

## 6. SUMMARY, CONCLUSIONS AND FINDINGS

This chapter presents a summary of the research and its' findings as laid out in chapter 5. The first section of the chapter will address the research method used. The second section of the chapter will address the company background information. The third section of the chapter will deal with the marketing methods used by high-technology companies in Finland as well as their perceived effectiveness. The fourth section of the chapter will evaluate the relationship of company related factors and the marketing methods used (hypothesis 1-6). The fifth section of the chapter will evaluate the relationship of company related factors and marketing costs (hypothesis 7-10). The sixth section of the chapter will evaluate the relationship of the marketing methods and the outcome of the launch stage (hypothesis 11). The seventh section of the chapter will evaluate the relationship of marketing costs and the outcome of the launch stage (hypothesis 12). The eighth section of the chapter will assess the relationship of company related factors and the outcome of the launch stage (hypothesis 13-18). The ninth section of the chapter will review the relationship of marketing costs and the marketing methods used (hypothesis 19). In the tenth section of the chapter the conclusions of the research will be presented. In the eleventh section of the chapter the recommendations for the management of the high technology companies will be given and finally in the twelfth section of the chapter the suggestions for further research will be given.

### 6.1. Research method

The purpose of this study was to gain knowledge regarding the use of different marketing methods in Finnish high technology companies when launching new products into the foreign markets. Further, this research should contribute to the increase of empirically based knowledge concerning the product launch phase of the R&D process and specifically what is the role of marketing methods in it. Marketing methods were searched from the literature regarding marketing theory taking into account the special features of high-tech products.

The areas of research were reflected by the following research questions:

- 1) To what extent are Finnish high-technology companies using different marketing methods when launching new products into the foreign markets?

- 2) What is the perceived effectiveness of different marketing methods in the Finnish high-technology companies when launching new products into the foreign markets?
- 3) Why are the marketing methods effective or not effective?

Marketing effectiveness in this study was defined as the relative fulfilment of the predetermined objectives of the Finnish high-technology companies. This research focused on Finnish high technology industries. Pure services, management technology, process technology were left out of the scope of this research, as well as projects, subcontracted products and consumer products.

Data was collected from the managing directors and managers or directors of independent profit-centers of firms headquartered in Finland receiving sales revenue from both domestic and foreign markets.

This research used the research design in which the event under research is described and then hypotheses are produced to explain it. The goal was primarily to show causal or at least correlative relationships. Sampling frame was collected from a wide population and it was dealt with statistical methods.

This research included conducting a direct mail survey using a two-part questionnaire, which included questions concerning the marketing methods and questions regarding the background of the company and the respondent. To test some of the hypothesis the sample population was divided into two different groups, so that successful and unsuccessful product launches could be compared.

Based on the review of the literature in chapters 2 and 3 a conceptual model, which concentrated on this research's key concepts, was constructed to study the various relationships of the factors between the elements of the new product launch phase.

The primary concepts were:

- the outcome of the new product launch into the foreign markets;
- the marketing methods used and their perceived effectiveness;
- company related factors; and
- marketing costs.

The sample population of the research consisted of the following industries:

- 1) Office machinery and computers (SIC (1988) code 261),
- 2) Electrical machinery for industry (SIC (1988) code 263 excluding 2633),
- 3) Telecommunication equipment (SIC (1988) code 2621 and 2622), and
- 4) Scientific instruments (SIC (1988) code 264).

The contact information of the basic population of the research was received from the Statistics of Finland. The initial sample was also received from Statistics Finland. It contained 298 companies. The size of the accepted sample population was 81 and thus the response rate was 35,2%.

The questionnaires were sent to managing directors or managers of profit centers. The questionnaires were not sent to persons who were responsible for marketing only or R&D only. Out of the accepted answers 20 (24,7%) responded concerning unsuccessful product launch and 61 (75,3%) responded concerning successful product launch.

The mailings of the final questionnaires were done in March and April, 1995. Two basic statistical analytical techniques were employed in this study to test the hypotheses: chi-square analysis and analysis of variance.

## 6.2. Company background information

The mean turnover of the respondents' companies was 256 MFIM. Out of firms, 44,4 % belonged to a concern. The mean percentage of R&D expenditure of turnover was 9,62 %, which clearly indicates that the R&D intensity is very high in these companies.<sup>1</sup> The mean percentage of marketing expenditure of turnover was 10,02%.

The percentage of export share of the turnover in the last fiscal year in the respondents' companies was 62,43%, which indicates the high export intensity of

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<sup>1</sup> For example Alahuhta's determination as high-technology assumed at least 5 % of R&D expenditure of turnover. Frequently used percentage is also 4 %. See Matti Alahuhta: Global Growth Strategies for High Technology Challengers, p.19. See also Classification of high-technology products and industries. Working Party N°9 of the Industry Committee on Industrial Statistics. Organisation for Economic Co-operation and development (OECD). 1994.

these companies, and at least to some extent confirms the importance of these companies to the economy of Finland.

The typical background for the president in the responding company was technical (67,9% of the respondents). The situation was not much different when speaking about the background of the highest ranking marketing officer. 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 sample population of the research represented the following industries: telecommunications equipment, manufacturing of office machinery and computers, electrical machinery for industry, and scientific instruments, optical equipment. The first two constituted the largest portion of the total sample.

The mean number of products launched during last three years in the sample population was 6,62. Out of these, 5,32 were classified as successful product launches. This indicates a success rate of 80,41%.

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.

### 6.3. Marketing methods usage and effectiveness

In the following table the ranking order of importance of the different marketing methods is presented. In the first column are the marketing methods and in the second column are the medians of each marketing method. The third column has been calculated by multiplying the fifth level of importance by the corresponding frequency and by multiplying the fourth level of importance by the corresponding frequency and then these two figures have been added together. After this calculation it was possible to rank the marketing methods in the order of importance.

Table 144. The relative importance of marketing methods in ranking order.

Marketing method	Median	Calc.	Rank
1. Personal selling	4	296	1
2. Marketing concept	4	254	2
3. New product development strategy	4	254	3
4. Differentiation	4	252	4
5. Product/service specialisation	4	206	5
6. Pricing	4	189	6
7. Sales promotion	4	178	7
8. Market segmentation	4	177	8
9. Marketing organisation	3	161	9
10. Distribution	3	154	10
11. Positioning	3	141	11
12. Marketing planning	3	116	12
13. Market share	2	109	13
14. Publicity	2	77	14
15. Market research	2	74	15
16. Advertising	2	48	16
17. Marketing information systems/ Marketing intelligence	2	47	17
18. Marketing consultants	1	31	18

The marketing methods are then divided in groups as follows:

- 250 - 300 points    Very important    - 200 - 249 points    Rather important
- 100 - 199 points    Moderate    - 50 - 99 points    Rather unimportant
- 0-49 points    Very unimportant.

The results of this classification can be presented in the following table as follows:

Table 145. Description of importance of the marketing methods in Finnish high-technology companies.

Marketing method	Description of importance
1. Personal selling	Very important
2. Marketing concept	Very important
3. New product development strategy	Very important
4. Differentiation	Very important
5. Product/service specialisation	Rather important
6. Pricing	Moderately important
7. Sales promotion	Moderately important
8. Market segmentation	Moderately important
9. Marketing organisation	Moderately important
10. Distribution	Moderately important
11. Positioning	Moderately important
12. Marketing planning	Moderately important
13. Market share	Moderately important
14. Publicity	Rather unimportant
15. Market research	Rather unimportant
16. Advertising	Very unimportant
17. Marketing information systems/ Marketing intelligence	Very unimportant
18. Marketing consultants	Very unimportant

By using similar procedure, the usage of marketing methods in both successful and unsuccessful product launches into the foreign markets are presented in the following table. If there is a difference of two or more in the ranking order, the ranking of the marketing method has been typed in bold in the both successful and unsuccessful cases' column. It can be seen from the table that there are some differences.

**Sales promotion** is the third most important marketing method in unsuccessful product launches, whilst it is only the eight most important in the successful product launches. **Market share** is the ninth most important marketing method in unsuccessful product launches, when it is the 13th most important in the successful product launches. **New product development** strategy is only the fifth most important marketing method in unsuccessful product launches, when it is the second most important in the successful product launches. **Marketing information systems/**

**marketing intelligence** is the 17th most important marketing method in unsuccessful product launches, when it is the 14th most important in the successful product launches. **Differentiation**, on the other hand, is the second most important marketing method in unsuccessful product launches, when it is the fourth most important in the successful product launches. **Market segmentation** is the ninth most important marketing method in unsuccessful product launches, when it is the seventh most important in the successful product launches. **Marketing organisation** is the seventh most important marketing method in unsuccessful product launches, when it is the ninth most important in the successful product launches.

Table 146. *The relative importance of marketing methods in both successful and unsuccessful product launches into the foreign markets in ranking order.*

Marketing method	Successful cases			Unsuccessful cases		
	Med.	Calc.	Rank	Med.	Calc.	Rank
1. Personal selling	4	227	1	4	69	1
2. New product development strategy	4	214	2	3	40	5
3. Marketing concept	4	213	3	3,5	41	4
4. Differentiation	4	189	4	3,5	63	2
5. Product/service specialisation	4	169	5	4	37	6
6. Pricing	4	155	6	3,5	34	7
7. Market segmentation	4	146	7	3	31	9
8. Sales promotion	4	135	8	3,5	43	3
9. Marketing organisation	3	127	9	3	34	7
10. Distribution	3	126	10	2	28	11
11. Positioning	3	113	11	3	28	11
12. Marketing planning	3	98	12	2,5	18	13
13. Market share	2	78	13	2	31	9
14. Market research	2	74	14	1	8	15
15. Publicity	2	73	15	1	4	16
16. Advertising	2	44	16	2	4	16
17. Marketing information systems/ Marketing intelligence	2	30	17	1,5	17	14
18. Marketing consultants	1	27	18	1	4	16

Based on the previous analysis, it is clear that all the above mentioned marketing methods are used in all companies at least to some extent. It is important to note,

however, that the relative importance of the marketing methods in some cases seems to be quite different. **Sales promotion** as a marketing method, for example, seems to be have a too important meaning in unsuccessful product launches. **New product development strategy**, on the other hand, seems to be undervalued as a marketing method in unsuccessful product launches. Contrary to this, **differentiation** seems to be overvalued as a marketing method in unsuccessful product launches. Same applies to market share. **Market share** seems to be overvalued as a marketing method in unsuccessful product launches.

In terms of effectiveness, the results were following:

Table 147. *The relative importance of marketing methods as perceived by the respondents in ranking order.*

Marketing method	Median	Calc.	Rank
1. Personal selling	4	282	3
2. Marketing concept	4	298	2
3. New product development strategy	4	312	1
4. Differentiation	4	219	5
5. Product/service specialisation	4	230	4
6. Pricing	4	189	7
7. Sales promotion	3	169	11
8. Market segmentation	4	212	6
9. Marketing organisation	4	184	8
10. Distribution	3	171	10
11. Positioning	4	176	9
12. Marketing planning	3	140	12
13. Market share	2	85	16
14. Publicity	3	95	13
15. Market research	3	90	15
16. Advertising	2	70	17
17. Marketing information systems/ Marketing intelligence	3	91	14
18. Marketing consultants	2	38	18

Thus, in terms of effectiveness, the highest rating was given to new product development strategy. Marketing consultants received the lowest rating. Thirteen marketing methods (marketing concept, new product development strategy,

product/service specialisation, market segmentation, marketing organisation, distribution, positioning, marketing planning, publicity, market research, advertising, marketing information systems/marketing intelligence and marketing consultants) received higher effectiveness ratings than usage. The major differences between usage and effectiveness were sales promotion, market share and marketing information systems/marketing intelligence. The effectiveness ratings regarding sales promotion and market share were somewhat lower than usage. The effectiveness rating regarding marketing information systems/marketing intelligence, on the other, hand was somewhat higher than usage.

Another way to describe these results is given in the following figure. As one can see, the respondents' responses show that a certain relationship exists between the usage and effectiveness. As D'Aquila's<sup>2</sup> study had also done, the results of this study presume that a marketing method is being used because it is perceived as being effective in achieving the predetermined objectives. In the case, when a marketing method is not effective, it is usually not used. In the D'Aquila's research, it was observed that the difficulty in judging the effectiveness of some marketing methods can result that the respondents weigh the usage more as a means of measuring success. Thus it can be said that usage creates results.<sup>3</sup>

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<sup>2</sup> Ann D'Aquila Scheer: *Effective Marketing Methods in Export Management Companies*, p. 269-270.

<sup>3</sup> Ann D'Aquila Scheer: *Effective Marketing Methods in Export Management Companies*, p. 270.

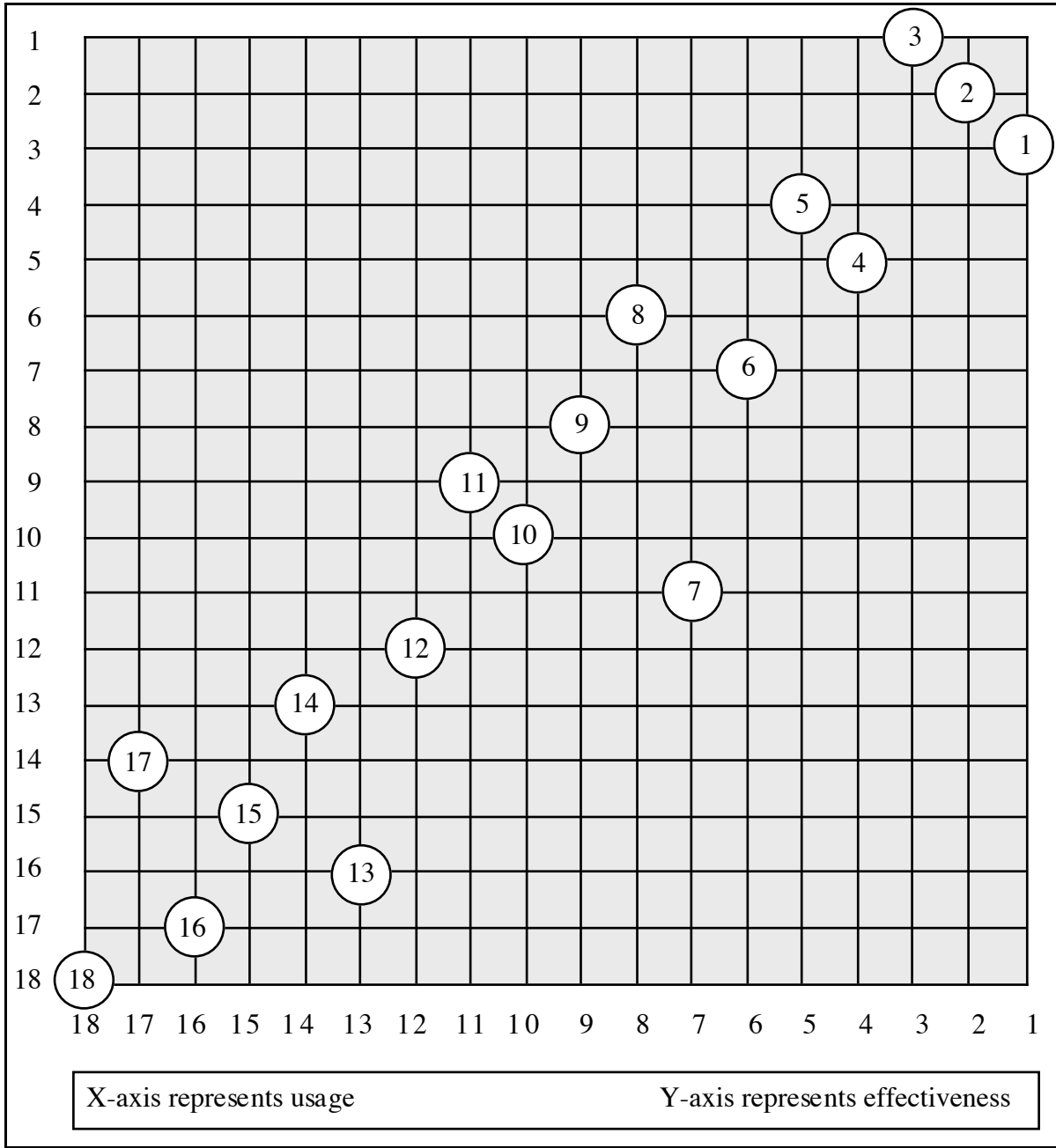


Figure 26. Usage and effectiveness ratings for 18 marketing methods in Finnish high-technology companies.

### 6.4. Company related factors and marketing methods

In this section the findings concerning the relationship of the company related factors and marketing methods will be presented. The company related factors were the size of the company ((hypothesis 1), export intensity (the percentage of the sales of the company sold outside Finland) (hypothesis 2), the background of the key personnel (president and highest ranking marketing officer) (hypothesis 3 and 4), experience on

product launches into the export markets (hypothesis 5), and industry (hypothesis 6). It was not expected by the researcher that all or most of these hypotheses would have been fully supported.

In the case of the **first hypothesis** (the size of the company and the marketing methods), publicity, promotion, marketing organisation, market share and positioning were marketing methods, which are more commonly used in larger companies. As far as publicity, promotion and marketing organisation are concerned, this finding perhaps indicates that larger companies have more resources to use these marketing methods and perhaps also that they have more experience to use these marketing methods. Small and emerging companies conceivably have to consider how to use their scarce resources, when is the right time to consider hiring a new high quality marketing person and so on. In the case of market share and positioning, one can argue that the effective use of these marketing methods requires more in-depth knowledge regarding the marketplace, and also experience and management competence. Another point as far as market share is concerned, is that the use of the market share as a marketing method requires that there is a market for the product already. If there is not a market for the product, market share cannot be calculated or at least it can be very difficult. This was also an expected finding from the literature review. As Regis McKenna put it, "high-technology companies should focus on creating markets, instead of putting emphasis on market shares."<sup>4</sup> As far as the effectiveness of the marketing methods was concerned, marketing planning was the only marketing method, which was perceived to be more efficient by the respondents in larger companies.

In the case of the **second hypothesis** (export intensity, i.e. the percentage of the sales of the company sold outside Finland and the marketing methods), the companies were divided into two groups: the first group comprised of companies in which the sales sold outside Finland was less or equal to 40%, and the second group comprised of companies in which the sales sold outside Finland was more than 40%. Advertising, publicity, promotion and market share were marketing methods that are more commonly used in companies in which most (>40%) the sales of the company is sold outside Finland. This is to some extent similar to the findings of the first hypothesis. Companies with less experience in export markets conceivably have to consider how to use their scarce resources efficiently. The use of these methods possibly requires more in-depth knowledge of the market place, especially regarding

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<sup>4</sup> Regis McKenna: The Regis Touch, p. 21.

market share. If the management of the company does not have enough in-depth knowledge of the market place, it could be more difficult to use advertising, publicity and promotion as marketing methods. One also has to remember the practical and educational background of the key personnel in the responding companies, which in most of the cases was technical. Maybe managers with technical background only don't feel comfortable using these methods due to their somewhat abstract nature. As far as the effectiveness of the marketing methods was concerned, publicity was the only marketing method, which is perceived to be more efficient in the companies where most the sales of the company is sold outside Finland.

In the case of the **third hypothesis** (the background of the president and the marketing methods), personal selling and positioning are marketing methods that are more commonly used in companies where the president of the firm has a technical and marketing background, or just marketing background than in companies where the president has only technical background. This is perhaps one of the most significant findings of this research, since personal selling was the most important marketing method in Finnish high-technology companies. This was also found out earlier in the literature review by Shanklin and Ryans. The largest number of marketing personnel in high-technology companies is involved in personal selling and sales promotion efforts.<sup>5</sup> In this case one has to remember the slightly different nature of personal selling in the marketing of high-technology products. As emphasised by McKenna, a qualitative approach should be used in sales, since many customers make their decisions on more qualitative factors, such as service, reliability and reputation.<sup>6</sup> In McKenna's view, positioning is perhaps the cornerstone in the marketing of high-technology products. Thus this research confirms this view. As far as the effectiveness of the marketing methods was concerned, marketing consultant, market segmentation and differentiation were marketing methods, which are perceived to be more efficient by the presidents have a technical and marketing background, or just marketing background.

In the case of the **fourth hypothesis** (the background of the highest ranking marketing officer and the marketing methods), differentiation was the only marketing method that is more commonly used in companies where the senior marketing officer of the firm has a technical and marketing background, or just marketing background than in companies where the senior marketing officer has

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<sup>5</sup> William L. Shanklin, John K. Ryans, Jr.: *Essentials of Marketing High Technology*, p. 90.

<sup>6</sup> Regis McKenna: *The Regis Touch*, p. 29.

only technical background. As far as the effectiveness of the marketing methods was concerned, marketing concept and marketing consultant are marketing methods, which are perceived to be more efficient in companies where the senior marketing officer has a technical and marketing background, or just marketing background.

In the case of the **fifth hypothesis** (experience on product launches into the export markets and marketing methods), product/service specialisation, distribution, and positioning were marketing methods which are more commonly used in companies with more experience on product launches into the export markets. The companies with more experience on product launches realise that these marketing methods are important when launching new products into the export markets. It is especially interesting that, distribution, is among these methods. Therefore companies with less experience on product launches, should place a lot of emphasis on the selection of the distribution channel, since it is a decision, which could have very long lasting consequences and mistakes might cause, if not complete failure, at least postponement for the launch of their products. With regard to positioning, same comments as in the previous hypothesis, can be given. The findings here only confirm that positioning really is important when launching new high-technology products into the export markets. As far as the effectiveness of the marketing methods was concerned, marketing concept, product/service specialisation, distribution, overall strategy in new product program and positioning are marketing methods, which are perceived to be more efficient in the companies with more experience on product launches into the export markets.

In the case of the **sixth hypothesis** (industry and the marketing methods), marketing methods used in the two industries (electrical machinery for industry, and scientific instruments, optical equipment) studied, were similar to very large extent. Only marketing consultant was the marketing method that is more commonly used in the industry of electrical machinery for industry. As far as the effectiveness of the marketing methods was concerned, there were no marketing methods, which are perceived to be more efficient in the companies between the two industries.

## 6.5. Company related factors and marketing costs

In this section the findings concerning the relationship of the company related factors and marketing costs will be presented. The company related factors were the size of the company (hypothesis 7), experience on product launches into the export markets (hypothesis 8), export intensity (the percentage of the sales of the company sold

outside Finland) (hypothesis 9), experience on product launches into the export markets (hypothesis 8), and industry (hypothesis 10).

In the case of the **seventh hypothesis** (the size of the company and the marketing costs). There were no significant differences either in absolute or relative marketing expenditure between large and small companies.

In the case of the **eighth hypothesis** (experience on product launches into the export markets and relative marketing costs), there were no significant differences in marketing expenditure amongst companies with different amount of experience on product launches into the export markets.

In the case of the **ninth hypothesis** (export intensity, i.e. the percentage of the sales of the company sold outside Finland and the marketing costs) there were significant differences in relative marketing expenditure amongst companies with different percentage of the sales of the company sold outside Finland. This clearly indicates that launching products into the foreign markets is more expensive. In the research, the companies were divided into two groups: the first one consisted of companies in which the export's share of turnover was less or equal to 40 %, and the second one consisted of companies in which the share was more than 40 %. In the first group the mean of the marketing expenditure was 7,6%, and in the second group the mean of the marketing expenditure was 11,2 %. Thus the difference in relative expenditure was 3,6 %.

In the case of the **tenth hypothesis** (industry and the marketing costs) there were significant differences in relative marketing expenditure between the two industries studied. In the industry of electrical machinery for industry, the mean of the marketing expenditure was 13,7%, and in the industry of scientific instruments, optical equipment the mean of the marketing expenditure was 7,8 %. Thus the difference in relative expenditure was 5,9 %.

## 6.6. Marketing methods and the outcome of the launch stage

In this section the findings concerning the relationship of the marketing methods and the outcome of the launch stage will be presented (hypothesis 11). Marketing concept is a marketing method that is more commonly used in successful product launches. This is an important finding especially when taking into account how the contents of

the marketing concept in the research questionnaires a marketing method was described:

Marketing concept as a marketing method is described as the orientation of all parts of the organisation towards **the satisfaction of the customer needs**. For example, everyone is actively involved in marketing, not just the higher top management. It focuses especially in developing long-term relationships with customers in order to guarantee immediate and frequent communication.

This marketing method lays the foundation for the whole organisation towards the satisfaction of the customer needs. Thus the result indicates, that everyone is not actively involved in marketing in unsuccessful product launches. And further, the development of long-term relationships with customers in unsuccessful product launches is perhaps not as important as in successful product launches. Same thing applies to frequent and immediate communication. As far as the effectiveness of the marketing methods was concerned, advertising is the only marketing method, which is perceived to be more efficient in the successful product launches.

## 6.7. Marketing costs and the outcome of the launch stage

In this section the findings concerning the relationship of the marketing costs and the outcome of the launch stage will be presented (hypothesis 12). With the significance level of 0,05 there were no differences in relative and absolute terms of marketing expenditure regarding the outcome of the product launch. It has to be pointed out, however, that the part of this hypothesis regarding the absolute marketing expenditure, was only very closely rejected. If one assumed a significance level of 0,06, this hypothesis would have been accepted. So practically one can say that this hypothesis was accepted. This means that the absolute amount of marketing expenditure correlates with the success of the product launch. It was also analysed that what was the mean absolute marketing expenditure in companies in successful and unsuccessful product launches. In those respondents' companies which answered with regard to unsuccessful product launches, the absolute marketing expenditure was 4,18 MFIM and in those respondents' companies which answered with regard to successful product launches, the absolute marketing expenditure was 26,20 MFIM. This discussion, however, has to be carried on in context with the next chapter.

## 6.8. Company related factors and the outcome of the launch stage

In this section the findings concerning the relationship of the company related factors and the outcome of the launch stage will be presented. The company related factors were industry (hypothesis 13), experience on product launches into the export markets (hypothesis 14), export intensity (the percentage of the sales of the company sold outside Finland) (hypothesis 15), the size of the company (hypothesis 16), and the background of the key personnel (president and highest ranking marketing officer) (hypothesis 17 and 18).

In the case of the **thirteenth hypothesis** (industry and the outcome of the launch stage), no differences were found between different industries concerning the outcome of the launch stage.

In the case of the **fourteenth hypothesis** (experience on product launches into the export markets and the outcome of the launch stage), no differences were found between companies with different amount of experience on product launches into the export markets concerning the outcome of the launch stage.

In the case of the **fifteenth hypothesis** (export intensity, i.e. the percentage of the sales of the company sold outside Finland and the outcome of the launch stage), no differences were found between companies with different percentage of the sales of the company sold outside Finland. It was found out, however, that the absolute amount of export volume of the company differentiated the successful and unsuccessful product launches. Thus it can be said that when the absolute export volume of the company increases, the greater the probability for success of the new product launch. In those respondents' companies who answered with regard to unsuccessful product launches, the absolute export sales volume was 39,10 MFIM and in those respondents' companies who answered with regard to successful product launches, the absolute export sales volume was 258,4 MFIM.

In the case of the **sixteenth hypothesis** (the size of the company and the outcome of the launch stage). It was found out that the absolute sales volume correlates with the success of the product launch. It was also analysed that what was the mean absolute sales volume in companies in successful and unsuccessful product launches. 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.

Thus, the three factors (the absolute sales volume of the company, the absolute export volume and the absolute marketing expenditure) differentiate effectively the successful and unsuccessful product launches. It was also analysed, to what degree there was correlation between these factors. The correlation was especially high (correlation factor 0,9901) between the absolute sales volume and the absolute amount of export volume of the company.

In the case of the **seventeenth hypothesis** (the background of the president (technical and marketing background or just marketing background versus only technical background) and the outcome of the launch stage)) no differences were found in this regard between the different backgrounds of the presidents. The same finding applied to the **eighteenth hypothesis** (the background of the highest ranking marketing officer (technical and marketing background or just marketing background versus only technical background)). Again no differences were found in this regard between the different backgrounds of the highest ranking marketing officer.

## 6.9. Marketing costs and marketing methods

In this section the findings concerning the relationship of the marketing methods and marketing costs will be presented (hypothesis 19). Product/service specialisation, distribution, advertising, publicity, promotion, market share, marketing planning and market research are marketing methods which are more commonly used in companies with higher marketing expenditure. Three other marketing methods were only very closely rejected (personal selling (0,0600), overall strategy in new product program (0,0624), marketing information system/marketing intelligence (0,0601)). This can be said to be an expected finding. The more you spend on marketing costs, the more you use the different marketing methods. And also other way round.

It is interesting, however, that for example marketing concept is not amongst these methods. It was found out earlier on (hypothesis 11), that marketing concept was the only marketing method that was more commonly used in successful product launches. Similar conclusion applies to pricing, especially when taking into account the meaning that pricing can have on the profitability of the company.

## 6.10. Comparison of findings to related research

A portion of this research included replication of previous research. The empirical research method, however, was different. Sage Ann D'Aquila Scheer used case study methodology, and statistical approach was used in this research. It has to be noted here, that the research concerning high technology companies, the use of marketing methods and their perceived effectiveness when launching new products into the export markets is non-existent. Sage Ann D'Aquila Scheer's dissertation dealt with effective marketing methods in export management companies, and that is practically the only research to which a comparison could be made. The results are compared in the following table.

*Table 148. The comparison of the results in this research and in Sage Ann D'Aquila Scheer's dissertation.*

	<b>This research</b>	<b>Sage Ann D'Aquila Scheer's dissertation</b>
<b>Marketing method</b>	<b>Rank</b>	<b>Rank</b>
1. Personal selling	1	1
2. Marketing concept	2	6
3. New product development strategy	3	N.a.
4. Differentiation	4	3
5. Product/service specialisation	5	6
6. Pricing	6	9
7. Sales promotion	7	4
8. Market segmentation	8	11
9. Marketing organisation	9	2
10. Distribution	10	10
11. Positioning	11	5
12. Marketing planning	12	12
13. Market share	13	N.a.
14. Publicity	14	14
15. Market research	15	16
16. Advertising	16	6
17. Marketing information systems/ Marketing intelligence	17	15
18. Marketing consultants	18	13

New product development strategy and market share were marketing methods that were not included in Sage Ann D'Aquila Scheer's dissertation. Personal selling was the most important marketing method in Sage Ann D'Aquila Scheer's dissertation. That was the case also in this research.<sup>7</sup> The other promotional methods were of lesser importance.<sup>8</sup> The most important differences between these two studies were marketing concept (rank 2 versus 6), marketing organisation (rank 9 versus 2), positioning (rank 11 versus 5), advertising (rank 16 versus 6) and marketing consultants (rank 18 versus 13). Most of these differences are due to the fact that high technology companies and export management companies are quite different although both studies dealt with export. The other important factor here is that the contents of those marketing methods in this research and in Sage Ann D'Aquila Scheer's dissertation were quite different. This makes the comparison of the findings even more complicated.

One important fact can be stated. Similarly than in Sage Ann D'Aquila Scheer's research, it was expected that high technology companies would not use and perceive all marketing methods to be effective marketing tools. The researcher did not anticipate, however, the large number of marketing methods to be perceived only moderately important or even less for both usage and effectiveness. This was the case with 13 out of 18 marketing methods studied in this research.

## 6.11. Conclusions

The findings of this study are:

1. The success rate when launching high technology products into the export markets was in this study 80,41 %.

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

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<sup>7</sup> Many studies of buying practices in industry have shown that personal selling is 2 to 3 times more accepted by industrial customers than any other marketing method. See George Miaoulis, Peter J. LaPlaca: *A Systems Approach for Developing High Technology Products*, p.259.

<sup>8</sup> This finding is in concert with the literature concerning high technology products. See Regis McKenna: *The Regis Touch*, p. 25 and 55, and William L. Shanklin, John K. Ryans, Jr.: *Essentials of Marketing High Technology*, p. 209-213.

rate was 75,3 %.<sup>9</sup> Caution should be exercised when comparing the findings concerning new-product success rate statistics between domestic and foreign markets, as well as between consumer and industrial markets.

2. Amongst Finnish high technology companies product and sales related factors appear to have greater importance than marketing related factors, when launching new products into the foreign markets.

The high ratings of product related factors of usage and effectiveness (new product development strategy (3. and 1. respectively) and product/service specialisation (5. and 4.)) and rather high ratings of sales related factors (personal selling (1. and 3.), differentiation (4. and 5.), promotion (7. and 11.), and positioning (9. and 11.) are clear indicators that the Finnish high technology companies place more emphasis on product and sales related factors than marketing related factors (marketing concept (2. and 2. respectively), marketing planning (12. and 12.), market research (15. and 15.), and marketing information systems/marketing intelligence (17. and 14.). A *"Here is what we have discovered in our labs, and produced in our production line and this is what we sell!"* seems to be the standard approach instead of *"What do you really need and what kind of benefits are you seeking?"*

3. Amongst the four components of the marketing mix (product, price, place and promotion), product factors clearly have the highest utilisation, whilst the non personal elements of promotion have the lowest usage ratings. Personal selling is the most important promotional element. Pricing and place factors are only moderately important elements in the marketing mix decision.

Product/service specialisation and new product development strategy have higher usage ratings than price, place and promotion (excluding personal selling). The strong role of personal selling is probably due to the nature of the high technology products. It has to be noted here that this research only dealt with industrial high technology products; consumer products were left out of the scope of this study. This finding is in accordance with Philip Kotler's thinking when considering the role of the elements of the promotional mix between consumer and industrial products.<sup>10</sup>

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<sup>9</sup> Edward J. Zirkle: *The Role of Marketing in New-Consumer-Product Development for Foreign Markets*, p. 104. See also p. 5 for numerous other research articles concerning the failure rates of new products in various situations.

<sup>10</sup> Philip Kotler: *Marketing Management: Analysis, Planning and Control*, p.617.

4. The careful balance between the various marketing methods is important in the successful launch of new high technology product into the export market.

Product is the starting point. Failure cannot be avoided by artificial differentiation and too massive promotional efforts. Achieving a certain market share should not be an objective at the outset of a product launch. When launching new high technology products, the situation is often such that there are no markets for the product or they are very limited. Thus, the emphasis should be in the creation of the markets. Later on, when the place of the product has advanced in the product life cycle, the role of market share could increase.

5. Publicity, promotion, marketing organisation, market share and positioning are marketing methods, which are more commonly used in larger companies.

These methods do not guarantee success in the launch process of the new high technology product. They all are only moderately important. The typical feature for all of these methods perhaps is that they all require either resources or skill. Marketing organisation, for example, simply cannot be afforded in the early stages of the small high-technology company.

6. Advertising, publicity, sales promotion and market share are marketing methods that are more commonly used in companies in which most (>40%) of the sales of the company is sold outside Finland.

Advertising (16.), publicity (14.) and sales promotion (7.) were those elements of the promotional elements with rather low importance, and thus the connection with the success again is very low. This is a rather surprising finding. One would have expected that the opposite would have been true. Why then is market share a more used marketing method in companies in which most (>40%) the sales of the company is sold outside Finland? In early stages the management does not probably worry so much with the market share; it is perhaps more important to increase the sales first, and then worry about the market share after having something to protect.

7. Personal selling and positioning are marketing methods which are more commonly used in companies where the president of the firm has a technical and marketing background, or just marketing background than in companies where the president has only technical background.

This is an important finding especially as far as personal selling is concerned. Personal selling was by far the most important marketing method in the launch process of new high technology products. The fact that the president of the firm has marketing background indicates that they realise the very important meaning of the personal selling.

8. Differentiation is a marketing method which is more commonly used in companies where the senior marketing officer of the firm has a technical and marketing background, or just marketing background than in companies where the senior marketing officer has only technical background.

9. Product/service specialisation, distribution, and positioning are marketing methods that are more commonly used in companies with more experience on product launches into the export markets.

10. Marketing consultant is the only marketing method that is more commonly used in the industry of electrical machinery for industry than in the industry of scientific instruments, optical equipment.

It can be said that the marketing methods used in the two industries studied, were similar to a very large extent. Differences were minimal.

11. There were no significant differences either in absolute or relative marketing expenditure between large and small companies, nor were there significant differences in marketing expenditure amongst companies with different amount of experience on product launches into the export markets.

12. There were significant differences in relative marketing expenditure amongst companies with different percentage of the sales of the company sold outside Finland. In companies where the export's share of turnover was less or equal to 40 %, the mean of the marketing expenditure was 7,6%, and in companies where export's share of turnover more than 40 %, the mean of the marketing expenditure was 11,2 %.

This is an expected finding. Marketing products abroad is clearly more expensive than in the domestic markets. The companies should expect that when the percentage of the sales of the company sold outside Finland increases, so does relative marketing expenditure.

13. Marketing concept is a marketing method which is more commonly used in successful product launches.

This is an important finding. Marketing concept is a very important marketing method. Its' relative ranking was 2 amongst the 18 marketing methods studied. Although marketing concept was regarded as a very important marketing method both in successful (relative ranking 3.) and unsuccessful (relative ranking 4.) product launches, the difference in usage is significant.

14. The three factors (the absolute sales volume of the company, the absolute amount of export volume and the absolute amount of marketing expenditure) differentiate effectively the successful and unsuccessful product launches.

In those respondents' companies that answered with regard to unsuccessful product launches, the absolute marketing expenditure was 4,18 MFIM and in those respondents' companies which answered with regard to successful product launches, the absolute marketing expenditure was 26,20 MFIM. In those respondents' companies who answered with regard to unsuccessful product launches, the absolute export sales volume was 39,10 MFIM and in those respondents' companies who answered with regard to successful product launches, the absolute export sales volume was 258,4 MFIM. 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.

15. There were no differences 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.

16. There were no differences in the outcome of product launches depending upon the background of the president 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.

17. Product/service specialisation, distribution, advertising, publicity, promotion, market share, positioning, marketing planning and market research are marketing methods more commonly used by companies with higher relative marketing expenditure.

This can be said to be an expected finding. It is obvious, that when the relative marketing expenditure is higher, you also use more the studied marketing methods. Perhaps interesting is that marketing concept is not amongst them.

## 6.12. Recommendations for the management of high technology companies

The results of this research bring many important points to the attention of the management of high technology companies. They should focus their attention on the following points when launching new products into the foreign markets:

1. Always study carefully the contents of the marketing methods you are using in the launch process of the high technology products. The launch of a new high technology product into the foreign markets is clearly a different process than the launch of a traditional consumer product.
2. Remember that the new product is finished only when the launch process is completed, i.e. the final customer has received the product and is satisfied with it.
3. Be aware of the final customers' real needs. Make sure you are able to offer the benefits he or she is seeking. Try not to compensate for the shortages of the product/service offering with overly zealous promotional efforts.
4. Be prepared to increase your relative marketing expenditure with a substantial amount whilst the share of export of your sales increases.
5. Implement the marketing concept into your organisation. Involve everybody in this process including the R&D and production personnel.
6. Try to achieve critical mass in your export sales and marketing expenditure. Find any, and all means to overcome this obstacle. For example, use the export sales circles established by the Finnish Foreign Trade Association.

### 6.13. Suggestions for further research

The contribution of this research was the determination of effective marketing methods in various situations when launching new high technology products into the export markets. It was the aim of the researcher to cover this area as thoroughly as possible. Several interesting issues for further research aroused during the project:

1. Using similar research approach, but employing case study method would bring additional information to the marketing theorists and practitioners when speaking about the launch process of new high technology products.
2. 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.
3. Even more comprehensive research, including the market condition factors that affect the success of the launch, should be investigated.
4. Further, research is needed concerning companies using a distributor when launching high technology products into foreign markets. One research approach might be the use of case study method. At least two cases need to be compared; the other one representing an unsuccessful product launch and the other one a successful product launch. How would these companies differ in their marketing approach and in the use of different marketing methods.
5. Another interesting area of interest is to study, how the number of countries to which the new product has been launched affects the success of the launch and the marketing methods usage and their perceived effectiveness.