

Biography

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The role of company related factors when launching new products into the international markets in Finnish high-technology companies

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While much research has been directed at the variables critical to successful R&D of new and high-technology products, much less work has been directed at those factors crucial to the success of these products when the firm first attempts to enter 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 are investigated. The generalizability of these Finnish findings of this research to other economies is discussed.

INTRODUCTION

The product development process is long and tedious. Starting from idea generation and hopefully ending with a successful market place launch, emphasis has been placed by the developed countries on development of new products. During last 20 years or so the relative amount of R&D expenditure has risen from about 0,7 % to its current level of 2,5 % of GNP in 1995 in Finland. This growth of R&D expenditure has been among

the fastest of OECD countries [1]. The rise in R&D expenditures has been crucial to the success of many Finnish industries and companies.

Putting resources in R&D is not enough, however. The best innovation in the world is meaningless without purchasing customers. Marketing is the area most cited by technology intensive companies as being neglected [2]. Many of the problems new technology companies face are marketing related. Good performance in product launches can be based on numerous variables. It can be f.ex. achieved because of the fact that the company is in the right place in the right time, rather than having an effective marketing management program [3].

This research is part of a larger research project, in which the launch of new high-technology products is studied. In the earlier study, the relationship of marketing variables and the outcome of the launch (success/failure) was investigated. In this study the company related variables and their relationship to the outcome of the international product launch are researched. Based upon the literature search, the company related variables to be included were background of key personnel, size of the company, industry, export intensity, and experience in product launches.

GOALS AND PURPOSE OF THE RESEARCH

The purpose of this research is to gain knowledge about the relationship of various company related variables in Finnish companies and the outcome of the launch (success/failure) when launching new high technology products into foreign markets.

The research contributes to empirically based knowledge concerning product launches in product introductions. The research attempts to determine whether the company related factors in Finnish high technology companies launching new products abroad significantly differentiate successful and unsuccessful product launches. Company related factors investigated were selected through a literature review with respect to the special features of high-tech products.

Broader research issue can be reflected in the following question: To what extent company related factors in Finnish high-technology companies differentiate successful and unsuccessful product launches into foreign markets?

SCOPE AND LIMITATIONS OF THE STUDY

The focus is on Finnish high-technology industries. Pure services, management technology, process technology are beyond the scope of the research. Projects, subcontracted products and consumer products are also excluded. Noel Capon and Rashi Glazer write in their study more widely about the definition of technology. They identify three sources, or components of know-how: product technology (the set of ideas embodied in the product), process technology (the set of ideas involved in the manufacture of the product or the steps necessary to combine new materials to produce a finished product), and management technology (the set of management procedures associated with selling the product and administration of the business unit [4]. Eventhough Finland is a fairly small country, it is representative of a number of

developing countries, which are presently attempting to enter international markets with their emerging high-tech domestic products. Finland also is on the leading edge in many areas of high-technology.

RESEARCH METHODOLOGY AND MODEL DESCRIPTION

Data were collected from the managing directors and managers or directors of independent profit-centers of firms, headquartered in Finland, having sales 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. 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 questions at hand.

The respondents were asked to reply regarding a product launch effort made during last three years. All possible efforts were made in the design process of the questionnaires to avoid the problem of selective perception [5]. Methodology included the development of questionnaires both for successful and unsuccessful product launches. Successful and unsuccessful product launches were compared. The difference between the successful and unsuccessful product launches was whether predetermined

objectives were reached or not. The conceptual model in figure 3 suggests the relationship between company related variables, and success.

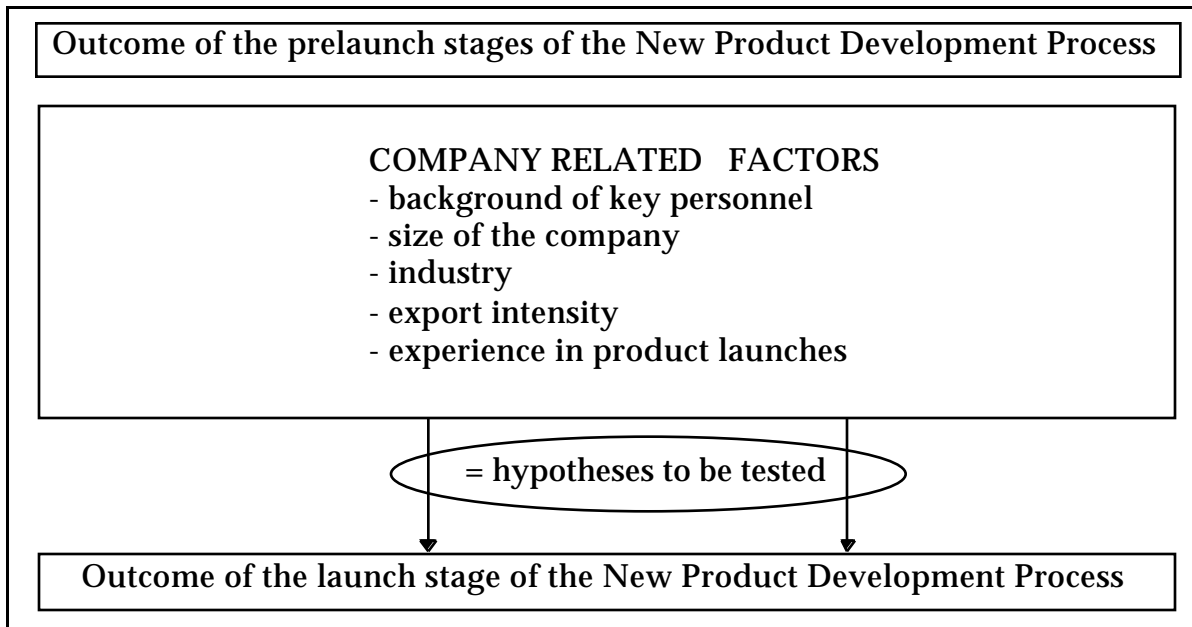


Figure 3. *The conceptual framework of the research.*

The partial model was developed to study the relationships of the factors between the elements of the new product launch phase. The direction of the arrows in the model is thought to be valid in each new product launch. The primary concepts are: the outcome of the new product launch into the foreign markets, and the company related factors.

Figure 3 describes the hypothesised relationships of selected variables. The effect of the prelaunch stages, although very important, has been excluded of the scope of this research. It is the belief here that the management has the opinion prior the actual

launch that the new product to be launched has every possible chance to make it in the market place.

One could also argue that in the real life the success or failure of the launch stage is influenced equally by internal factors (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 [6], market condition factors (like market share volatility (concentration of buyers and sellers, demand variability, market growth) and strength of competitors were not negatively related to the performance and factors as market size were not positively related to the performance. These factors are not studied in this research.

RESEARCH QUESTIONS AND HYPOTHESES

The following variables and hypotheses were central in the study:

- H₀₁ The industry in which the company operates does not affect success at new product launches into the foreign markets.
- H₀₂ The experience in product launches does not affect success at new product launches into the foreign markets.
- H₀₃ The share of sales sold outside Finland does not affect success at new product launches into the foreign markets.

H₀₄ The amount of sales of the company does not affect success at new product launches into the foreign markets.

H₀₅ The background of key personnel of the company does not affect success at new product launches into the foreign markets.

SAMPLING FRAME AND SAMPLE, AND DATA ANALYSIS METHODOLOGY

Virtaharju and Åkerblom [7] have identified the following industries to be high technology industries: drugs and medicine, office machinery and computers, electrical machinery for industry, telecommunication equipment, and scientific instruments [8]. The problem with industry-based definitions is that the companies within the specified industry are dissimilar[9]. Every effort was made by the researcher that the problems in this respect could have been avoided. It was asked from the respondent in the questionnaire, that whether the launched product in question, was a consumer or industrial product, project or subcontracted product. Accordingly, if the answer to this question was "Project", "Subcontracted product" or "Consumer Product", the answer was left out from the final sample, since it was felt by the researcher that projects and subcontracted products differ so vastly from the rest of the sample population. Projects and subcontracted products are always "produced" in very close connection with the final customer and thus f.ex. the meaning of advertising can be assumed to be limited. It was also decided that consumer products are to be left out of the scope of the research due to the fact the emphasis in the use of marketing methods is different. Drugs and medicines were left out due to their different nature in comparison to the other industries. The initial sample contained 298 companies.

Two statistical analytical techniques were used. Chi-square analysis was used to check for relationships between two 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 scale from 1 to 5 [10]. 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 [11].

FINDINGS

The mean turnover of the respondents' companies was 256 MFIM. Out of the firms, 44,4 % belonged to a concern. The mean percentage of R&D expenditure of turnover was 9,6 %, which clearly indicates that the R&D intensity is very high in these companies [12]. The mean percentage of marketing expenditure of turnover was 10,0%. The percentage of export share of the sales was 62,4%, which indicates high export intensity, and to some extent confirms the importance of these companies to the economy of Finland.

The typical background for the president was technical (67,9% of the respondents). The situation was not much different concerning the background of the highest ranking marketing officer [13]. The only perhaps surprising thing was that in 26 out of 81 cases (32,1%) the president of the company was also responsible for marketing. The

explanation for this is possibly the fairly small size of companies. The mean number of products launched during last three years in the sample population was 6,6. Out of these, 5,3 were classified as successful. This indicates a success rate of 80,4%. The most frequent export channel was direct, which was used by 80,3 % of the companies. Out of these, 28,4 %-units exported directly to the end-user.

Research hypothesis H_{01} reads “The industry in which the company operates does not affect success at new product launches into the foreign markets.” The purpose is to determine if the industry in which the company operates significantly affects on the success of the international product launch. The null hypothesis was accepted. The $\text{Prob}>F$ was 0,3813, and thus this hypothesis was accepted with the significance level of 0,05. Thus it can be said that there were no differences in the outcome of product launches between the four industries in the sample population.

Research hypothesis H_{02} reads “The experience in product launches does not affect success at new product launches into the foreign markets.” The purpose is to determine if the experience in product launches into the foreign markets significantly contributes to the success of international product launch. Experience was measured by the absolute number of the product launches. Somewhat surprisingly, the null hypothesis was accepted. The $\text{Prob}>F$ was 0,8161, and thus the hypothesis was accepted with the significance level of 0,05.

Research hypothesis H_{03} reads “The share of sales sold outside Finland does not affect success at new product launches into the foreign markets.” The purpose is to determine

if the share of sales that the company sells outside Finland significantly contributes to the success of international product launch. This hypothesis was studied in relative and absolute terms.

When testing the null hypothesis in relative (%) terms, it was accepted. The Prob>F was 0,7949, and thus the hypothesis was accepted with the significance level of 0,05. Thus, it can be said that high share (f.ex. 70 %) of sales to the export markets didn't affect the success of the product launch.

When testing the null hypothesis in absolute terms (export volume in finnmars), it was rejected. The Prob>F was 0,0456, and thus the hypothesis was rejected with the significance level of 0,05. The amount of absolute export volume in those respondents' companies who answered with regard to successful product launches, was 258,5 MFIM, and the amount of absolute export volume in those respondents' companies who answered with regard to unsuccessful product launches, was 39,1 MFIM.

Research hypothesis H_{04} reads "The amount of sales of the company does not affect success at new product launches into the foreign markets." The purpose is to determine if the sales volume of the company significantly contributes to the success of international product launch. The Prob>F was 0,0349, and thus the hypothesis was rejected with the significance level of 0,05. In those respondents' companies who answered with regard to unsuccessful product launches, the absolute sales volume was

50,58 MFIM and in those respondents' companies who answered with regard to successful product launches, the absolute sales volume was 323,52 MFIM.

Research hypothesis H_{05} reads "The background of key personnel of the company does not affect success at new product launches into the foreign markets." The purpose is to determine if the background (technical and marketing background or just marketing background versus only technical background) of the president as well as the highest ranking marketing officer of the company significantly contributes to the success of international product launch. The Prob>F's were 0,7564 (president) and 0,9125 (highest ranking marketing officer), and thus the hypothesis was accepted with the significance level of 0,05.

CONCLUSIONS

The success rate when launching high technology products into the export markets was in this study 80,4 %. This is a fairly high figure in comparison to the findings in other research. Zirkle, for example, found out in his research concerning consumer products that the success rate was 75,3 % [14]. Caution should be exercised, however, when comparing the findings concerning new-product success rates between domestic and foreign markets, as well as between consumer and industrial markets.

The present study offers empirical evidence that significant differences exist in the outcome of the product launch into the international markets depending upon the size

of the company and its' volume of exports. The two factors (the absolute sales volume of the company, and the absolute amount of export volume) differentiate effectively the successful and unsuccessful product launches. In those respondents' companies who answered with regard to unsuccessful product launches, the absolute sales volume was 50,6 MFIM and in those respondents' companies who answered with regard to successful product launches, the absolute sales volume was 323,5 MFIM. In those respondents' companies who answered with regard to unsuccessful product launches, the absolute export sales volume was 39,1 MFIM and in those respondents' companies who answered with regard to successful product launches, the absolute export sales volume was 258,4 MFIM.

There were no differences, however, in the outcome of product launches between the industries nor were there any differences in the outcome of product launches between the companies with different amount of experience in product launches into the export market. And also, there were no differences in the outcome of product launches depending upon the background of the key personnel of the company nor were there any differences in the outcome of product launches depending upon the background of the highest ranking marketing officer of the company.

MANAGERIAL IMPLICATIONS

The results of this research bring important points to the attention of the management of high technology companies. They should focus their attention on trying to achieve critical mass in the export sales and overall sales volume of the company. It is important

to find any, and all means to overcome this obstacle. For example, one possibility is to use the export sales circles established by the Finnish Foreign Trade Association.

Also, independent of the industry, every company should have a reasonable chance to succeed in the launch of their high technology products. This finding of course applies only to the four industries studied in this research. Whether this finding applies to other industries as well, is perhaps an area for further research.

SUGGESTIONS FOR FURTHER RESEARCH

The contribution of this research is the determination of effective marketing methods in various situations when launching new high technology products into the international markets. Several interesting issues for further research arose during the project:

1. Comparative research between countries with identical research approaches to the study in hand would raise interesting issues. In spite of the potential shortcomings of this approach, due to the cultural viewpoint, further research needs to be done.
2. Addressing a greater number of industries (which would not, based on the definition of the high technology industry, be high technology industries) in a further study, it would be interesting to see whether there are differences in the outcome of the launch process between the industries.
3. Even more comprehensive research, including the market condition factors that affect the success of the launch, should be investigated.

4. The responding companies in this research were companies producing industrial products. It would be an interesting area to also study companies producing consumer products.

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