improve NPD success rates. However, each used a somewhat different method, produced different factors, and reached results that are useful but sometimes inconsistent, or even contradictory with other studies' results. What they do share, however, is a general focus on what is necessary for successful NPD, namely: (1) top management support for innovation; (2) R&D, marketing and manufacturing competence and coordination; (3) involvement of suppliers and customers in the design process; (4) product quality; (5) nature of market; and (6) development time. It is not clear, though, whether the factors identified by previous research can be applied to SMEs due to their particular unique characteristics.

Another difference is the level (or unit) of study. Most of the studies were undertaken at the company level and asked questions that can be answered by general managers. However, many practical issues occur at the operational and functional level.

In this context, NPD speed is critical because product life cycles are shrinking and obsolescence is occurring quicker than in the past, whilst competition has also intensified (Sherman et al., 2000). To grow, it has become imperative for firms to move products to market faster (Vesey, 1992; Griffin, 2002). Firms that succeed in developing and marketing new products faster than competitors can obtain first mover advantages (Griffin, 2002). They may command higher prices, and then attain dominant market share and customer loyalty. Significant cost benefits can also accrue from compressing NPD cycle time (Gupta et al., 1992). Not surprisingly, the interest in accelerating the NPD has remained steadfast for its strategic importance (González and Palacios, 2002).

2.2. Time-to-market

In global and highly competitive markets, products have reduced life cycles. This means that there is a need for companies to reduce the TtM of new products and simultaneously ensure their success in the market. Early product introduction improves profitability by extending a product's sales life and allowing development and manufacturing cost advantages. Faster product development leads to superior performance according to some empirical studies (Griffin, 1997; Ittner and Larcker, 1997).

The importance of TtM of new products as a factor of competitive advantage is well known. In fact, a considerable number of articles on this subject have been published in the last decade. Griffin (1997, 2002) used TtM as a dependent variable and analysed its relationship with the use of multifunctional teams, the use of formal

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