



# Marketing variables when launching high-technology products into international markets: An empirical study on Finnish technology firms



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## ABSTRACT

While much research has been directed at variables critical to successful R&D of new and high-technology products, much less work has been directed at factors crucial to success of these products when the firm attempts to enter the international marketplace. This study surveys Finnish technology firms and identifies those marketing method variables that are associated with successful versus unsuccessful attempts to enter the international marketplace. The rank order of importance of the different marketing methods will be presented.

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## 1. Introduction

The product development process is long and tedious. Companies put a lot of emphasis on the development of new products. For example during the last three decades the relative amount of R&D expenditure has risen from about 0.7% to its current level of 3.5% of GNP in 2009 in Finland. This growth of R&D expenditure has been among the fastest of OECD countries (Research.fi, 2009) enabling the success of many Finnish firms. The current amount of annual spending is close to 7 B€.

Good performance in product launches can be based on numerous variables. It can for example be achieved because the company is in the right place at the right time, rather than having an effective marketing management program (Kotler, 1994). Marketing has been cited as a neglected area in technology intensive companies (Autio, Kaila, Kanerva, & Kauranen, 1989; Lumme, 1994; McKenna, 1985; Shanklin & Ryans, 1987). The emphasis of this study is on the marketing methods used and their relationship to the outcome of the international product launch. Based on the literature review, a wide variety of various marketing method variables were used in this study.

## 2. Goals, purpose and scope of the research

The research attempts to determine whether the marketing methods used by Finnish high technology companies in launching new products abroad are related to the new product development (NPD) outcome and also what the relative importance is of the marketing methods during the launch effort. The research contributes to empirically based knowledge concerning product launches into the international market. Thus the research issues can be stated as follows: To what extent do the marketing method variables in Finnish high technology companies impact the outcome of the NPD launch into foreign markets and what is the relative importance of the marketing methods?

The level of sales or profit performance does not necessarily reflect the effectiveness of marketing. Good performance can be achieved because the company is in the right place at the right time rather than having an effective marketing management program. Cooper and Kleinschmidt (1987a, 1987b) indicated that new product's achievement can be measured in many different

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ways such as success/failure, profitability, pay back period, domestic/foreign market share, relative sales/profits, actual sales vs. objectives, actual profits vs. objectives, extent of existing market and new market opportunities. Kotler suggests that various concepts should be used in measuring the effectiveness of marketing practices. The end result will be a measure indicating how well the different marketing tasks have performed. The marketing effectiveness depends on the basis of Kotler's thinking on a combination of five activities: customer philosophy, integrated marketing organization, adequate marketing information, strategic orientation, and operational efficiency.

The purpose of this study is to investigate the relative importance of the various marketing methods and their relationship with the NPD outcome. The marketing methods included were marketing concept, product, pricing, distribution, personal selling, advertising, publicity, promotion, market organization, use of marketing consultants, market share, NPD, market segmentation, positioning, differentiation, marketing planning, MIS/marketing intelligence and market research. The research proceeds as follows. First the sampling frame and the sample of the research will be discussed. Second the research methodology will be addressed. Third the relevant previous research will be reviewed. Fourth the results of the research will be discussed and finally the conclusions and managerial implications will be deliberated.

### 3. Sampling frame and sample

The scope of this study is on Finnish high-technology companies. The definition of technology intensive companies utilized in this study is based on the Eurostat/OECD's classification, which is based on the ratio of R&D expenditure to GDP or R&D intensity. Total R&D intensities are used to classify industry sectors based on their level of technology intensiveness. Technology intensive companies were defined as consisting of two major groups. The first group, high technology manufacturing, include office machinery and computers, electronics and communications equipment and medical, precision and optical instruments (R&D intensity greater than 7%). The second group, medium-high technology manufacturing, consists of chemicals, machinery and equipment and transport equipment (R&D intensity between 2.5% and 7%) (Beard & Easingwood, 1996; Davis, 1992; Felix, 2006; Hatzichronoglou, 1997; Loschky, 2010; Virtaharju & Åkerblom, 1993). In order to further decrease the problem identified by Cooper and Kleinschmidt (1995) and Reeder, Brierty, and Reeder (1991) pure services, management technology, and process technology were left beyond the scope of the research. For the same reason projects, subcontracted products and consumer products were also excluded.

Information sources from Statistics Finland ([http://www.stat.fi/index\\_en.html](http://www.stat.fi/index_en.html)) were used to derive a sample population of technology intensive companies known to be active in NPD. The sample contained 230 eligible companies. The number of responding companies was 81 representing a response rate of 35.2%.

### 4. Research methodology

Data were collected from the managing directors and managers or directors of independent profit-centers of firms, headquartered in Finland, having revenue from both domestic and foreign markets. The reason for using this level of management was an attempt to avoid the intrinsic prejudices that could affect the responses of managers of departments concerning the relative importance of their own departments (respondent bias). Additionally, directors normally are also in charge of strategic decisions, and should therefore have the capability to evaluate new product launches and their results, while department heads often do not have enough information to properly address the strategic issues at hand. The managers were asked to respond to questions about product launch efforts during the last three years. The difference between the successful and unsuccessful product launches was defined as whether predetermined objectives were reached or not.

Chi-square analysis was used to check for relationships between the variables. Relationships between variables measured by categorical data, such as nominal or ordinal data, are typically examined using chi-square analysis. Chi-square analysis is used in the questions where the respondent is asked to circle a number on a Likert scale from 1 to 5 (O'Neal, 1985). Chi-square is the "likelihood ratio chi-square test" of the hypothesis that the model fits no better than fixed response rates across the whole sample. The likelihood ratio chi-square test is computed as twice the negative log likelihood for model in the analysis of likelihood table (SAS Institute, 2010). In order to assess the relative importance of the various marketing methods simple means of the responses were calculated.

### 5. Previous research

The external and internal environment in the high technology companies can be turbulent due to the fact that in many cases these companies are small, operate in growing and evolving markets, and with emerging technologies (Beard & Easingwood, 1996; Mohr, 2001; Sperry & Jetter, 2009). Due to the turbulent nature of the high-technology market environment, the marketing practices must be adapted and modified to effectively adjust to the complex environment where customers are making the purchase decisions and where the companies are making their marketing method decisions (Mohr & Shooshtari, 2003).

We can argue that the success or failure of the launch is influenced also by internal variables (marketing and business controllables) such as marketing methods and costs, and by external factors (marketing and business uncontrollables) such as competition, customers and business environment. Previous research has indicated that the NPD and marketing practices of high-technology firms deserve greater attention (Mohr & Shooshtari, 2003; Yap & Souder, 1994). For example the findings of Green and Ryans (1990) that variables such as the magnitude of marketing investment as well as the product's competitive

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