



## New product performance indicators: Time horizon and importance attributed by managers<sup>☆</sup>

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### ABSTRACT

New product performance is one of the most relevant areas in academic literature because its description has potential implications in companies' growth and success. In particular, this paper provides a deeper insight into the time horizon and the importance attributed by managers to each performance indicator at project level. Several analytical models prove that (market-based, customer-based and financial-based) performance dimensions vary, depending on the method of construction (through a mean score of performance indicators or using the importance attributed by managers to the various performance indicators) both in the short term and in the long term. The relevance of these findings is discussed, along with their implications for managers when studying product performance determinants.

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### 1. Introduction

New product performance is a very important topic for managers and researchers alike. From a managerial perspective, the description of new product performance is essential when it comes to revising new product development strategy decisions (Millson and Wilemon, 2006), launching strategy decisions (Chiu et al., 2006) and analyzing the contribution of new product performance to the value of a firm (Pauwels et al., 2004). Accordingly, a substantial number of publications have tried to identify the best way to define new product performance from a theoretical (Cordero, 1990; Hauschildt, 1991) as well as an empirical point of view (Griffin, 1993; Griffin and Page, 1996; Storey and Easingwood, 1999).

Despite such academic efforts, few attempts have been made to synthesize and empirically test such classification schemes (Huang et al., 2004; Palmberg, 2006). Moreover, according to Henard and Szymanski (2001), the frequently challenging results obtained from analyzing new product performance determinants are partly the result of an incorrect description of new product performance. There are several contributions that can increase our knowledge in this area.

The first contribution of this research has to do with the distinction between short-term and long-term new product performance. Most works that include new product performance

in their analysis evaluate new product performance as a global measure and do not typically distinguish between short-term and long-term performance. Such a distinction has provided essential conclusions when analyzing the various stages of the new product development process (Hart et al., 2003), studying the effects of communication strategy (Lee and O'Connor, 2003) or explaining initial competitive positioning (Green et al., 1995). However, there is still a lack of agreement regarding the best way to distinguish between short-term and long-term performance and the consequences of such a distinction.

A second contribution stems from the idea that managers do not attribute the same level of importance to different performance indicators. Hultink and Robben (1995) have demonstrated that managers value performance indicators differently (a firm can, for instance, obtain a good market share and a poor ROI, but managers may consider the ROI performance indicator more important when they evaluate the performance of a new product for strategic or other purposes). Moreover, the importance of these performance indicators may vary based on the time horizon (short term versus long term). In line with Wheatley (1988), it is our position that, traditionally, the importance attributed by managers to various performance indicators at project level has thus far received insufficient attention in academic research.

Another contribution related to the description of new product performance is based on the way new product performance dimensions are developed. According to well-known methodological studies like Podsakoff et al. (2003), academics should use multi-item scales to define new product performance dimensions (instead of using a single item, for instance ROI, to analyze a firm's financial performance, managers use a multi-item scale based on different performance indicators, such as ROI, income and/or

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profit). Thus, in order to develop the performance dimensions, academics usually design the measure through a mean score of the various performance indicators involved (Langerak et al., 2004). This means that all performance indicators are awarded the same importance. The question is, however, whether using the importance managers attribute to these performance indicators (i.e. using a mean weighted measure rather than of a mean score) significantly affect the results of studies in this area?

Finally, in investigating the new product development activities, researchers face a two-fold task: in addition to having to describe new product performance (Huang et al., 2004), they must study the new product performance determinants (Cooper and Kleinschmidt, 1987; Kakati, 2003; Souder and Michael Song, 1998). It may be reasonable to expect new product performance determinants have a different impact on the two types of performance dimensions: (a) non-weighted (using a mean score, not taking the importance attributed by managers to performance indicators) and (b) weighted (using a weighted mean score, weighting performance indicators according to the importance attributed to them by managers). This issue requires further research because, as Hart and Craig (1993) have argued, different definitions of performance could lead to different results with regard to new product performance determinants.

Accordingly, the objective of this study is to understand how new product performance should be described and measured. To that end, we start with a thorough review of existing literature surrounding the project level performance indicators and dimensions that are most frequently used (market based, customer based and finance based). Subsequently, we summarize the different approaches to measuring short-term and long-term new product performance and the implications on new product performance description. Next, we discuss the relevance of considering the importance attributed by managers to each performance indicators and the consequences when performance dimensions are developed. Finally, we look at the possible implications of using weighted performance dimensions instead of traditional mean scores in the analysis of new product performance determinants.

We believe that by addressing these gaps, this study will improve the measurement of new product performance dimensions. From a managerial point of view, according to Huang et al. (2004), greater knowledge of the outcomes managers expect from new product development activities will help them allocate their resources more effectively. To this aim, this paper is organized as follows. First of all, we present the theoretical background and hypotheses. Next, we explain the research method we have used and conclude by discussing the implications of our findings.

## 2. Conceptual background

### 2.1. New product performance indicators and dimensions at project level

Empirical research in new product performance is made difficult by its multidimensionality and different levels of analysis (Palmberg, 2006). One of Hart and Craig (1993), most important findings are that performance dimensions vary depending on the level of analysis (firm, program or project). Accordingly, authors such as Hooley et al. (2005) or Hult et al. (2004) have measured performance at firm level by assessing the profitability or sales growth. Others, including Atuahene-Gima (2005) and Cooper and Kleinschmidt (1995a) have focused on describing performance measures at program level, based on program impact and profitability. By contrast, other authors, for instance, Hultink and Robben (1999) and Langerak et al. (2004) focus on the project

level of analysis, identifying performance indicators ranging from financial to customer-based measures.

The unit of analysis of our study is the project level. Our position is in line with Palmberg (2006), as it appears that firm-level or program-level studies overlook the true diversity of innovation activities within firms.

There is a large body of literature dealing with the most suitable performance dimensions at project level (Table 1). Griffin (1993) and Griffin and Page (1996) offer comprehensive reviews of the most relevant new product performance dimensions at project level (customer acceptance, financial performance, product level and firm level) that have been generally accepted by academics and practitioners alike. In recent years, new contributions around performance dimensions (strategy based, market based, etc.) have been suggested (Langerak et al., 2004; Storey and Easingwood, 1999). However, as Huang et al. (2004) and Lee and O'Connor (2003) have recently demonstrated, the three product performance dimensions generally accepted by academics and managers are market-based performance, customer-based performance and financial-based performance.

Market-based performance evaluates the results of a new product in terms of the level of success of that product in the market. Several authors, including Cooper and Kleinschmidt (1987) and Hultink and Robben (1999), have included market-based performance indicators, such as number of units sold, penetration rate and market share. Customer-based performance looks at the impact of a new product in terms of customer behaviour. Consequently, a number of performance indicators, for example customer satisfaction and loyalty, have been widely used by various authors, including Lee and O'Connor (2003). Financial performance is one of the most commonly used measures to analyze the outcomes of a firm's decisions, and many researchers, including Hart (1993) and Moorman and Miner (1997), have used financial indicators such as profit and return on investment.

## 3. Hypotheses development

### 3.1. Time horizon: short- and long-term new product performance

The idea of measuring new product performance at different points in time was suggested by Cordero (1990), who introduced the time horizon after observing product outcomes during the development and launch stages. Subsequently, Hart and Craig (1993) have argued that it is preferable to include measures that indicate how a company will perform in the future, rather than merely focusing on the present. This was later tested empirically by Hultink and Robben (1995), who analyzed new product performance indicators in different moments of time. Few other studies (Hart et al., 2003; Tse et al., 2003) have measured new product performance in both the short and the long term, although Henard and Szymanski (2001) considered this aspect a priority when examining the determinants of new product performance.

To distinguish short-term and long-term new product performance, several approaches have been proposed:

1. As a percentage of the product life cycle. Some authors, including Hultink and Robben (1995), have argued that the short term should be defined as the first 25% of a product's life cycle, and the remaining 75% should be seen as the long term. The problem with this method is that it is difficult for managers to apply a percentage to each product in order to distinguish between the short term and long term.
2. Based on the number of years, a product has been on the market. This approach has been used by various researchers

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