



Product–firm compatibility in new product development in technology companies

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ABSTRACT

We present an exploratory investigation of how managers conceptualize and perceive 'product–firm compatibility' variables in successful and unsuccessful new product development (NPD) projects, and explore the role that they play in differentiating between successful and unsuccessful NPD outcomes.

The findings show that managers perceive two distinctive types of product–firm compatibility factors, technology and marketing. Furthermore an 'advertising–finance' factor in the unsuccessful NPD projects emerged. Consequently differences exist in metric equivalence across successful and unsuccessful NPD projects, and thus the comparison of the successful and unsuccessful NPD projects should be done with caution. All product–firm compatibility variables and factors are positively related to NPD success. The managers, however, put lower relative importance to marketing in comparison to technology variables and factors.

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1. Introduction

Research regarding the outcomes of NPD has covered both environmental and controllable factors (Cooper & Kleinschmidt, 1995; Henard & Szymanski, 2001; Song & Parry, 1997a, 1997b). Environmental factors concern the milieu in which new products are developed and controllable factors are connected to new product activities that can be controlled by the company (Cooper, 1979a, 1979b; Song & Parry, 1994, 1997b). This study concentrates on a particular aspect of the controllable factors, which is the product–firm compatibility, and relates to the question how well the resources of the organization match the requirements of the NPD initiative.

In the new product literature, product–firm compatibility has been discovered to be closely related to the new product outcome (Cooper, 1979b; Mishra, Kim, & Lee, 1996; Parry & Song, 1994; Yap & Souder, 1994). Among the many factors that account for market success and failure, product–firm compatibility is one of the most important (Cooper, 1979a; Mishra et al., 1996). Although product–firm compatibility variables have been studied in differentiating successful and unsuccessful NPD projects (e.g. Cooper, 1979b; Kim, 1993; Mishra et al., 1996), they have mainly concentrated on the NPD process in industrial and manufacturing companies. There is a lack of research regarding the product–firm compatibility in the NPD process in technology intensive companies. Related research was done by Song and Noh (2006), in which, however, the emphasis was on the quality and need for proper resources and not on the product–firm compatibility as such. Another notable exception is the research done by Yap and Souder (1994), who concentrated on factors influencing new product success and failure in small entrepreneurial high-technology electronics companies in the Huntsville area in Alabama, United States. Overall the focus of the studies on the NPD process and the factors that contribute to NPD success and failure have largely focused on the United States, U.K. and Asia. In spite of the high importance of technology and R&D in Finland, little is known about the NPD process there. Our study seeks to fill this shortage.

In this study we try to provide answers to three vital research questions in a country with a continuous emphasis on innovation. The first research question relates to how managers in Finnish technology companies conceptualize product–firm compatibility

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during the NPD process, and the second research question is how product–firm compatibility variables differentiate successful and unsuccessful NPD projects in Finnish technology companies. By studying the dimensionality of product–firm compatibility and confirming metric equivalence between successful and unsuccessful NPD ventures it is possible to carry out a more thorough and valid investigation of the items affecting the success and failure of NPD projects, which is the second research question of this study. The third research question relates to the relationships and relative importance of the variables contributing to the success of the NPD projects. These research questions are essential to consider taking into account the significance being allocated on R&D in the development of new technology in the European Union, and Finland in particular.

Technology, and the research and development (R&D) investments on new product development (NPD) have a significant impact on the economic development of the OECD countries (OECD, 2004). Table 1 describes the relative weight and development of the R&D expenditure as a percentage of GDP in various countries (Research.fi, 2010).

An interesting discovery from Table 1 is the increasing role of R&D in China. The increasing role of China as an important production and manufacturing location in the world is a known fact, but as can be seen from Table 1 its investments in R&D have been expanding a great deal (UNESCO Institute for Statistics, 2007). This fact (Europa, 2005), the global growth in R&D expenditure (UNESCO Institute for Statistics, 2007) and the current economic challenges put a growing pressure on countries like Finland, which have traditionally placed a lot of emphasis on R&D as a way to vitalize its economy and to introduce new products into the world markets. On the basis of the discussion above it is critical that the R&D process activities are executed competently and as much as possible are understood in relation to the variables and factors present in the NPD process.

This research paper is organized as follows. First, we consider relevant literature related to the role of product–firm compatibility variables in the NPD process. Specifically we review the literature related to product–firm compatibility studies, which have empirically examined the relationship between product–firm compatibility and NPD success. Second, we bring forward an empirical study that was done in a technology industry in Finland. Third, we compare the results of this study to the previous studies done. Finally, we present the results and discuss implications for researchers and practitioners.

2. Theoretical background

2.1. NPD and product–firm compatibility

One of the most common reasons why new products do not succeed is the failure to meet the needs of customers (Crawford, 1991). Product–firm compatibility on the other hand has not always been discovered to play a critical role in new product success (Cooper, 1979b). The extant literature demonstrates, however, a positive relationship between product–firm compatibility and successful NPD outcomes.

The study among Canadian companies done by Cooper (1979b) discovered a low to medium correlation between the product–firm compatibility variables and the NPD success (correlations ranged in between 0.107 and 0.374). A replication of the Cooper (1979b) study by Mishra et al. (1996) with a Korean sample discovered medium to high correlations in product–firm compatibility variables (range 0.474–0.680) with NPD success than the Cooper study. The results in the study done by Parry and Song (1994) with a sample of Chinese companies also indicated somewhat higher correlations (range 0.178–0.519) than the Cooper study. Neither of these studies investigated the metric equivalence of product–firm compatibility in successful and unsuccessful NPD projects, which is a necessary requirement for conducting more thorough multivariate analysis.

2.2. NPD and product–firm compatibility in technology companies

The Yap and Souder (1994) study as well as the one conducted by Zirger and Maidique (1990) with an emphasis on the high-technology companies discovered a significant relationship between the project synergies/existing competencies (product line, marketing skills, engineering skills, and production skills), and commercial success. No specific relationships for product–firm compatibility variables were mentioned in this study, however. The finding in the Yap and Souder study, however, is important because the significant relationships mentioned above hold also under all market and technical uncertainty conditions, which are characteristic to high-technology markets (Mohr, 2001; Sperry & Jetter, 2009), and might not always be controllable in highly turbulent conditions (Droge, Calantone, & Harmancioglu, 2008). Finally a recent study by Harmancioglu, Droge, and Calantone (2009) studied the roles of strategic fit of the NPD venture to existing resources, and discovered that marketing fit and technology

Table 1
R&D expenditure in various countries as % of GDP.

	1997	2001	2005	2007
Finland	2.70	3.30	3.48	3.47
Japan	2.87	3.12	3.32	3.44
Sweden	3.48	4.17	3.60	3.60
US	2.58	2.76	2.62	2.68
EU-27	1.66	1.75	1.73	1.77
China	0.64	0.95	1.33	1.49

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