

2006

# Planning product software export -a method to identify opportunities and threats in new geographical markets

M Pulkkinen

*Utrecht University*, mpulkkinen@deloitte.nl

Johan Versendaal

*Utrecht University*, j.versendaal@cs.uu.nl

Ronald Batenburg

*Utrecht University*, r.s.batenburg@cs.uu.nl

Sjaak Brinkkemper

*Utrecht University*, s.brinkkemper@cs.uu.nl

Follow this and additional works at: <http://aisel.aisnet.org/ecis2006>

---

## Recommended Citation

Pulkkinen, M; Versendaal, Johan; Batenburg, Ronald; and Brinkkemper, Sjaak, "Planning product software export -a method to identify opportunities and threats in new geographical markets" (2006). *ECIS 2006 Proceedings*. 75.

<http://aisel.aisnet.org/ecis2006/75>

This material is brought to you by the European Conference on Information Systems (ECIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ECIS 2006 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# PLANNING PRODUCT SOFTWARE EXPORT – A METHOD TO IDENTIFY OPPORTUNITIES AND THREATS IN NEW GEOGRAPHICAL MARKETS

Mari Pulkkinen, Deloitte Consultancy, Flightforum 1, 5657 DA Eindhoven, The Netherlands,  
[MPulkkinen@deloitte.nl](mailto:MPulkkinen@deloitte.nl)

Johan Versendaal, Utrecht University, Padualaan 14, 3584 CH Utrecht, The Netherlands,  
[J.Versendaal@cs.uu.nl](mailto:J.Versendaal@cs.uu.nl)

Ronald Batenburg, Utrecht University, Padualaan 14, 3584 CH Utrecht, The Netherlands,  
[R.S.Batenburg@cs.uu.nl](mailto:R.S.Batenburg@cs.uu.nl)

Sjaak Brinkkemper, Utrecht University, Padualaan 14, 3584 CH Utrecht, The Netherlands,  
[S.Brinkkemper@cs.uu.nl](mailto:S.Brinkkemper@cs.uu.nl)

## Abstract

*Product software export can be an attractive option for small and medium sized IT-companies operating in small local markets. In practice however, little support is offered for specifically those type of companies to support strategic preparation and to enable thorough export planning. The central aim of this paper is to present a Product Software Export Planning Method (PSEPM) that supports the decision making of management of product software companies to enter foreign markets. The method builds upon existing insights from the success factors of software export and strategic planning. It facilitates systematic export planning through strategic country analysis, i.e. a systematic comparison between the companies' home country and the export country of interest. A similarities/differences and opportunities/ threats (SDOT) analysis is the other key part of the method. Through the identification of opportunities and threats, the specific challenges of entering the foreign market can be identified. The method has been applied to a case study at a Dutch product software company specialized in workforce planning applications. In addition, an expert validation was conducted by interviewing (former) board members of IT-companies. The method turned out to be useful for supporting export planning of small and medium size product software companies.*

*Keywords: Product software, software export, export success factors, Product Software Export Planning Method.*

# 1 THE EXPORT CHALLENGE FOR PRODUCT SOFTWARE COMPANIES

Product software companies operating in small local markets are more and more conscious of the fact that their advantage of having a standardized product cannot be fully exploited, due to the limited market size. For small and medium enterprises a diversification growth strategy by creating new products is not attractive due to the limited amount of resources and skills available in the company (cf. Ansoff 1965). The option left is to explore new markets or countries where the existing products can easily be exported to. The key characteristic of the product software business – the manufacturing of copies of the product does not cost more for a company (Shapiro & Varian 1999, Cusumano 2004, p. 25) – makes the option to enter new markets with existing products even more appealing.

Despite the attractiveness of product software export, much of the scientific literature in the area of international software business has a limited scope. One area of available research is on localization, i.e. the language and cultural adaptation (Luong & Lok & Taylor & Driscoll 1995, Taylor 1992). Also, the distribution of product development, such as for instance at the Baan company (Carmel 1999), is studied in varying circumstances (e.g. Herbsleb & Moitra 2001, Prikładnicki & Audy & Evaristo 2004). However, the structured planning of product software export as part of strategic decision making from a product/market perspective has – to our knowledge – never been investigated.

With the exception of release planning, which has been addressed by several scholars (e.g. Höst et al 2001, Ruhe & Saliu 2005), in general, the research in the product software domain has been limited as compared to tailor-made software development and implementation. Product software has a unique set of characteristics that justifies further investigation when looking at export. First of all there is no physical goods distribution, even CD-Roms and hardcopy manuals of the software are distributed less and less; with the absence of complex logistics, it seems easy to enter a new market. At the same time, many product software companies act in highly dynamic markets; the rise and fall of some Enterprise Resource Planning (ERP) companies is an indication; there is a high mortality rate regarding small software companies (cf. Bell 1997). Also, product software quality in terms of functionality, robustness and usability is of high importance when entering new markets (e.g. Philips 1998). As a fourth characteristic we mention the cultural differences between countries as a complicating export factor (Png & Tan & Wee 2001).

## 1.1 Research question and methodology outline

This paper is driven by the need for a software export planning method in order to support the strategic planning of small and medium sized product software companies. Many European countries have economies where the total market value in a particular market segment is too small to build a sustainable business, for example companies in the Netherlands (Statistics Netherlands 2005, p. 147). Hence product export is a strategic and critical option. Our aim is therefore:

*To identify the areas of concern in exporting product software to new (geographical) markets, and to develop a planning method that supports the strategic planning of product software export initiatives.*

We search for the concern areas of product export in general, and the factors affecting the success of product software export in particular. In this paper, the Product Software Export Planning Method (PSEPM) is introduced that builds upon existing insights from success factors of product software export and strategic planning. PSEPM enables us to assess the home country of the company against the export market. In addition, the method supports the actual export planning of the company, by performing the similarities/differences analysis of the two markets and defining the opportunities and threats for the export initiatives. The novelty of PSEPM is in the way it enables an assessment of the opportunities and threats from different perspectives, i.e. a combination of concern area dimensions

that were found to affect the success of the product software exporting from a product/market viewpoint. We explore the method through a case study at a Dutch product software company specialised in workforce planning software, planning to export to Finland. Also, PSEPM is validated through expert interviews in order to value its applicability, beyond the particular case study, for the product software industry.

## 1.2 Paper outline

The paper is organized as follows. In the following section we provide more background on success and fail factors of product software export. We conclude this section by presenting and explaining PSEPM. Then, in section 3, the case study is presented in which PSEPM was applied to a real-world situation. In section 4 the validation of the method is described through expert interviews. Finally, we draw conclusions and present relevant topics for future research.

## 2 A PRODUCT SOFTWARE EXPORT PLANNING METHOD

In this chapter the Product Software Export Planning Method (PSEPM) is presented. Appendix A depicts the overall structure of the method. The content and premise of the method will be described in detail in the following sections.

### 2.1 Success and fail factors of export

In markets other than product software markets, the success and failure of export of commercial goods has been studied extensively over the years. Without claiming to be complete, we provide a compressed overview of the current research in this area. In addition we reference the few product software export related papers that are available.

Piercy, Kaleka and Katsikeas (1998) studied the sources of superior export performance in manufacturing sector, and found that product related factors like product quality were the major cause of superior export performance. Furthermore, Cavusgil and Kirpalani (1993) saw that changing product positioning to fit the needs and market competition in foreign markets was very useful for small and large companies. Bodur (1986) and Karafakioglu (1986), who both studied problems of Turkish exporters and Bannock (1987), found that low product quality or product suitability were problematic for exporters. Karafakioglu (1986), Bell (1997) and Loane (2003) found that foreign market information was of crucial importance for exporting companies. Other researchers also reported about companies having difficulties to find required market information (Bannock 1987, Price Waterhouse 1995, Czinkota & Johnston 1983, Karafakioglu 1986).

Piercy et al. (1998) found that the appropriateness of resources and skills was needed in order to achieve competitive advantage in exporting. Further, Bijmolt and Zwart (1994) studied manufacturing companies to explore the success factors of Dutch exporting small and medium enterprises. Their results show that managements' attitude towards exporting, together with export planning, were the most important factors for successful export. The study of Cavusgil et al. (1993) confirmed that commitment of top management was essential for the long-term success for exporting firms. Loane (2003) reported the results of a research performed by Boston Consulting Group about the Australian software industry. Two of the elements that were mentioned to be important for software companies to succeed abroad were related to strategy building, namely to position the company well in order to receive venture capital funding and to determine appropriate channel strategies. Bell (1997) investigated the export behaviour of small software firms in Finland, Ireland and Norway. The study revealed that the software companies had difficulties to obtain finance. This was due to the fact that banks considered small software firms to be especially high risk, not only because of company size, but also due to their low asset bases and a relatively high mortality rate within the sector. Furthermore,

costs of communication and delays in payments were hindering the success of exporting according to Bell (1997).

Finally, export execution related issues have slowed down the success of exporting. The study of Czinkota and Johnston (1983) showed that the greatest problems that exporting companies faced were related to communication with customers and sales efforts, which were found to be inadequate. Further, the study conducted by Price Waterhouse (1995) revealed that selling and distribution created difficulties in exporting. Summarizing we distinguish three main categories with their following characteristics:

Product/market related:

- Product quality; after sales service; product adaption; product development process.
- Knowledge of customer needs; knowledge of competitors; knowledge of the export market; appropriate partners.

Management board related:

- Appropriateness of skills and resources; management commitment.
- Marketing strategy, positioning for venture capital funding; distribution strategy.
- Capability of obtaining finance; limited currency fluctuations; effective communication; absence of major delays in payments

Export execution related:

- Quality of export documentation; effective customer communication; adequate sales efforts; smooth distribution.

Among others, Roberts and Berry (1985) observe that the choice for a market entrance strategy is to large extent dependent on the company's acquaintance with the product/market aspects. Also, software as an exportable product inherits specific product/market focus in contrast with tailor-made software. With these and other observations (notably Johnson & Scoles 1999, Ward & Peppard 2002), as a first step and primary focus within this paper, we take the product and its export market as the centre of our attention, i.e.:

- Product; As a product, software is directly and intensively used by persons with very different backgrounds and level of experience. Its functionality and usability is highly critical as product life cycles rapidly decrease. Hence, product quality and adaptation to customers' needs (in particular from different countries) is critical for software companies with export ambitions (Philips 1998, Bell 1997)
- External; The market for software products is highly dynamic, fast-moving and globally expanding on both the demand and supply side. Sufficient information about possible distribution channels, potential customers and competitors is therefore crucial for software companies with export ambitions (Bell 1997, Loane 2003)

Note again that we are aware of other important elements –see the 'management board related category– that are part of an export strategy, however these are not the focus of this study.

## 2.2 Method overview

Literature discusses and proposes many techniques for strategic analysis. We explored the techniques for analyzing external environments and product suitability, mainly relying on the standard works of Johnson and Scholes (1999) from a business/organizational perspective and Ward and Peppard (2002) from an IS/IT perspective. Furthermore, we identified five main steps in PSEPM, which were derived from the product/market related success and fail factors, presented earlier in subsection 2.1. Those are combined with techniques for strategic analysis. Thirdly the method consists of two main phases: (1) country analysis and (2) similarities/differences and opportunities/threats (SDOT) analysis. Both will be described and explained below. Table 1 combines all steps, techniques and phases, and appendix A shows an overview chart of the method.

	Phase 1: Country analysis	Phase 2: SDOT analysis
Step	Techniques	Techniques
Step 1: Industry trends	Industry trends analysis, using: - Secondary data (e.g. Internet) - Survey (e.g. questionnaire) - Porter's five forces model (Porter 1985)	Similarities/differences analysis and opportunities/threats analysis, using: - Brainstorming - Weighting of importance - Porter's five forces model
Step 2: Competitors	Competitor analysis, using: - Secondary data - Survey	
Step 3: Customers' external partners	Value chain analysis, using: - Secondary data - Customer studies (e.g. semi-structured interviews)	
Step 4: Customers' operation	Process analysis, using: - Secondary data - Customer studies	
Step 5: Product suitability	Product analysis, using: - Offering analysis - Customer studies	

*Table 1 Steps and techniques of PSEPM.*

### 2.3 Phase 1: Country analysis

The aim of country analysis is to determine industry trends, competitive forces, competitors, customers' environments of countries, including the (potential) fit with the software companies' products. The country analysis includes the home country of the company as well as the country (or countries) where the company is planning to export their product(s) to. The five steps that are defined to perform the country analysis (see below) should be repeated for each country under study. The order of the steps can differ between companies: some will find it more convenient to start the country analysis with the product suitability step whereas others prefer to initiate a more general industry trends analysis. The key issue of the country analysis is that by following all the steps, the company is able to define opportunities and threats of new markets (i.e. countries) from a broad perspective. Hence, information from different perspectives will contribute to the export strategy formulation.

#### *Step 1.1: Industry trends*

An efficient way to collect the data for industry trend analysis is to use secondary data, for example from the Internet, competitors' web sites and IT magazines. A questionnaire for e.g. (potential) partners helps to collect information for the industry analysis. Much secondary data for industry analysis is also available from market research companies like Gartner, IDC and Forrester. Porter's five force model is a proven technique to determine a company's current position in the home market and to analyze its possible future positions.

#### *Step 1.2: Competitors*

Competitor analysis includes identifying existing competitors. Internet search is a convenient way to list the existing competitors in a market. Another effective way is to visit trade fairs where competitors show their products. After listing the existing competitors, the comparative analysis of competitors is performed in this study by comparing the following information of competing companies:

- Number of countries where the company is present
- Number of employees, ftes, subsidiaries, locations
- Annual turnover, profit, EBITA
- Number, type and location of customers, including product-market or portfolio information

The comparative analysis of competitors' products can be conducted by comparing the functionalities they provide in their product offerings.

*Step 1.3: Customers' external partners*

Interviews with customers in the home country and with potential customers from the country of export can be used to find distribution channels and other important external partners. In order to gain more insight, these customers can be asked to list their most important external partners and describe the type of relationship that exists between them. This input can be used to create an overview of the potential value chains or value systems within a country. In addition, this information can be used as an inter-organizational map, to discover the particular nature of the industry networks that are relevant in that country (cf. Burt 1992). Another possibility to collect information for this analysis is to use secondary data, like company websites.

*Step 1.4: Customers' operation*

In a similar way as the previous step, customer interviews in the home country and interviews with potential customer from the export market can be conducted to collect information about customers' operation. During the interviews customers can be asked to describe and explain their primary process in several ways. To compare the different customer situations, a process modelling tool can be used. An alternative way to collect information for the customers' operation analysis would be to exploit secondary sources like the Internet and research reports from the industry.

*Step 1.5: Product suitability*

Through prospect and customer interviews exporting software companies can determine the current support of customers' processes in their home market and in the potential export countries. The key is to focus on the most important processes of the customer, important factors affecting these processes, and how (new, additional or better) software helps them with their activities.

An alternative way to collect information about product suitability is to search for information from software competitors' offerings (including Requests For Information, Requests For Proposal and Requests For Quote). This information provides guidelines of what functionalities customers require in a particular case. However, it may be difficult to obtain some of these sources.

## 2.4 Phase 2: SDOT analysis

Applying PSEPM, software companies first determine the similarities and differences that exist between the two or more different markets. Next, the similarities/differences analysis will help to find the possible opportunities and threats for their export initiatives. The last step in a SDOT analysis is to allocate weights to each opportunity and threat, in order to define what contributes most to the success and possible failure of an export initiative.

The opportunity analysis should be performed for all five dimensions of PSEPM: industry trends, competitors & products, customers' external partners, customers' operation and product suitability. In this way, product software companies receive valuable information for their strategy determination from a broad range of angles. Where each single dimension has a limited scope, the combination of analysis provides a wide set of dimensions to determine the opportunities and threats in new markets.

*Step 2.1-2.5: SDOT analysis*

First, a list of similarities and differences is created based on the country analysis. Second, the analysis of opportunities and threats can be performed, based on these similarities and differences. The opportunity and threat analysis is effectively done by organizing brainstorming session with external experts and managers of the software company. Also the following levers in Porter's five forces model can be used to identify opportunities and threats (derived from Ward & Peppard 2002, p. 107):

- Threats of new entrants: product price, product differentiation, market segmentation.

- Buyers power high: product price, product quality, flexible product services, competition, product differentiation, price/performance-ratio, switching costs, buyers product selection.
- Supplier power high: product price, supply quality, product availability, quality control, supplier sourcing process
- Substitute products threatened: potential market and profit, product price, price/performance-ratio, product (re-)definition, (redefined) market segmentation
- Intense competition from rivals: product price, product development, product distribution and service, customer loyalty, price/performance-ratio, product differentiation, product services (distribution channel), customer intimacy.

The results can subsequently be discussed with other managers. To meet the goal of this analysis it is important to have a multi-disciplinary group of several stakeholders to optimize creativity and to support a broad scope (cf. Osborn 1963, Von Oech 1990). A more structured part of the SDOT-analysis is the allocation of weights to each of the opportunities and threats (low, medium, high). The weight should reflect the importance of each opportunity and threat for the particular export success. The weight allocation can also be performed by brainstorming sessions.

With the help of the SDOT-analysis management receives important information about two different markets and competitors, customers and IT systems in those markets. The five separate dimensions offer a broad scope of angles for the opportunity and threat analysis. In addition, the SDOT analysis provide a structured way to list similarities and differences and further opportunities and threats of two separate markets. Finally the weighting of each opportunity and threat assist on putting the effort on the most valuable findings. A disadvantage of the SDOT-analysis is that the analysis requires availability and input from different managers especially during the opportunity and threat analysis: this may be hard to realize.

### **3 PSEPM CASE STUDY**

#### **3.1 Context and approach**

We have applied PSEPM to a small/medium Dutch product software provider. This company develops software products for the Dutch health care market. It is specialized in workforce planning and scheduling software for home care organizations. The company provides solutions for home care suppliers that cope with the assignment of home care personnel to home care customers. To attain more advantage of the standardized software product, the company aims to export its product to geographically new markets. Historically, this company had already ties with Finland. For this reason they want to start investigating their product's export opportunities to Finland.

The researcher performed the study. After analyzing the Finnish and Dutch markets in the five dimensions, we first listed the similarities and differences of those two markets in each dimension. Next we performed the opportunities and threats analysis, based on the similarities and differences we found in each dimension. Finally we gave each opportunity and threat a weight, to see which of them contribute the most for the success and possible failure of the export initiative.

As for the country analysis, an industry trend analysis was done using a questionnaire that was sent to the located competitors in each country. The questionnaire contained questions related to the key concepts of Porter's five forces model as described in the previous section. Additional information was retrieved with the help of the Internet, including information about the competitors' products. Furthermore, the "Zorg & ICT expo" in the Netherlands was attended to collect more information about the Dutch competitors and their products.

Further country analysis was done by interviewing employees of the companies' customers in the Netherlands and three prospects (i.e. home care organizations) in Finland. Having found six potential respondents, semi-structured interviews were designed. A number of different themes was covered in

the interviews, including the customers' operations. The participants were asked to describe the primary process of the organization from the intake till the invoicing. The product suitability analysis was also a theme of the semi-structured interviews. Here the participants were asked to describe how the workforce scheduling process looked like.

After the country analysis, the actual SDOT analysis was performed: first by systematically comparing the results from the two country studies per dimension, then by defining the opportunities and threats based on the previous analysis. Finally, each opportunity and threat was weighted by estimating the interest of the opportunity for the software company, and judging the relevance of the threat for its export plans.

### 3.2 Results

#### *Similarities and differences*

Applying the country analyses of industry trends most notably showed that both the Finnish and Dutch market for workforce scheduling software can be characterized by increasing rivalry among existing firms, medium threat of new entrants, and low bargaining power of suppliers.

At the same time the main industry difference between Finland and the Netherlands is in the bargaining power of buyers; in the Netherlands this was perceived to be higher than in Finland. The cross-national competitor analysis revealed that most competitors in the Netherlands and in Finland are small companies. In addition, in both countries four competitors possess almost 100% of the market share. Yet, differences were also recognized. First, in the Netherlands more competition existed than in Finland. Second, the software products were better differentiated in the Netherlands than in Finland. Third, whereas in the Netherlands most of the competitors are specialized within the health care sector, in Finland the competitors were also serving hotels, restaurants and catering businesses.

#### *Opportunities and threats*

The country analysis led to the following observations. The fact that the Finnish home care market is a non-growing market makes it a less attractive market to enter. Software companies have to fight for opportunities to replace the competitors' product or to find client organizations that do not have a scheduling tool yet. Due to the increasing competition and the similarity of the existing products in the market, the opportunity for the Dutch software company is to differentiate their software product from the existing software products in the Finnish market. It was discovered that the Dutch company does offer some unique functionalities not supported by Finnish competitor products. The Dutch company has to compete with a dominant health care software provider in the Finnish market. This strong competitor more or less causes the Dutch company to specialize to serve a niche market. This specialization can make it the preferred supplier for that niche market: existing suppliers did not specialize in that segment. However, to become a preferred supplier the Dutch company has to demonstrate that they have the knowledge of the Finnish home care market and that their product supports the operation of those organizations. Getting closer to the end-consumer and understanding their requirements is essential to achieve this and to compete successfully in the market.

## **4 METHOD VALIDATION**

### 4.1 Expert interviews

The previous section demonstrated how PSEPM was successfully applied within the context of a study. To support the generalization of the method and to reflect the needs of the software industry, we additionally performed expert validation as proposed by Burstein, Suwannasart, and Carlson (1996). We targeted experts from different backgrounds and audience groups as recommended by Lauesen

and Vinter (2001) and Kitchenham, Pfleeger, Pickard, Jones, Hoaglin, El Emam and Rosenberg (2002). In total six (former) board members were interviewed, coming from product software, IT consultancy and IT export consultancy companies.

We identified three criteria to test the relevance and validity of PSEPM. These criteria and the related interview questions are presented in table 2. The criteria were identified from comparable work by Beecham, Hall, Britton, Cottee, and Rainer (2005, p. 254). In this early phase of the development of PSEPM we want to find out whether the scope of our method is sufficient for the software industry. Second, we want to avoid an ‘over-complex’ method as this is unlikely to be adopted; it may be too challenging to interpret without extensive training. Third, we additionally stress that the results of PSEPM need to be easily be communicated with the management team.

Question	Criterion
Is the method complete? If not, what do you suggest to add to the method?	Scope
Is it time efficient to perform this type of analysis?	Ease of use (efficiency)
Is the method executable? If so, who should execute the analysis?	Ease of use
Are the results easy to communicate?	Comprehension

Table 2. Expert validation questions and criteria for PSEPM validation

## 4.2 Results

The responses of the six validation experts highlighted several strengths and weaknesses of PSEPM. The general attitude of the experts towards the method was positive and supportive. Most of the experts found the method easy to use, although two experts thought that small companies might have difficulties to find enough time to perform the analyses. The experts observed that the best way to execute the method is with the help of a team of specialists from areas like product, finance, technology, marketing and sales. Furthermore, all the experts believed that the results of the method are easy to communicate with the management. The experts encouraged us to perform further research beyond product/market related issues into:

- Internal analysis
- Cultural environment analysis
- Financial analysis
- Entry strategy determination

This provides an even more elaborated holistic view in addition to the aspects considered in the product/market domain. According to the experts the internal analysis should include a study of the strengths and weaknesses of the company and its people. As one of the respondents stated: “*I have to find out if I have the right people who fit the export market and the business idea over there.*” Related to this, the respondents found it important to study the cultural environment of the export market, in order to determine if the company has the right people to successfully work in that type of culture.

## 5 CONCLUSIONS

In this paper we presented the Product Software Export Planning Method (PSEPM) that aims to contribute to the research question “Identify the areas of concern in transferring product software to new (geographical) markets and develop a planning method that supports the systematic planning of the export initiatives.” We successfully developed the Product Software Export Planning Method to a small/medium sized product software company: as we speak, the case study company is using its results as a strategy to enter the Finnish market.

It is important to recognize that the case study is a snap shot of the current situation. Due to the regulated nature of workforce scheduling, the Dutch company has to anticipate on the changes that are

made by new laws and regulations. In addition, changes in the home care operation environment may occur that may change the needs of the end-customers. Consequently, the Dutch company should track the home care environment developments in both the Netherlands and Finland.

Multiple roles in product software companies may benefit from PSEPM. Because PSEPM focuses on the product/market domain, it can especially support product managers in guiding them in export planning for the product(s) they are responsible for. A product manager's job is dynamic: many stakeholders are involved in product management. The multi-dimensional approach of PSEPM will benefit product managers in planning for the export market. Project managers can use PSEPM while product software export is in the process of execution. Activities and tasks related to the opportunities and threats can be planned, monitored and controlled. Partner managers may use the opportunities and threats from PSEPM to initiate new partner relations in the export market.

Based on the case study we performed, we can conclude that a couple of critical factors exist for the successful implementation of the SDOT analysis. First of all, it is critical for the success of the SDOT analysis to have (correct) input information available for the study. Another critical success factor is the availability of different managers to consider the possible opportunities and threats (IT, finance, marketing & sales, HR).

Although the method has been successfully applied, more case studies need to be analyzed to verify the application of PSEPM. Applying the method to a large company may indicate its usefulness for larger product software companies. Exporting to a country outside Europe, e.g. in a rapidly developing market like China, is definitely an interesting situation to test PSEPM; in that case we expect that cultural aspects will play a strong role. Experiences in outsourcing (as e.g. described by Carmel 1999) may be of use here.

Going beyond the product marketing perspective, in search for a full integral method for product software planning, is another area for future research. Financial aspects, cultural aspects and legislation aspects may then become part of the export planning method. Lessons learned from product export in general (not only taking software export into account), may be of use in that case.

## References

- Ansoff, H.I. (1965). *Corporate strategy; an analytic approach to business policy for growth and expansion*. McGraw-Hill, New York.
- Bannock, G. (1987). *Into Active Exporting*. BOTB Occasional Papers. HMSO. Dd 8934782 J0229NJ, London.
- Beecham, S., Hall, T., Britton, C., Cottee, M. and Rainer, A. (2005). Using an Expert Panel to Validate a Requirements Process Improvement Model. *The Journal of Systems and Software* 76, 251-275.
- Bell, J. (1997). A Comparative Study of the Export Problems of Small Computer Software Exporters in Finland, Ireland and Norway. *International Business Review* 6, 585-604.
- Bijmolt, T.H.A. and Zwart, P.S. (1994). The Impact of Internal Factors on the Export Success of Dutch Small and Medium-Sized Firms. *Journal of Small Business Management*, April-June.
- Bodur, M. (1986). A Study in the Nature and Intensity of Problems Experienced by Turkish Exporting Firms. In *Advances in International Marketing*, ed. S.T. Cavusgil 1, 205-232.
- Burstein, I., Suwannasart, T. and Carlson, C. (1996). Developing a Testing Maturity Model, Part II. *CrossTalk: The Journal of Defences Software Engineering*.
- Burt, R.S. (1992). *Structural Holes. The Social Structure of Competition*. Harvard University Press, Cambridge, MA.
- Carmel, E. (1999). *Global Software Teams – Collaboration Across Borders and Time-Zones*. Prentice Hall: Upper Saddle River, NK.
- Cavusgil, S. T. and Kirpalani, V. H. M. (1993). Introducing Products Into Export Markets: Success Factors. *Journal of Business Research* 27, 1-15.

- Cusumano, M.A. (2004). *The Business of Software. What Every Manager, Programmer, and Entrepreneur Must Know to Thrive and Survive in Good Times and Bad*. Free Press: New York.
- Czinkota, M.R. and Johnston, W.J. (1983). Exporting: Does Sales Volume Make a Difference? *Journal of International Business Studies* 14, 147-153.
- Herbsleb, J.D. and Moitra, D. (2001). Global Software Development. *IEEE Software*, March/April, USA, 16-20.
- Höst, M., Regnell, B., Natt och Dag, J., Nedstam, J. and Nyberg, C. (2001). Exploring Bottlenecks in Market-Driven Requirements Management Processes with Discrete Event Simulation. *Journal of Systems and Software*, 59, 323-332.
- Johnson, G. and Scholes, K. (1999). *Exploring Corporate Strategy*. Fifth Edition. Prentice Hall: Herfordshire, England.
- Karafakioglu, M. (1986). Export Activities of Turkish Manufacturers. *International Marketing Review* Winter, 34-43.
- Kitchenham, B.A. and Pfleeger, S.L. and Pickard, L.M. and Jones, P.W. and Hoaglin, D.C. and El Emam, K. and Rosenberg, J. (2002). Preliminary Guidelines for Empirical Research in Software Engineering. *IEEE Transactions on Software Engineering* 28 (8), 721-734.
- Lauesen, S. and Vinter, O. (2001). Preventing Requirement Defects: An Experiment in Process Improvement. *Requirements Engineering Journal* 6 (1), 37-50.
- Loane, S. (2003). Exporting Small Software Firms. A Cross-National Comparison of the Export Success Factors of Small Firms. Retrieved 2 February, 2005 from <http://www.seanational.com.au>.
- Luong, T. V., Lok, J.S.H., Taylor, D.J. and Driscoll, K. (1995). *Internationalization, Developing Software for Global Markets*. John Wiley & Sons: New York.
- Osborn, A.F. (1963). *Applied Imagination*. Scribner's, New York.
- Philips, R.A. (1998). *Guide to Software Export. A Handbook for International Software Sales*. The Haworth Press, London.
- Piercy, N.F., Kaleka, A. and Katsikeas, C.S. (1998). Sources of Competitive Advantage in High Performing Exporting Companies. *Journal of World Business* 33 (4), 378-393
- Png, I. P. L., Tan, B. C. Y., and Wee, K.-L. (2001). Dimensions of national culture and corporate adoption of IT infrastructures. *IEEE Transactions on Engineering Management*, 48 (1), 36-45.
- Porter, M.E. (1985). *Competitive Advantage*. Free Press, New York.
- Prikladnicki, R., Audy, J.L.N. and Evaristo, R. (2004). A Reference Model for Global Software Development. In *Proceedings of the 5th IFIP Working Conference on Virtual Enterprises and Collaborative Networks 2004* (Luis M. Camarinha-Matos Ed.):, Toulouse, France, 369-378.
- Price Waterhouse and the Confederation of British Industry (1995). *Small Firms Export Survey*. Price Waterhouse, Belfast.
- Roberts, E.B., and Berry, C.A. (1985). Entering new Businesses: Selecting Strategies for Success, *Sloan Management Review*, Spring 1985, 3-17.
- Ruhe, G. and Saliu, M.O. (2005). The Art of Science of Software Release Planning. *IEEE Software* 22 (6), 47-53.
- Shapiro, C. and Varian, H.R. (1999). *Information Rules. A Strategic Guide to the Network Economy*. Harvard Business School Press, Boston, MA.
- Statistics Netherlands (2005). *Statistics Yearbook 2005*. Statistics Netherlands, Voorburg/Heerlen, Netherlands.
- Taylor, D. (1992). *Global Software. Developing Applications for the International Market*. Springer-Verlag: New York.
- Von Oech, R.A. (1990). *A Whack on the Side of the Head: How You Can Be More Creative*. Warner Books, New York.
- Ward, J. and Peppard, J. (2002). *Strategic Planning for Information Systems*. Third Edition. Wiley Series in Information Systems. John Wiley & Sons, West Sussex.

# Appendix A: PSEPM Structure, containing arbitrary case study data

## Similarity & difference and opportunity & threat analysis

Success category	Items	Country 1	Country 2	Opportunity-threat analysis																																																																																																								
External	1. Industry Trends			<table border="1"> <tr> <td>Similarities</td> <td>↑</td> <td>Opportunities</td> </tr> <tr> <td>Differences</td> <td>↓</td> <td>Threats</td> </tr> </table>	Similarities	↑	Opportunities	Differences	↓	Threats																																																																																																		
	Similarities	↑	Opportunities																																																																																																									
	Differences	↓	Threats																																																																																																									
	2. Competitors & products	<table border="1"> <tr> <th>Company</th> <th>Scheduling software name</th> <th>Year of establishment</th> <th># of countries operating in</th> <th># of employees (million euros)</th> <th>Turnover 2004 (million euros)</th> <th># of client organizations using scheduling product</th> </tr> <tr> <td>Company 1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Company 2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Company 3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Company 4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Company 5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Company	Scheduling software name	Year of establishment	# of countries operating in	# of employees (million euros)	Turnover 2004 (million euros)	# of client organizations using scheduling product	Company 1							Company 2							Company 3							Company 4							Company 5							<table border="1"> <tr> <th>Company name</th> <th>Product name</th> <th>Company A</th> <th>Company B</th> <th>Company C</th> <th>Company D</th> <th>Company E</th> <th>Company F</th> </tr> <tr> <td>Functabilite1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Functabilite2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Functabilite3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Functabilite4</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Functabilite5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Functabilite6</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Company name	Product name	Company A	Company B	Company C	Company D	Company E	Company F	Functabilite1								Functabilite2								Functabilite3								Functabilite4								Functabilite5								Functabilite6								<table border="1"> <tr> <td>Similarities</td> <td>↑</td> <td>Opportunities</td> </tr> <tr> <td>Differences</td> <td>↓</td> <td>Threats</td> </tr> </table>	Similarities	↑	Opportunities	Differences	↓	Threats
	Company	Scheduling software name	Year of establishment	# of countries operating in	# of employees (million euros)	Turnover 2004 (million euros)	# of client organizations using scheduling product																																																																																																					
Company 1																																																																																																												
Company 2																																																																																																												
Company 3																																																																																																												
Company 4																																																																																																												
Company 5																																																																																																												
Company name	Product name	Company A	Company B	Company C	Company D	Company E	Company F																																																																																																					
Functabilite1																																																																																																												
Functabilite2																																																																																																												
Functabilite3																																																																																																												
Functabilite4																																																																																																												
Functabilite5																																																																																																												
Functabilite6																																																																																																												
Similarities	↑	Opportunities																																																																																																										
Differences	↓	Threats																																																																																																										
3. Customers' external partners			<table border="1"> <tr> <td>Similarities</td> <td>↑</td> <td>Opportunities</td> </tr> <tr> <td>Differences</td> <td>↓</td> <td>Threats</td> </tr> </table>	Similarities	↑	Opportunities	Differences	↓	Threats																																																																																																			
Similarities	↑	Opportunities																																																																																																										
Differences	↓	Threats																																																																																																										
4. Customers' operation			<table border="1"> <tr> <td>Similarities</td> <td>↑</td> <td>Opportunities</td> </tr> <tr> <td>Differences</td> <td>↓</td> <td>Threats</td> </tr> </table>	Similarities	↑	Opportunities	Differences	↓	Threats																																																																																																			
Similarities	↑	Opportunities																																																																																																										
Differences	↓	Threats																																																																																																										
Product	5. Product suitability			<table border="1"> <tr> <td>Similarities</td> <td>↑</td> <td>Opportunities</td> </tr> <tr> <td>Differences</td> <td>↓</td> <td>Threats</td> </tr> </table>	Similarities	↑	Opportunities	Differences	↓	Threats																																																																																																		
Similarities	↑	Opportunities																																																																																																										
Differences	↓	Threats																																																																																																										