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Abstract. In the new product innovation management literature a lot of empirical studies have supported the importance of marketing orientation as a key success factor of new products. The purpose of this paper is to examine on a Hungarian sample if there is a connection between marketing oriented product development and new product performance. Firms were clustered into two product performance categories. ANOVA analysis showed significant correlation between R&D/marketing interface and new product performance, while variables associated with costumer orientation were not significant. The study was based on data "In Global Competition 2004 – 2006" survey. This paper was presented at the INCODE conference (INCODE, 2008).

Keywords: ANOVA analysis, market orientation, R&D/marketing interface, new product development, new product performance

A marketing orientált termékfejlesztés hatása az új termék teljesítményre

Absztakt. Számos felmérés bizonyítja, hogy az új termékek sikerét nagyban elősegíti a marketing orientált fejlesztési gyakorlat. A „Versenyben a világgal 2004-2006" felmérés adatbázisán ennek relevanciáját vizsgáltuk. A vonatkozó szakirodalomból kiindulva, a felmérés kérdőívéből kiválasztottuk azokat a változókat, amelyekkel a marketing orientált termékfejlesztés leginkább jellemezhető. Öt változóval írtuk le a fogyasztó orientációt, míg egy változónk volt a K+F/marketing együttműködésre. Eredményeink szerint azok a vállalatok, amelyeknél a K+F és a marketing részlegek szorosan együttműködnek, jobb termékfejlesztési teljesítményt érnek el. Ugyanakkor a fogyasztó orientáció és a termékfejlesztési teljesítmény között nem találtunk szignifikáns kapcsolatot. A tanulmány megjelent a pécsi INCODE konferencia kötetében (INCODE, 2008).

Kulcsszavak: ANOVA elemzés, piaci orientáció, K+F/marketing együttműködés, termékfejlesztés, új termék teljesítmény

Introduction

In the new product innovation management literature a lot of empirical studies have supported the importance of marketing orientation as a key success factor of new products (NP). In these studies, marketing orientation has been manifested as listening to costumer needs, proficiency of marketing activities and close R&D/Marketing relationship. One must differentiate this approach from another body of literature that deals with the relationship between market orientation and new product development activities and performance. The two most frequently administered market orientation scales are the MARKOR (Kholi, Javorski and Kumar, 1993) and the Narver and Slater (1990) scales. The measures in both scales are broad in scope and are designed to truly capture an "orientation" rather than specific processes, systems and procedures (Baker and Sinkula, 2005). The purpose of this paper is to examine on a Hungarian sample if there is a connection between marketing oriented product development and new product performance. Following a review of a limited part of the plentiful literature on new product development, I examine the research findings.

Marketing oriented product development

Our knowledge about the factors of successful product development and new product performance is based on the findings of many publications. Perhaps the most fruitful research direction has been comparative studies: here a large sample of new product success is compared and contrasted with a sample of failures in order to identify the key factors that discriminate between the two groups. One of the first researches in this field was the SAPPHO project about forty years ago. Forty-three pairs of projects – success versus failure – were studied, and 41 variables were found to be statistically significant in their relationship to project outcomes. Two of the five most important discriminators were marketing related: understanding of users' needs and attention to marketing and publicity (Rothwell et al, 1974). A similar study was undertaken in Hungary and revealed a parallel set of success factors (Rothwell, 1976).

Project NewProd sought to identify those characteristics that separated 102 new product successes from 93 failures in 102 firms (Cooper, 1979). The two most important success factors were:

- Having a unique, superior product in the eyes of the costumer, one with a real differential advantage in the market;

- Having strong market knowledge and market inputs, and undertaking the market research and marketing tasks well.

Maidique and Zirger (1983) concluded that success is likely to be greater under eight circumstances. The first two were:

- The developing organisation, through in-depth understanding of the marketplace and costumers, introduces a product with a high performance-to-cost ratio.
- The company is proficient in marketing, and commits a significant amount of resources to selling and promoting the product.

Focusing on the chemical industry, Cooper and Kleinschmidt (1993) found that product differentiation was the number one discriminator between winning and losing new products. "The winners are new products that offer higher relative product quality, have superior price/performance characteristics, provide good value for money to the customer, are superior to competing products in meeting customer needs, have unique attributes, and have highly visible benefits that are easily seen by the costumer" (p. 108). They also concluded that differentiation via nonproduct variables (superior sales force, better advertising, company image or product availability) less successful as a strategy; "low-price" strategy is not effective; and new products succeed and fail in spite of their external or market environment. A few years later, Cooper and Kleinschmidt (1995) moved from the project level to the company level in investigating success factors. They found that the existence of a high-quality new product management is the number one driver of new product performance. The ninth most important macro success factor was the existence of cross-functional teams. As a matter of course, marketing managers take part too in teams' work.

Comparing of U.S. and New Zealand small high-tech firms' new product development practices and performances, it was found that the New Zealand firms performed better than their U.S. counterparts. A confluence of country and organisation cultures, relationship marketing, and costumer-focused new product management practices was identified as a system of factors underlying the superior performance of the New Zealand firms (Souder et al, 1997).

From the 80th's a growing body of literature emerged that dealt with the role of marketing in the process for developing new products. Marketing plays an important

role in product development by, among other things, providing information user needs and by participating in decisions on product positioning and feature delivery. As Gupta et al. (1988) wrote: "Many studies have concluded that the failure to integrate marketing early into the innovative process is among the most significant causes for new product failure. Therefore, R&D/marketing integration is an important issue for all innovating organizations…" Griffin and Hauser (1996) reviewing and analysing the literature on the marketing/R&D interface concluded that all the 15 study in question either supported or was consistent with the hypothesis that cooperation enhances success. At the same time, they also stated that many researchers found and investigated numerous barriers to communication and cooperation.

Souder (1988) examined the R&D/marketing interface conditions found at 289 new product development projects. The data were collected through ten years of intensive field research at 56 consumer and industrial product firms. The results demonstrated that the quality of R&D/marketing interface affects the degree of success of new product development efforts. He concluded that those projects that experienced R&D/marketing harmony were much more successful than severe disharmonic projects. Most of the harmony projects succeeded (52%), while most of the severe disharmony projects failed (68%). Projects that can be characterized by mild disharmony were partially successful (45%).

Hise et al. (1990) analysed the new product development procedures of 252 large U.S. manufacturing companies. According to the study's results, the degree of commercial success achieved by new consumer or industrial products does not appear to depend significantly on the level of involvement existing for marketing in the process for developing new products. There was, however, one significant exception to this conclusion: When marketing and R&D demonstrated high levels of joint effort in determining the final design of new products, new products were more likely to have higher levels of success than when low levels of cooperation occurred.

Drawing on a sample of 206 Swedish medium-sized manufacturing firms, Frishammar and Hörte (2005) found that crossfunctional integration in the form of collaboration (e.g., work together as a team) proved significantly correlated with innovation performance, while interaction (e.g., exchange of reports) showed no such relationship.

Research findings

The study is based on data "In Global Competition 2004 – 2006" survey, which was organised by the Business Economics Department of Budapest Corvinus University. The aim of the survey was to give a general view of the competitiveness of the Hungarian companies. The questioner contained about 300 questions covering almost the entire aspects of firm's operations, management and marketing practices. For this paper, we made innovation and marketing questions of use.

Table 1. *Size of firms and industrial profile*

	Sample		Hungary (2003)
	N	%	%
Medium (50-249 employees)	55	55.6	78.9
Large (<250 employees)	44	44,4	21.1
All	99	100.0	100.0
Food and beverages	16	16.2	17.7
Textile, leather, clothing	11	11.1	16.8
Wood, paper, printing	10	10.1	8.7
Chemicals	21	21.2	9.9
Non-metallic products	8	8.1	4.0
Metal products	9	9.1	12.3
Industrial machinery	21	21.2	26.3
Other	3	3.0	4.3
All	99	100.0	100.0

Source: HCSO (2006)

The original database contains 300 firms of which 154 belong to the processing industry. I narrowed this sample further to those firms (99) that introduced new products between 2001 and 2003. The sample is composed of medium (50-249 employees) and large (<250 employees) firms; and it is biased towards large companies, average number of employees is 574. In the resulting sample the chemical and the non-metallic products are overrepresented, while others (e.g., textile, leather, clothing) underrepresented.

New *product performance* was measured by 3 variables: percentage of new-to-the-world/country products of all the new products; new product introduction rate relative to largest competitor (a subjective perception: 1 = much lower; 5 = much higher); and proportion of sales due to new or substantially improved products. 51 of 99 firms introduced new-to-the-world/country type products, while 48 firms new-to-the-

firm ones. Firms were clustered into two categories, based on their similarities in terms of these three performance metrics. K-means cluster analysis was used that computes distances using simple Euclidean distance. The smaller group of 29 firms boasted the higher results of the three metrics. As ANOVA analysis showed, two of them were highly significant (Table 2).

Table 2. *Clusters of new product performance*

NEW PRODUCT PERFORMANCE GROUPS	MEAN SCORE FOR NEW PRODUCT LAUNCH (1-5)	PROPORTION OF NEW-TO-THE-WORLD/COUNTRY PRODUCTS (%)	PROPORTION OF SALES BY NEW PRODUCTS (%)
High NP performers N = 29	3.41	72.14	25.17
Low NP performers N = 65	2.74	4.92	21.95
Total N = 94	2.95	25.66	22.95
	F = 6.92 Sig.=0.010	F = 377.25 Sig. = 0.000	F = 0.241 Sig. = 0.625

We measured the level of *market orientation in new product development* (MOPD) by six variables. Each item was measured on a Likert type scale from 1 to 5 (not important – very important) Five of them refer to costumer orientation, while one of them refers to R&D/marketing cooperation.

Table 3. *Performance clusters vs. MOPD variables*

VARIABLES	HIGH	LOW	TOTAL
		PERFORMERS	
	MEAN VALUES FOR VARIABLES		
The main cause of entering into a long-range contract with a costumer is the good chance for product development cooperation.	2.93	2.77	2.82
Considering new products, we mind the needs of our costumer's costumer.	3.76	3.69	3.71
Cooperation with costumers, suppliers and competitors contributes to the success of our new products.	3.69	3.29	3.41
Costumers are the main sources of new product development ideas.	3.79	3.62	3.67
Product development is marketing oriented.	3.62	3.40	3.47
Joint efforts of R&D/marketing/production departments in product development contribute to the success of our new products.	3.38	2.78*	2.97

*$p<0,1$

The difference between performance groups considering marketing orientation in product development was determined via ANOVA tests (Table 3). We found that although the high performers scored each variable better, "R&D/marketing interface" variable was statistically significant alone (at 10% level), and "Cooperation with business partners" item was very close to the 10 percent acceptance level. We can conclude that the high new product performer firms attached more importance to the collaboration between departments and with costumers. These factors were much more important than, for example, the origin of new products ideas.

Conclusions

The findings from this sample of firms partly support the connection between marketing oriented product development and new product performance. R&D/marketing interface variable significantly correlated with new product performance, while variables associated with costumer orientation were not significant. This imply that the firms agreed on the importance of costumer orientation, but the successful one's R&D, marketing, and production departments collaborated even more intensively in translating costumers' needs into competitive products.

A managerial implication could be that management can influence product development performance positively by investing organisational activities that enhance the market orientation of the firm. The limitation of the sample size and small number of MOPD variables relative to other international studies should lead one to treat the final result with caution.

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