



Finnish Software Product Business: Summary Results of National Software Industry Survey 2007

Mikko Rönkkö, Eero Eloranta, Hanna Mustaniemi,
Olli-Pekka Mutanen, Jyrki Kontio

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FOREWORD

This year marks the 10th “anniversary for the survey of the software product-based industry in Finland. Again, as quite consistently over the last 10 years, the industry is growing steadily. This survey, complemented by other studies and the insights of industry insiders, has helped the industry to define strategies and directions to support the growth of the industry.

The software product industry in Finland is now showing signs of maturing. This is reflected in our study through more balanced R&D spending, focus on development of complimentary services and products, as well as focus on improving personnel competencies and internal operations. The software firms in Finland are more capable, more focused, and more internationally competitive than ever.

There is one downside common to more mature industries: the growth rate tends to decline. While the growth rate of the Finnish software product based industry remains quite high, the revenues are not growing at a rate that would be needed for the industry to become a prominent sector of the economy. In particular, the international sales are a cause for concern: they grew at “only” less than ten per cent per annum. While this is higher than the global ICT growth, it is less than the growth of the domestic software business. It is also way short of the industry’s target growth rate of over twenty percent per annum.

On the one hand this is puzzling. The fundamentals for competitiveness are in good shape. Finland has a skillful workforce, good international reputation, and plenty of technological know-how. Regarding the weaknesses – lack of experience in international sales and markets, lack of capital funding, and resource and competence gaps of small companies – these have been addressed by several focused development programs. While Finland’s software product industry is a prime example of joint focused planning and action to support the industry and these actions have clearly helped the industry, the substantial growth impact has been less than targeted. Further, some benchmark countries such as Ireland and Israel have been even more successful.

We suspect that there are real impediments for higher growth beyond the factors addressed by existing programs. Factors that may contribute include the taxation system, societal attitudes toward risk taking and entrepreneurship, the social consequences of failure, the environment for international investment in software firms, the management approaches of venture capitalists, the business sophistication of entrepreneurs, the targets and level of government research funding, and others. There should be a great payoff in further understanding any remaining obstacles and taking actions to overcome them.

The global software industry is continually undergoing change and addressing new challenges, creating great business opportunities for Finnish firms. The current “convergence of convergences” will make the world more online, more mobile and more dependent on software of all kinds. Not only is this a great opportunity to create economic activity and jobs, but Finland needs to support and expand its successful software industry to take full advantage of these convergence opportunities.

Professor Jyrki Kontio
Software Business Laboratory
Helsinki University of Technology

Professor David G. Messerschmitt
University of California at Berkeley
Helsinki University of Technology

1 THE FINNISH SOFTWARE PRODUCT INDUSTRY: CURRENT STATE AND FUTURE PROSPECTS

1.1 Introduction

This report presents the results of the tenth annual Finnish software product industry survey. This research study, which to our understanding is the only one addressing the software product industry as a whole, is used to assess the current state of the industry, especially in terms of growth and internationalization.

Software product industry is a challenging industry for survey research due to the pervasive nature of software: software is a key component of many modern technology products, and can be also used as an integrated element when producing services. It has been argued that the software product industry should not be studied in isolation, but as combination with other information product industries (Seppänen, Käkölä et al. 2001).

In this study, we did not attempt to explicitly define the boundaries of the industry; rather, we contacted a large set of firms in the focal and adjacent industries, and measured the amount of software product business done in these firms. This implicit approach suits studies where the population to be surveyed is not known prior to the study (Groves 2004). In this study, we defined software product business as follows:

Software product business is business, which is based on selling software owned by the company either as licenses or as services, and all other services which are tightly linked to this business.

With this approach, we hoped to capture the multitude of software product businesses in Finland, and especially address firms that do not consider themselves as software product firms, but practice software product business as a secondary area.

1.2 Implementation of the Survey

The survey was conducted during May-June 2007 using paper and web form questionnaires. Invitations to participate in the survey were sent to 2 616 companies, which were selected from a database compiled for this study survey. It is estimated that there were 1000 software product companies in Finland at the end of 2006. We received responses from 287 (163) software product companies i.e. from ca. 29% of the companies in the industry. In addition, we systematically approached the largest non responding companies to improve the response rate and to collect statistics about the size of the industry. In addition, the collection of primary data was complemented with secondary data from public sources. Altogether, we estimate that the companies analyzed in this study generated over 77% of the whole industry's revenues and over 84% of the international revenues. Based on our analysis, we conclude that the results of this research study well represent the Finnish software industry in general. However, due to missing answers, some analyses were performed with a subset of the responses. The amount of data used is clearly described in the tables and figures. The methodology, sample selection, data collection, and analysis and estimation techniques as well as the different sources of secondary data are described in Appendix 1.

This year, the sampling strategy was changed to get a better coverage of the smaller firms. Larger sampling frame and including email and letter contact for each firm resulted in larger sample, which is generally a good thing for survey studies. However, the response rate did not increase evenly throughout the population, but focused more on the previously underrepresented smaller firms. As a result, the distribution of this years sample is different from previous years. Naturally, this affects also several of the result figures in the study. Statistical techniques have been used to make the samples more comparable. However, several of the results are affected by this change in the design causing some of the results to be incomparable to previous years. It is clearly indicated when this is the case. The sampling strategy is described in Appendix 1.

1.3 Overview of the Results

1.3.1 Industry Total Revenue

Companies were asked about their revenue for the latest completed fiscal year, which in a majority of the cases closely match the year 2006, and their budgeted revenue for the next year. In addition, the respondents were instructed to describe how their software product business revenue is divided between the domestic and the international markets. Based on responses of companies, we extrapolated the overall value of the industry and its distribution between domestic and international sales. We did the following: The industry size was estimated by first stratifying the sample according to revenue class, then all firms in the largest strata that had not reported revenue figures were checked from secondary data. The rest of the strata were estimated by calculating the average figures from the respondents falling in each strata and using a linear extrapolation method to estimate the total amount of revenue generated as explained in Appendix I.

In 2006 the overall value of the industry, in terms of generated revenue, was 1 408 million euros and the value of exports was 514 million euros. It is worth mentioning that the revenue generated by the 51 largest companies alone was 1004 million euros of which 481 million euros came from exports. Thus, over 93% of the export came from the 51 largest companies.

Table 1 Industry Composition¹

Revenue class	Number of companies analyzed	Average revenue	Average age	Average number of employees	Estimated number of firms in class
<0,4 M€	128	0,15 M€	9,6	4	522
0,4-3 M€	111	1,0 M€	10,4	12	351
3-10 M€	51	5,4 M€	11,6	44	87
10< M€	25	132 M€	15,7	1172	40
Total	315				1000

The software product revenues grew by 13.1 %² in 2006 (9.2 % in 2005) reaching 1.408 billion euros. The share of domestic and international revenues 15.3 %² (1.4 %) does not significantly differ from the long term trend amounting to 894 million for domestic revenue and 514 million euros for international revenue. The development of the industry revenue is presented in Figure 1. Since the figures prior to this year were calculated using a different estimation approach, they are not directly comparable to this year's figure.

¹ This figure shows total revenue instead of revenue from software product business. Total revenue was used because data for this figure was available from public sources and it was hence possible to classify non-respondent firms as well.

² In order to get a comparable growth rate we re-estimated last year's industry value with this year's extrapolation method and calculated the relative growth based on this estimation.

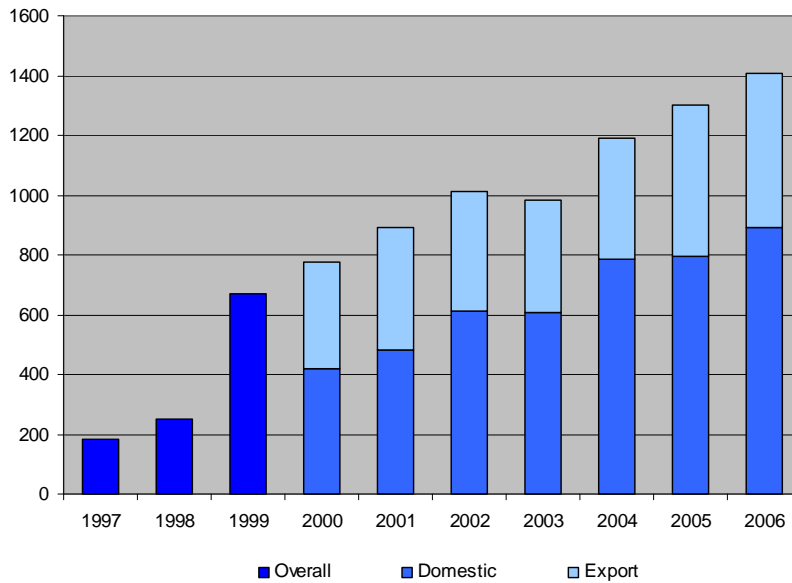


Figure 1. Development of the Revenue at the Industry Level from 1997-2006

Revenue growth rates are presented in Figure 2. Possible explanation for the variation in these figure over the years may be a result of statistical error or anomalies, like extra ordinary events in the data rather than real changes in the industry³.

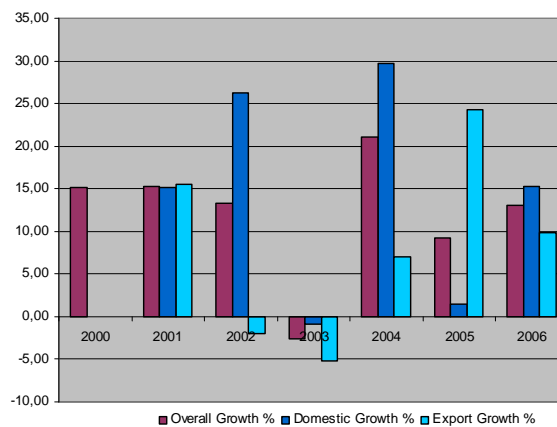


Figure 2. Revenue Growth Rates 2001-2006

Figure 3 shows the budgeted figures that are the estimated values of the industry (based on the responding companies) given in the software industry survey the previous year. From the figure we can see a trend showing that the companies' budgeted revenues have risen for the past four years, but the growth estimates have decelerated this year. As actual revenues have followed the budgeted figures, this predicts a slight growth also for the year 2007, but the growth rate may become slower. We can also see from Figure 3 that changes in the economic situation after the year 2000 have also made the companies more realistic in estimating their growth prospects in the recent years. Quite naturally young and small firms expect growth,

³ See Appendix 1 for more thorough analysis of the growth figures and growth estimates.

but other than that, there are no statistically significant differences of growth expectations when comparing different age or revenue classes, or past growth.

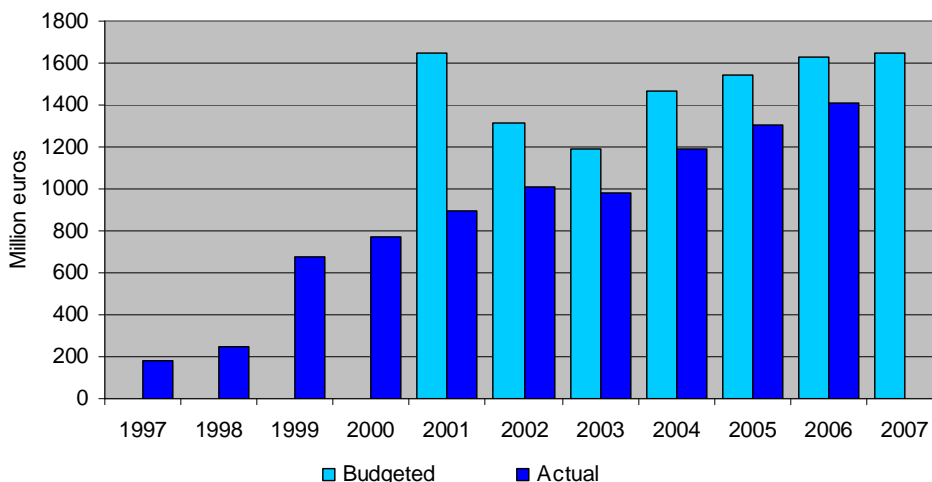


Figure 3. Development of the Revenue (budgeted and actual) 1997-2007

The analyzed software product companies had an average total revenue of 11.1 million euros (16.9 million euros in 2005) and a median revenue of 0.6 (0.9) million euros in 2006. The average software product business revenue was 3.92 (4.1) million euros and the median revenue was 0.35 (0.5) million. The difference between the averages and medians is explained by the number of large companies that raise the average figures upwards. Also, this year's lower figures can be explained by current survey's better coverage of smaller companies than in previous years. As can be seen by studying the medians, most of the companies are relatively small. Distribution of the responding companies' total revenue in 2006 is presented in Figure 4. The large number of small companies does not directly indicate that there would be a large number of young companies in Finland. Only one in three of the smallest companies is less than five years old. In all, it seems that a large part of the industry is occupied by firms that are small, and seem to have no intentions to grow.

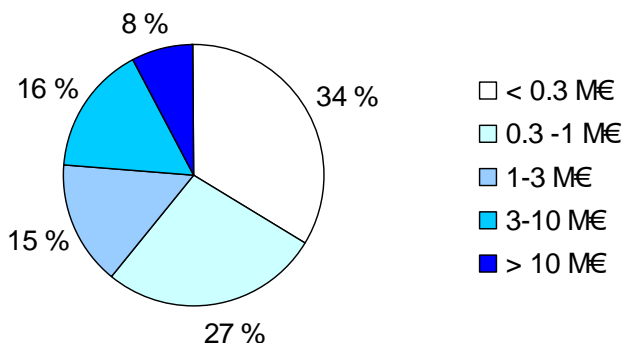


Figure 4. Responding Companies' Distribution by Total Revenue in 2006 (n=280)

In order to shed more light regarding the business focus of the respondent companies, Figure 5. shows the percentage of the companies' own software product business revenue in relation to the overall company revenue. On average, the respondents received 71% (71% in 2005) of their total revenue from

their own software product sales and the median was 90% (90%). As Figure 5. shows, the responding companies' core business of this survey often was the software product-based business. This is quite understandable, since the mailing was targeted at these companies, and since these companies are probably more eager to participate in this survey with the hopes of improving the conditions of the Finnish software product business environment.

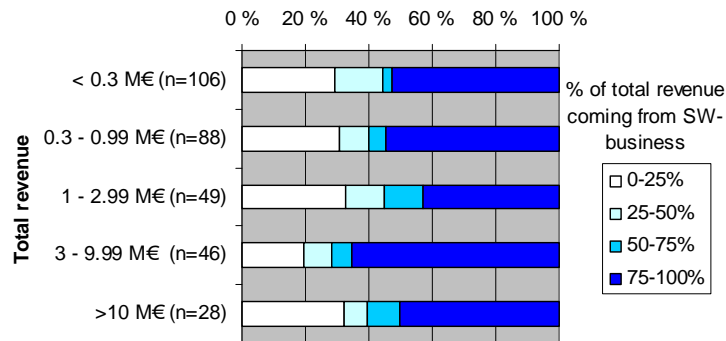


Figure 5. Percentage of Companies' Total Revenue from Company's Software Product Business in 2006 (n=275)

Figure 6. shows the distribution of the responding companies based on their revenue from the companies' own software product business. We can see that the majority of the responding companies are rather small as 38% of the companies generated less than 200 000 euros and 71% of the responding companies' software product business revenue (62% in 2004) did not exceed 1 million euros in 2006.

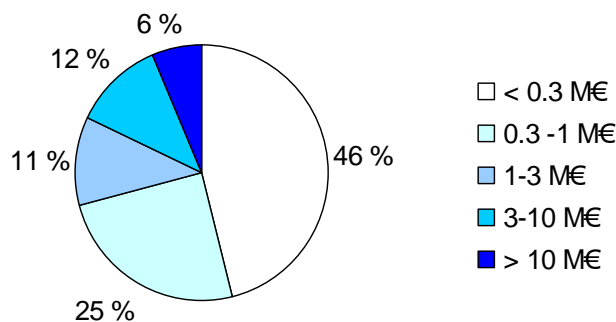


Figure 6. Responding Companies' Distribution by Software Product Business Revenue in 2006 (n=278)

The total revenue and number of employees working for the companies that responded to the survey were calculated and the resulting figure revenue per employee was ca. 110 000 euros (109 000 euros in 2005). However, the number of the large companies strongly influences this ratio. When we calculated the revenue per employee ratio as an average of the per company revenue per employee ratios, the ratio is 90 000 (87 000) euros per employee. When we studied the development of the revenue per employee ratio based on the time that the companies had been in the business, we found that the ratio was typically higher for those companies that had been in the business for a longer period of time. Regression analysis, however, revealed that age is a poor direct predictor for profitability, but this

relation is mediated by the amount of revenue⁴. In other words, companies that generate more revenue are naturally more profitable, and younger companies are generally smaller than their older counterparts.

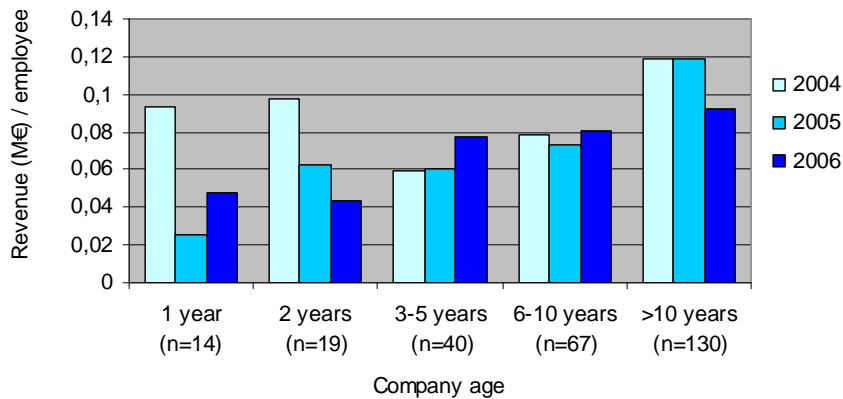


Figure 7. Development of Revenue per Employee Grouped by the Age of the Company

When we take a closer look at how the revenue collected from software product business affects the revenue per employee ratio, we can see that the companies with software product business revenue exceeding 1 million euros reach the ratio of over 100 000 euros per employee. However, regression analysis indicated that age does not explain the revenue per employee ratio. An alternative explanation, which is supported more strongly from the data ($R^2=.67$, $sig=.000$), is that firms which are larger generate more revenue per employee, and older firms are larger. Figure 8 shows the development of revenue per person in the industry when mapped against the revenue of the firm. The revenue per employee is naturally strongly dependent on the amount of revenue ($R^2=.87$, $sig=.000$).

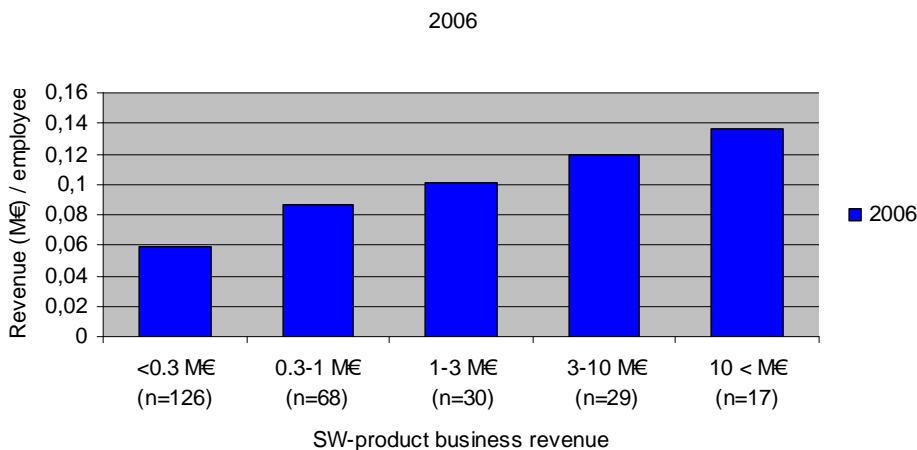


Figure 8. Development of Revenue per Employee Grouped by Software Product Business Revenue

The companies were asked about their budgeted figures for the next year and it seems that the smaller software product companies expect the fastest growth rate in their software product business revenue for the year 2006. These figures are probably caused by some individual companies who are just about to launch their products to market, but in general the amount of revenue explains only 18% of the share of the variance in the data. However, it is worth noting that a relatively small amount of all of the

⁴ Statistical power of 1% vs. 10% with .02 and .0001 significance levels respectively

responding companies answered the question about their future expectations. It could be argued that the companies with positive views were more eager to answer these questions compared to those that did not see the future positively. Therefore, the figures in Table 2 should be interpreted with caution.

Table 2. Expected Annual Growth of Software Product Business for the Year 2006 (n=229)

	Revenue from companies' own software product business in 2006 (million euros)				
	<0.3	0.3-0.99	1-2.99	3-9.99	10-
Amount of companies	72	58	42	31	10
Mean	23,56 %	41,12 %	31,93 %	21,32 %	7,39 %
Median	13,39 %	31,18 %	23,52 %	11,54 %	0,00 %

To complement this analysis, the growth of individual companies was analyzed by comparing data between this and previous years to see how the companies have actually grown from the year 2005 compared to their growth estimates for the year 2006. Unfortunately the number of companies for which this comparison could be made is relatively small (n=73). On average, the companies had expected an annual growth of 133% (81% in 2005, 161% in 2004 and 259% in 2003) but the actual growth was 58% (24% in 2005, 271% in 2004 and 181% in 2003). The expected median growth was 38% (25 in 2005, 47% in 2004 and 33% in 2003) and the actual growth 25% (5% in 2005, 7% in 2004 and 20% in 2003). The differences in the averages and the medians mean that some of the companies have been able to increase their revenue significantly, but on the other hand some companies have suffered from a decline in their revenue. The expected and actual medians and averages are presented in Table 3.

Table 3. Expected and Actual Growth in Software Product Business in 2006 (n=73)

Annual growth in 2006	Revenue from companies' own software product business in 2006 (million euros)					
	<0.2 (n=18)		0.2-1.0 (n=25)		1- (n=30)	
	Mean	Median	Mean	Median	Mean	Median
Expected (in 2005)	247,7 %	72,5 %	133,4 %	66,7 %	66,5 %	29,4 %
Actual	20,2 %	12,7 %	59,3 %	22,2 %	79,3 %	38,0 %

1.3.2 Regional Distribution of the Companies

The software industry is geographically very concentrated in Finland, since 88% of the companies are located in the proximity of technology centers and universities. In addition, 58% of all the companies and 72% of the large companies (i.e. companies, whose software product business revenue is over 3 million euros) are located in the capital district (Pääkaupunkiseutu). Tampere and Jyväskylä were the other districts that were home to at least 20 companies. Together, these three provinces hosted 74% (70% in 2006) of the responding companies. The regional distribution could indicate the reasons for “centralization” of the companies: six provinces representing the highest number of the responding companies have universities, which provide high-level technological education and technology centers in the population centre. The geographic distribution of the companies is presented in Table 4.

Table 4. Location of the Software Product Companies and Their Revenue Distribution (n=277)

Province	Revenue from companies' own software product business in 2005 (million euros)					Total
	<0.2	0.2-0.99	1-1.99	2-2.99	3-	
Pääkaupunkiseutu	55	49	10	10	36	160
Tampere district	9	8	3		5	25
Jyväskylä district	11	8	1	1		21
Turku district	4	5	3		1	13
Oulu district	4	3		1	3	11
Kuopio district	2	5			1	8
Joensuu district	3	1	1			5
Lahti district	2	3				5
Pori district	1	1			1	3
Hämeenlinna district	1	1	1			3
Lappeenranta district	1	2				3
Seinäjoki district	2	1				3
Pieksämäki district	2	1				3
Kouvola district	3					3
Rauma district	1	1				2
Mikkeli district	2					2
Savonlinna district					1	1
Vaasa district					1	1
Maarianhamina					1	1
Kokkola district			1			1
Kajaani district		1				1
Kemi district	1					1
Kotka district	1					1
Total	105	90	20	12	50	277

The companies' revenue from their own software product business and their geographical distribution is shown in Table 4. From Table 4 we can see that 72% of the companies with revenue exceeding 3 million euros from their own software product business are located in the capital district. The relatively high number of companies with over 3 million euros of revenue compared to the other companies is explained by the fact that these companies were systematically contacted if they had not responded to the survey in time. This was done in order to estimate the industry volumes more precisely.

When we take a closer look at the locations of the respondents, it is noticeable that the software companies are usually located very close to the technology centers. Despite a good infrastructure that enables telecommuting, and excellent communication networks, software product companies are still mostly located in the largest cities. The seven most popular Finnish cities, listed in Table 5, hosted 208 companies, which represents 75% (71% in 2005) of all of the respondents. The most popular cities were the same as in the previous year's survey. In Table 5 we present the software product companies divided into five groups according to their revenue in these seven cities. The table also shows that the larger companies are mostly located in the technology centers and in the major cities.

Table 5. Location of the Companies by City and Software Business Revenue

City	Revenue from companies' own software product business in 2005 (million euros)					Total
	<0.2	0.2-0.99	1-1.99	2-2.99	3-	
Helsinki	28	27	7	4	18	84
Espoo	18	13	3	3	15	52
Tampere	5	8	3		4	20
Jyväskylä	7	7	1	1		16
Turku	4	5	3		1	13
Vantaa	3	3		3	3	12
Oulu	4	3		1	3	11
Total	69	66	17	12	44	208

A possible explanation for the geographical concentration of software product companies is the importance of technology centers and universities, which often enable networking and supporting services, highly valued by the software product companies.

1.3.3 Age of the Software Product Companies

The age of the responding software product companies varied a lot. Even though the Finnish software product industry is regarded as a relatively young industry, the oldest companies in the business are more than three decades old. On the other hand, there is a large number of companies, which were founded in the late 1980's - early 1990's, as well as several companies that were founded after 1999. The average age of the responding companies was 11 years (13 in 2005) and the median age was 10 years (11 in 2005). The share of young companies (age under 3 years) is 9% (3% in 2005, 5% in 2004). This year's clearly greater share of young companies is a consequence of the much better coverage over small (usually young) companies in the sampling frame than previous years. The age distribution of software companies is presented in Figure 9.

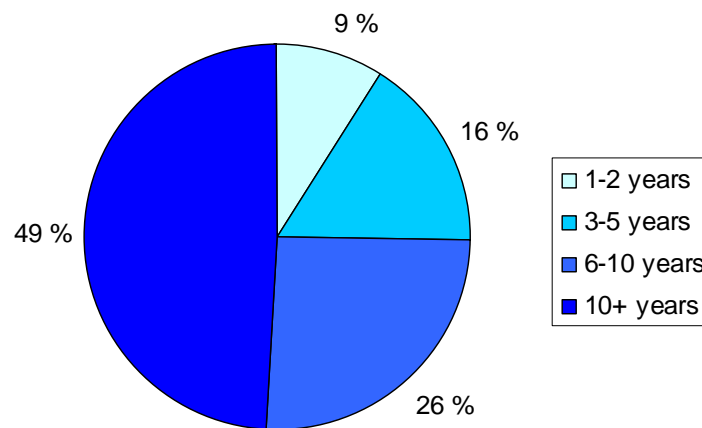


Figure 9. Age Distribution of Software Product Companies (n=312)

1.3.4 Personnel⁵

The companies analyzed in this study employed approximately 28 000 people working in 277 companies (28 091 people working in 184 companies in 2005). Most of the employees, approximately 91 % (85 % in 2005), work in companies with at least 3 million euros revenue from their own software product business. Out of these 28 000 employees, some 8 000 of them worked in software product business. When this is extrapolated to the industry level, the number of employees working in software product business was about 13 000 in the year 2006 (12 340 in 2005). This extrapolation was made in the same way as the extrapolation for the revenue. On average, there were ca. 98 employees per firm (median 7 employees) and of them 33 people were working in the software product business (median 6 employees).

When we take a closer look at the distribution of the personnel in the software product firms that responded to the survey, it can be seen that 41% (32%) of the companies have fewer than six employees. On the other hand, only 7% (11%) of the firms employ more than 100 people. As mentioned before, the large companies are overrepresented in our sample since they were systematically approached in the data collection phase of the study. Figure 10 shows the distribution of the companies' personnel.

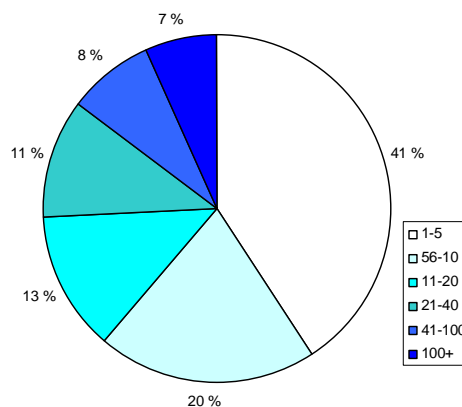


Figure 10. Distribution of Companies by Overall Personnel (n=287)

At the industry level, the total number of software professionals increased by 5.1 % from last year. The companies had a positive outlook for recruiting in 2006, as they budgeted for a 15% increase in the software product business personnel. This growth is mainly based on the small companies' budgeted recruitment, as the larger ones estimated their personnel count will stay at almost same level in 2007. Development of the software product business personnel in 1999-2006 and budgeted estimates for 2002-2007 are presented in Figure 11.

⁵ Personnel figures are presented with the accuracy of two significant digits due to the large impact of the use of secondary data on these figures.

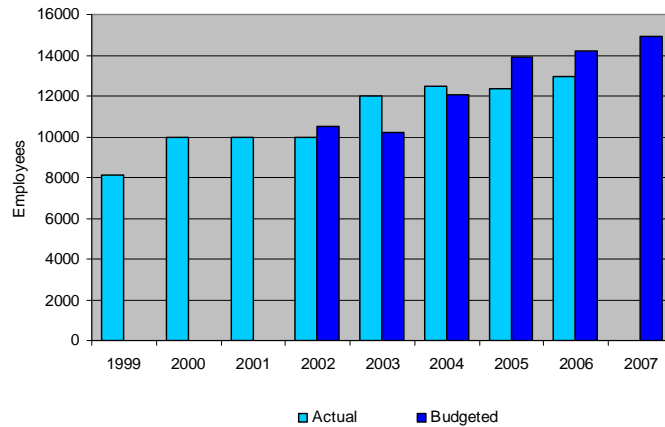


Figure 11. Development of the Software Personnel at the Industry Level

1.3.5 Profitability

For the software product companies, the year 2006 seems to have been a good one, Although it is possible that this increase is attributed to the statistical error caused by more profitable companies answering this year than the previous year, can be said that profitability probably increased slightly in the industry, Table 6 shows that the year 2006 was generally speaking a good one.

Table 6. Companies' Average Profits

Revenue from companies' own software product business in 2006 (million euros)	Mean	Median	Sum	n
< 0.3	0,00	0,00	0,40	122
0.3-0.99	0,05	0,03	3,12	66
1-2.99	0,21	0,20	6,56	31
3-10	0,74	0,33	24,33	33
10 > -	13,43	5,50	201,43	15
Total	0,88	0,02	235,83	267

Altogether, the companies that responded to the survey generated 235 million euros of profits (2005: 316 M€ 2004: 170 M€). Moreover, the companies with software product business revenue less than 3 million euros, generated in total 10,0 (2005: 6.2, 2004: 5.3) million euros of profit. In addition, it has to be noted that 267 out of 314 software product companies (169 out of 184 in 2005) reported their profits for the year 2006. We think that there is a tendency for companies doing relatively well to report their profits, although this was not analyzed in detail.

From Table 7, we can see that only 2.7% (5.9%) of the companies generated larger losses than 0.5 million euros in the year 2006. 74.7% (54.5%) of the companies were in the range of from 0.5 million euro losses to 0.1 million euro profits. However, around 25% of the companies (32% in 2005) generated larger profits than 0.1 million euros as can be seen in Table 7. This change in the figure can best be explained by better coverage of the smaller companies in the survey.

Table 7. Companies' Profits in 2006

Profit (million euros)	Frequency	Valid Percent	Cumulative Percent
<-0.5	8	2,7	2,7
-0.51 - 0	76	25,9	28,7
0.01 - 0.1	135	46,1	74,7
0.11 - 1	57	19,5	94,2
>1	17	5,8	100,0
Total	293	100,0	

Figure 12. presents the companies' profits in relation to their revenues (profitability) in the year 2006. The average profitability was 5.6 %. There were no significant differences in the profitability based on the companies' revenue sizes: the majority of the companies have remained profitable. Moreover, regression analysis revealed a somewhat strong (β .15, sig .05) relationship between the amount of revenue from software product business and total profit, but adding the total revenue as control variable revealed it to be 8 times stronger and statistically more significant (.001) predictor for profitability. Moreover, using the rate of software product revenue to total revenue as predictor did not reveal any significant relation to profitability. Hence, we cannot conclude that the amount of software product business does have a direct effect to company profitability.

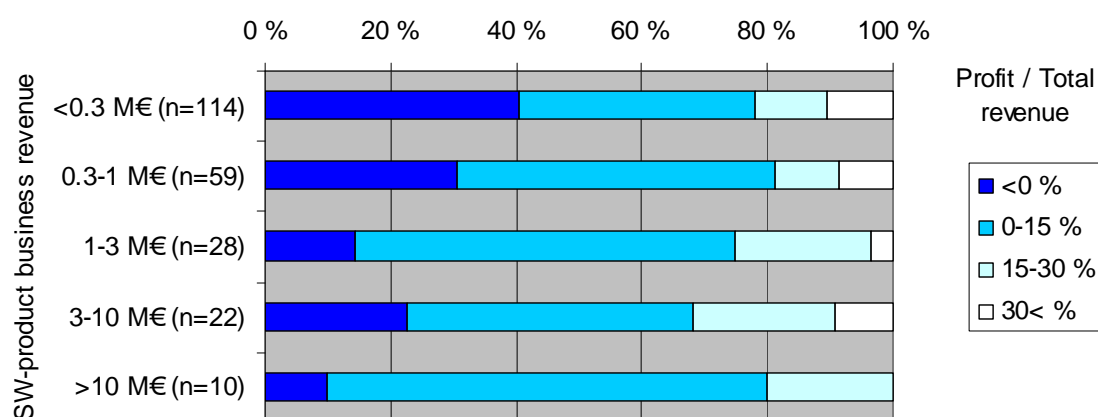


Figure 12. Companies Profit per Revenue (n=233)

1.3.6 International Operations

Overall, 150 (48%) of the 313 firms had some revenue streams from foreign markets in 2006, and thus can be considered as operating internationally. This represents a significant decrease from the 59% reported a year ago (46% in 2005). This decrease can be attributed solely to the better coverage of the industry by this year's study when compared to the previous years. Firms in the largest two revenue classes are significantly more international than other firms ($p=.001$), and the smallest revenue class is significantly less international than other classes ($p=.015$). This year, the sampling strategy resulted in a sample that represents the whole industry better⁶. This year data indicates that the industry was thought to be more international than it actually is.

The distribution of internationally operating firms, as well as the distribution of their foreign revenue share, are presented in Figure 13. We can observe that well over half of the companies with

⁶ See Appendix 2 for analysis of the reliability and validity of the study

international sales received only one quarter or less of their revenue from outside of Finland. In fact, 28% of the responding internationalized firms had 5% or less of their revenue coming from abroad. On the other hand, almost one fifth of the firms generated 75% or more of their revenue abroad. The share of firms receiving 25 to 75% of their revenues from abroad decreased slightly from last year (27%) to 25 %.

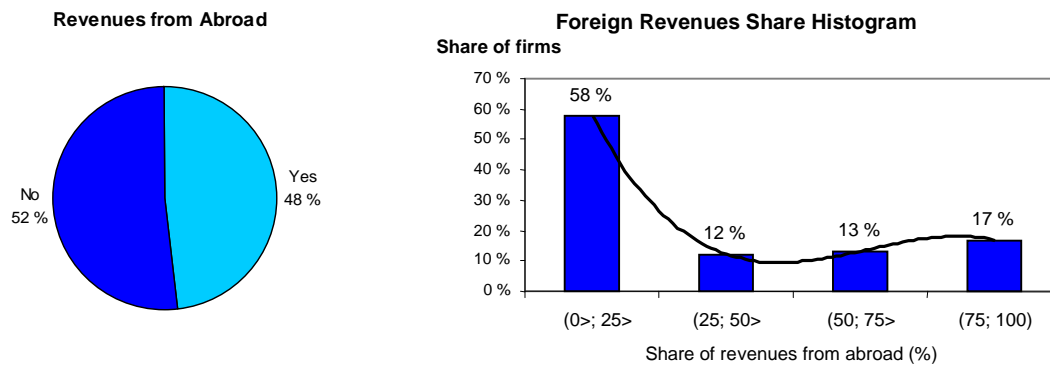


Figure 13. Firms with Revenue from International Operations ($n_1=313$ and $n_2=106$)

1.3.7 Profile of Internationally Operating Firms

The basic indicators of international operations and their averages from 2006 and 2003 for responding internationalized firms are presented in Table 8. The average number of foreign markets targeted in 2006 was 9.9. This represents a significant growth in geographic coverage, as the corresponding figure was just 6.84 in 2003. Last year, the corresponding figures were 7.8 and 3.9. Also the median number of export countries had grown significantly: from 1.5 export countries in 2003 to 4.0 in 2006. The corresponding figures from the year 2005 were 1.5 and 3.0. This indicates that software product firms are internationalizing roughly at the same pace as before but this year's sample consists of relatively fewer internationalized companies than the one last year.

Probably the most important internationalization indicator, the share of foreign revenue, shows that on average 33% of revenue (23% in 2003) was generated abroad in internationalized software product companies. However, about a half of the firms gained only 15% or less of their revenue from international operations. Hence, the corresponding median is 16 percent units lower, at 17%. Also, the median for export share in 2003 was just 5%. The figures indicate a significant increase in the share of foreign revenue among the sample firms during the last three years both in terms of mean and median figures. These average numbers do not differ much from last year's results. The mean shares of revenues from abroad last year were 33% in 2005 and 21% in 2002, and the corresponding medians 20% and 5%.

On average, internationalized firms had employees in 2.0 countries excluding Finland and 55% of the firms did not have any employees abroad. A little less than one quarter of the effort by employees (including those based in Finland) focused on export business. Again, the corresponding median value is only 5% (2% in 2003). The strong increase since 2002 suggests that many companies today assign significantly more employees to foreign operations than they did three years ago. However, these figures are almost an exact match to those in last year's sample. All in all, there has been positive development in the software sector. On average the sample companies are bigger and more internationally oriented than they were three years ago.

Table 8 Indicators of International Operations

<i>Indicator</i>	<i>2006</i>			<i>2003</i>		
	<i>Mean</i>	<i>Median</i>	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>N</i>
Number of countries generating revenue, excl. Finland	9.9	4.0	110	7.0	2.0	63
Share of revenues from outside of Finland (%)	33 %	17 %	106	23 %	5 %	62
Share of revenues from own SW product business from abroad (%)	29 %	13 %	109			
Number of countries where company had employees, excl. Finland	2.0	0.0	97	2.0	0.0	55
Share of employees focusing full-time on foreign operations (%)	24 %	5 %	71	17 %	2 %	39

A comparison of some key descriptive statistics between internationally and domestically operating companies is presented in Table 9. The average total revenue of internationalized firms was 22.5 million euros in 2006. There was a significant difference in total revenue between internationalized and domestic firms both in terms of mean and median values. The average internationally operating company was almost five times bigger than the average domestic software company. The findings are close to those from last year's results. Last year the average total revenue for an internationally operating firm was 25.5 million euros. There is a large difference in domestically operating firms' average total revenue when compared the 5.2 million euros reported last year to this year's 0.8 million euros. Also, the median dropped 33% from 0.3 million to 0.2 million this year. Again, this can be attributed to the better coverage of the study.

All mean values are greatly influenced by some large companies' figures. For instance the average profitability of internationalized companies in 2005 is largely biased downwards by some companies' heavy losses. Hence, the median better describes the actual situation of the firms. Still, also the median values indicate differences in most company characteristics between domestic and international software product firms. Internationally operating firms are bigger both in terms of revenue and number of employees as well as profits than their domestically operating siblings. They also expect stronger growth during the next three years. On the other hand, they may be less profitable as domestically operating firms, which yet again tells about the risky nature of internationalization.

Table 9 Profile of International vs. Domestic Firms in 2006

<i>Indicator</i>	<i>International</i>			<i>Domestic</i>		
	<i>Mean</i>	<i>Median</i>	<i>N</i>	<i>Mean</i>	<i>Median</i>	<i>N</i>
Total revenue in 2006 (M€)	22.5	1.4	141	0.8	0.2	140
Predicted growth rate 2006-2007	32 %	20 %	101	26%	17 %	112
Proportion of revenues in 2006 from own SW products	73 %	96 %	138	69 %	90 %	136
Age of company	11.8	11.0	149	8.9	7.0	163
Number of employees in 2006	204.1	18.0	140	8.5	4.0	148
Profit in 2006 (M€)	1.7	0.07	135	0.05	0.009	132
Profitability (%)	3.8 %	6.4 %	118	7.2 %	4.0 %	131
R&D per revenue in 2006 (%)	25 %	18 %	106	24 %	15 %	120

1.3.8 Product Development

Figure 14 shows the medians of R&D investments according to the maturity of the software product business. The young companies (age of software product business 2 years or less) R&D investments dropped dramatically from last year. However, this may be explained mainly by a different respondent group composition. In year 2005 this group had only 10 companies but this year we have 28 respondents. In general it may seem that the R&D investments show a slightly descending trend in last five years. However, if we disregard the results from 2006 and 2001, the trend seems to be stable. These changes can be attributed to methodological differences between the years 2001, 2006 and the four years between them⁷.

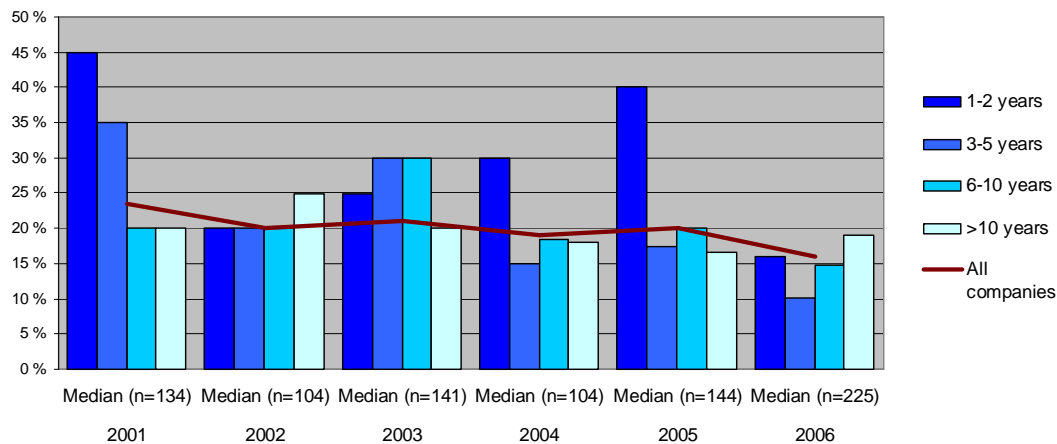


Figure 14 R&D Investment (% of total revenue) According to the Maturity of the Software Product Business in 2001-2004

1.3.9 Improvement Areas

In this survey, we asked about twelve possible improvement areas that companies can focus on in the next three years, as presented in Figure 15. The companies were asked to assess the importance of each improvement area on a 7-point Likert scale. 82.7% of companies thought that “further development of existing products” was an extremely or very important. Next was “personnel competence development” at 68.2%. Moreover, *the development of value added services around main product* was the third most important area with 61.5% rating it very or extremely important. It is also interesting to note that only around 30% of the companies rated *totally new product development* or *acquiring financing* as very or extremely important improvement areas.

⁷ A different sampling strategy has been used for the studies that described the industry in 2001 and 2006.

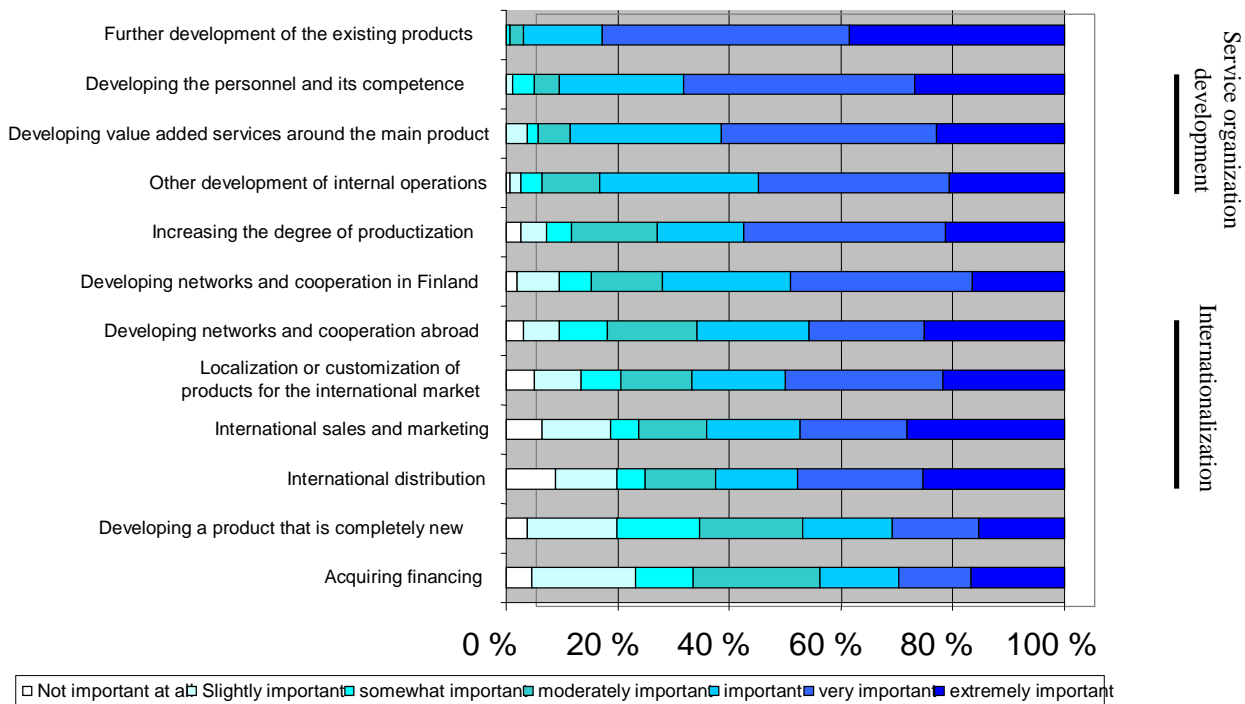


Figure 15 Most Important Improvement Areas 2007-2009 (n=155-157)

The data presented in Figure 15 was analyzed using factor analysis to see what if the items form groups that would be jointly explained by one factor. Two factors labeled “internationalization” and “service organization development” were discovered. To analyze what kinds of firms focus on these factors, we formed factor scores ($\alpha = .92$ and $\alpha = .75$) and used regression analysis to see if the age, degree of productization or firm size explained what firms focus on. We found a significant (.02) relationship between the firm size and internationalization efforts ($\beta = .55$), but no other significant interrelationships for these factors. Larger firms focus more on internationalization than smaller firms.

Size of the company affects the responses significantly (.001). Outside the effect of the internationalization factor, we found that smaller companies consider *networks in Finland* and *acquiring financing* clearly more important than larger ones. *Improvement of personnel knowledge* was also an important improvement area for the larger companies. Despite the company’s size in general, the most important improvement areas seemed to relate to the very fundamentals of the software product business i.e. *further development of existing product* and *increasing the degree of productization*. The mean values of answers by the size of the company are presented in Figure 16.

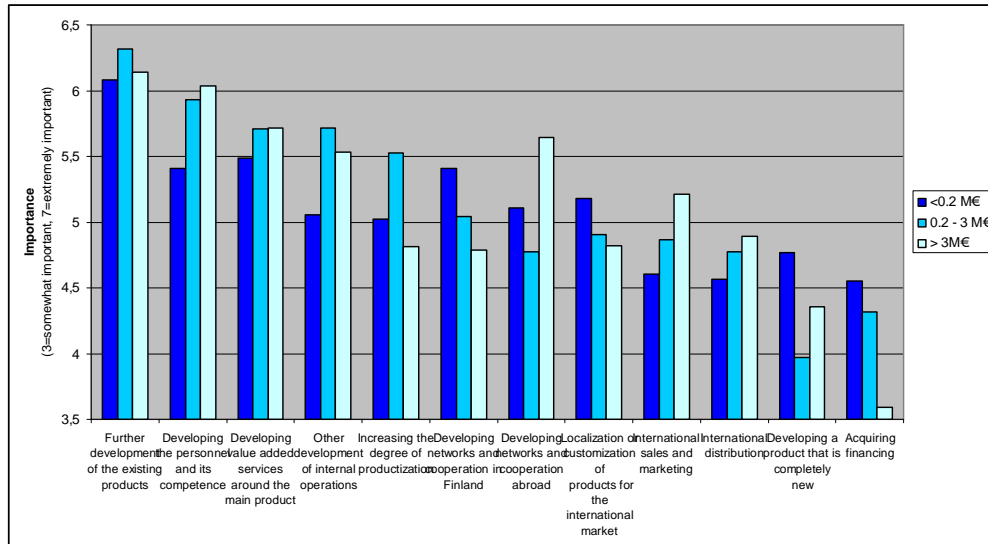


Figure 16. Mean Values of the Importance of Improvement Areas 2006-2008 Grouped by the Software Business Revenue ($n=140-142$)

We also studied how a company's age affected the importance of the improvement areas. The youngest companies saw predictably *acquiring financing* and a *new product developing* as far more important than the older ones. Somewhat unexpectedly, younger companies also emphasize the importance of *localization for international markets*, *international sales and marketing*, *international distribution* and *network development abroad* as remarkable more than the older companies. However, this finding is not statistically significant (.82) and can hence attributed to the statistical error caused by relatively small number ($N=2$) of firms in the youngest group. In Figure 17 we can see a clear difference in importance between the youngest group (1-2 years) and the rest, but surprisingly there is not a big divergence among the other age groups.

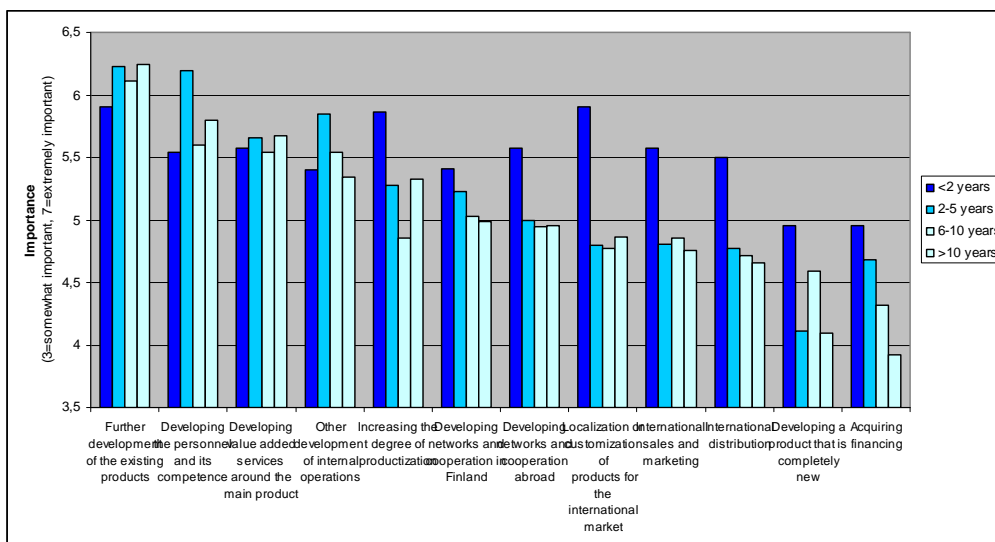


Figure 17. Mean values of the Importance of Improvement Areas 2006-2008 Grouped by the Age of the Company ($n=154-156$)

1.4 Conclusion

This summary report of the results of the tenth national software industry survey clearly communicates one message: the software industry grows and internationalizes, but does not surprise. What we find more interesting is the composition of the software product industry. When comparing this study to the previous studies we present a somewhat different picture of the industry in terms of the average size and growth orientation of the firms.

Compared to previous studies the sampling strategy and analysis of non respondents was more systematic, and as a result we now have data from the previously little covered segment of smaller software firms. In addition, based on our analysis, which is presented in Appendix 2 of the main report, the distribution of the firms in our sample closely matches that of the population. It seems that the software industry, if considered through the number of firms, is dominated by very small businesses. In addition, not all of these smaller firms are start-ups, but established firms. A more detailed analysis shows that a large amount of these firms fall into two categories: small firms that produce software products to support their main business, or firms that offer a very specialized product for a niche market. A typical example of the first category is a media house that produces its own web publishing platform. Some interesting issues were also found when examining the minority of the industry that corresponds to the stereotype of growth firms in software product business. It is clear that Finnish firms grow through internationalization. Also, the willingness to acquire external financing was clearly dependent on internationalization efforts. Based on these findings, it does not come as a surprise that most of the fastest growing companies were financed through private venture capital. Hence, we conclude that the product development oriented funding by Finnish governmental bodies could improve the growth of the industry more if the focus was widened from product development to internationalization. This argument is supported by the fact that investments from the public sector do not significantly affect the growth rate of firms. This and other findings will be presented in the main report of the study.

1.5 References

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