

# Modeling market information processing in new product development: An empirical analysis

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## Abstract

This research explores the antecedents and consequences of market information processing during the development process of new high-tech products. To this end, we develop and test a conceptual model for market information processing in three generic stages of the new product development (NPD) process (predevelopment, development and commercialization). In addition, we explore the relationships between market information processing, its antecedents, and product advantage and success. We test our model with responses from 166 NPD-managers in Dutch high-tech firms. The findings show that the market information processing variables are related differentially to new product outcomes, even when controlling for product advantage and product newness to the market. In addition, we found that companies can enhance market information processing for new high-tech products by influencing project priority and flexibility to new products, and by reducing interdepartmental conflict.

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## 1. Introduction

Market orientation has received much attention for its apparent positive effect on organizational performance (Narver and Slater, 1990; Jaworski and Kohli, 1993). Market orientation leads to superior organizational performance, at least in part, by aiding in developing

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successful new products (Gatignon and Xuereb, 1997). A market orientation is inherently a learning orientation (Slater and Narver, 1995) as it consists of information processing activities that organizations use to learn (Kohli and Jaworski, 1990; Kohli et al., 1993). These activities include market information acquisition, dissemination and use (Kohli and Jaworski, 1990; Baker and Sinkula, 2002).

Innovation is inherently an information processing activity (Leenders et al., 2003). An important element of information processing is the use of market information (Moorman, 1995; Ottum and Moore, 1997). Market information use has been defined as taking information about current and future needs of customers and external factors such as competition into account when making decisions (Moorman et al., 1993). Several studies have shown that the use of market information has a positive effect on the successful development of new products (Atuahene-Gima, 1995; Ottum and Moore, 1997). A market orientation is achieved, therefore, through market information processing.

However, organizations often fail to use market information that is available to them (Maltz and Kohli, 1996). Effective market information processing has been identified as a problematic area (Cooper, 2003), and many firms do not actively incorporate market information into their new products (Ottum and Moore, 1997).

Whereas market information is acknowledged for its important effect on both NPD and organizational performance for incrementally new products, the appropriate role for market information is less apparent for really new products (O'Connor, 1998; Veryzer, 1998a). According to some authors, too much emphasis on market information may lead to incremental product improvements rather than truly innovative products (Tauber, 1974; Bennett and Cooper, 1981). Two important questions, therefore, are why companies decide to process, or not to process, market information in their development projects, and how product newness to the market interacts with their level of market information processing, and ultimately the new product's success.

The purpose of this research is to investigate the antecedents and consequences of market information processing during the development of new high-tech products. To this end, we develop a conceptual model of market information processing across three generic stages of the NPD process (predevelopment, development and commercialization). In addition, the relationships between market information processing, product advantage and new product success are explored.

This study contributes to the existing literature in three ways. First, most market orientation studies have been conducted at the company level. The present study focuses on implementing a market orientation at the project level. Second, we investigate market information use across three different stages of the NPD process, and thereby show the consequences of market information use more granularly than previous studies. Finally, we investigate the effects of several antecedents of market information processing for new high-tech products, including the controversial issue of product newness to the market. While most studies in the past decade focused on the consequences of market information processing in NPD, few have investigated antecedents to market information processing. To our knowledge, no study has investigated several of the antecedents included here. We hope to fill a part of this gap in extant knowledge.

## **2. Literature review and hypotheses development**

Fig. 1 presents our conceptual model of the antecedents and consequences of market information processing in high-tech NPD. Antecedents of market information processing were derived from the literature and 11 exploratory interviews with NPD-managers. The interviewees were professionals in marketing, R&D, design, and business development. The semi-structured interviews used open-ended questions focused on understanding (1) the organization, (2) the

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