



## Company related variables and their impact on the NPD outcome in the context of international markets in Finnish high-technology companies

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### ABSTRACT

While much research has been directed at the variables critical to successful R&D of new products on the one hand and high-technology products on the other, much less work has been directed at those factors crucial to the success of these products when the firm enters the international marketplace. This study surveys Finnish high-technology firms and variables related to the properties of the company and their association with successful versus unsuccessful attempts to enter the international marketplace. Relationship between firm characteristics – type of industry, size of the company, background of key personnel, export intensity and experience in product launches – and success/failure in the product launches is investigated. The generalizability of the findings is also discussed.

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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 industries and companies.

Good performance in product launches can be based on numerous variables. It can be for example achieved because the company is in the right place in the right time, rather than having an effective marketing management program (Kotler, 1994). Marketing has been cited to be a neglected area in technology intensive companies (Autio, Kaila, Kanerva, & Kauranen, 1989; Lumme, 1994; McKenna, 1985; Shanklin & Ryans, 1987). The emphasis of this study, however, is on the company related variables and their relationship to the outcome of the international product launch. Based on the literature review, the company related variables to be included were educational background of key personnel, size of the company, industry, export intensity, and experience in product launches.

The research attempts to determine whether the company related factors in Finnish high technology companies launching new products abroad significantly impact the NPD outcome. The research contributes to empirically based knowledge concerning product launches into the international markets. Thus the research question can be stated as follows: To what extent company related variables in Finnish high technology companies impact the outcome of the NPD launch into foreign markets?

### 2. 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 (Mohr, 2001; Sperry & Jetter, 2009).

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One could also argue that in the real life 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. Based on the findings of Green and Ryans (1990) variables such as the magnitude of marketing investment as well as product's competitive position were positively related to the performance. These issues are, however, beyond the scope of this research.

### 2.1. Company related variables

Previous research has investigated the company related variables in the NPD context. These variables include for example strategies, capabilities, resources of the firm, and competitive advantage (Aspelund, Madsen, & Moen, 2007; Montoya-Weiss & Calantone, 1994). Yap and Souder (1994) investigated how the degree of non-participative style of the project manager, and also how the degree to which the organization is organic (Organicity) effects the outcome of the new product success and failure in small entrepreneurial high technology electronic firms. These research questions were answered when low/high market uncertainty and technical uncertainty moderated the relationship between the variables and the NPD outcome. Expectedly the participative style of the project manager correlated positively with the NPD outcome in the various uncertainty scenarios the only exception being the high technical uncertainty scenario in which the correlation was non-significant.

Organicity, which refers to a particular condition of openness of organizational communication, frequent interaction, harmony, and close interdependency between the units within an organization (Yap & Souder, 1994), on the other hand correlated positively with the NPD outcome only in the low technical uncertainty scenario, and negatively in the high technical uncertainty scenario. The correlation in the high/low market uncertainty scenario was non-significant.

The company related variables, which are here called as near background variables (NBV), experience in product launches, export intensity, company size, educational background and skill levels of top management, have received relatively little attention in the literature, will be discussed more in detail next.

### 2.2. The industry

The first of the NBV variables is the impact of industry on the NPD outcome. Prior research has investigated the relationship between the NPD outcome as dependent variable and various independent variables across industries (Calantone, Schmidt, & Song, 1996; Cooper & Kleinschmidt, 1995; Parry & Song, 1994; Song & Parry, 1997a,b; Song, Montoya-Weiss, & Schmidt, 1997) and also in specific industries (Barczak, 1995). Others have concentrated on more specific industry groupings such as high-technology (Easingwood, Moxey, & Capleton, 2006; Song & Noh, 2006), and chemical industry (Cooper & Kleinschmidt, 1993a,b). Interestingly prior research has not investigated the relationship between the NPD outcome as a dependent variable and the independent variables between the industries, nor between various sub-industries for example in the high technology category. As it will be discussed later in the methodology section the high technology industries according to Eurostat/OECD's classification comprise of such sub-industries as office machinery and computers, electronics and communications equipment and medical, precision and optical instruments, and further the medium high technology industries include such sub-industries as chemicals, machinery and equipment and transport equipment (Hatzichronoglou, 1997). It would be interesting to know whether the NPD outcomes would be consistent across these sub-industries.

### 2.3. Experience in product launches

The second of the NBV variables is the experience and its impact on the NPD outcome. Robert G. Cooper (1999) indicates in his reference paper for example that "Today's complex projects require a multitude of technical and people skills to be an effective, well-rounded team leader or player." This statement clearly emphasizes the importance of experience in the NPD processes. He furthermore states that "One recurring problem is the lack of experience and/or education of people expected to undertake new product projects." According to Cooper this is true both in consumer products as well as industrial products environment. Through the 'blockers' that Cooper introduces in his article the importance of experience throughout the NPD process including the launch stage becomes evident.

Cooper's colleague in many research papers, Elko J. Kleinschmidt together with Marjorie Adams-Bigelow (2006), bring up an aspect, which has a vital impact on NPD outcomes being the so-called soft or background resources, which are derived from the resource-based theory (RBT) of the firm framework (Helfat & Peteraf, 2003; Smith, Vasudevan, & Tanniru, 1996; Teece, Pisano, & Shuen, 1997). One of these background resources is experience, which according to Kleinschmidt cannot be acquired and forms the basis for the NPD activities, and thus enables the capability development and organizational learning for successful NPD projects. This organizational learning enables the companies to develop sustainable competitive advantages (Nevis, DiBella, & Gould, 1995) for example to be utilized in successful NPD launches. This might not always be an easy task however. Prior research has indicated that firms do not pay enough attention to this cumulative experience that can be successfully transformed into a competitive advantage to be utilized in successive successful NPD launches. This transformation process should incorporate the continuous improvement of the NPD launch practices, and also the dissemination and management of the accumulated knowledge (Ordanini, Rubera, & Sala, 2008).

Now the critical question is that does the experience in NPD launches have a positive impact on the NPD outcome. The previous research in this regard is limited. There is a notable exception here, however. Susan Hart (1993) discovered when

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