

Internationalization Models of Software Product Firms

Matti T. Heikkonen and Markus M. Mäkelä
Software Business and Engineering Institute
Helsinki University of Technology
<http://www.soberit.hut.fi/SWBiz/>
firstname.surname@hut.fi

Abstract

This research focuses on internationalization models of firms whose business is based on value derived from creating and marketing software products in the context of small, open economies. Prior research in the area, on which we build herein, has been conducted in Finland. As Finland's domestic market is limited in its support for large-scale business for software product firms, it is essential for these firms to be able to conduct a successful internationalization program, cognizant of the applicability of relevant software business models that support the process. The Finnish software industry is limited in the number of firms with extensive internationalization experience.

Software is distinct from physical and information goods. It is intangible, embodies a large amount of intellectual content, and its development process is labor-intensive. In many decision contexts, traditional business models and best practices are not valid. The present paper delivers a literature review of the state-of-the-art of internationalization models and best practices in software firm internationalization in the context of small open economies.

1. Current Interests

The authors' current interests central for this work are to develop and validate internationalization models that take into account the specific contexts of software business and small, open economies. The aim is to define the most critical phases and to relate internationalization models with software business models. Their other research interests include other aspects of international software business and economics, especially software product development, internationalization of software firms, and strategic management in the software industry.

The contribution of the internationalization research is in building understanding of which parts of earlier internationalization models are applicable to the context of software business and the proposition of a model for internationalization that takes into account

the different dimensions that are relevant for different software firms.

The authors are employed by the Software Business and Engineering Institute (SoberIT, <http://www.soberit.hut.fi>), Helsinki University of Technology.

2. Past Work

We have carried out a one-year research project related to knowledge-intensive service activities and knowledge transition within business networks in the software business domain. The seven case firms were international or in the preliminary phase on internationalization. We have performed a literature study in the areas of internationalization, software business models, and knowledge intensive business services. This provides us with access to data from the OSKARI project (<http://www.soberit.hut.fi/oskari/>). OSKARI is a large-scale empirical survey conducted within the Finnish software industry. The data at hand can be employed in various stages of the research to test hypotheses.

3. Issue Statement

The Finnish software industry has grown rapidly during the 1990s. The total turnover was 1.6 billion euros in 1999 (Nukari & Forsell 1999). The revenues of the software industry worldwide were \$600 billion in year 2001. Taken together, Finland is a small country in the global software industry.

A recent OSKARI survey indicates that the total volume of Finnish software *product* business is about 1 billion euros. Of this, exports amount to 400 million euros. Fifty of a total of 1,200 firms (about 4%) represent 83% of the exports (Hietala et al. 2003). It seems evident that the majority of the Finnish software product firms operate in the domestic market although there is a huge market potential abroad.

Based on preliminary knowledge of the authors, there is an indication that small and medium sized Finnish software firms lack the methods and tools to

initiate and manage their internationalization process (Forssén et al. 2003). This is, the firms do not have a holistic view of the internationalization itself, its phases and its requirements related to knowledge and competencies.

Preliminary knowledge also implies that there is a relation between a software product firm's business model and applicable internationalization models. As inward internationalization is an important area to study (Cusumano et al. 2003), we focus the work on outward internationalization: see, for instance (Luostarinen 1979).

There seems to be a clear need for further research in the area of internationalization in the context of software business. The industry needs concrete models and tools that outline planning and management for the various circumstances faced by internationalizing businesses.

Type of issue

The issue of internationalization is strategic in nature and highly important for the ability of software product companies to deliver value to their shareholders and thus for the industry to deliver value to national economies. Contemporary internationalization models, presented later in this document, are somewhat too general in nature to be valid. The software product industry is fundamentally different from other industries (Mowery 1996) and therefore, software product specific internationalization models can be developed. One differentiating issue is the ability to customize software products with marginal effort to meet the needs of various market segments and market areas. Another differentiating aspect is the short life-cycle of product releases. The product itself is also a differentiating factor as it is immaterial in nature and can be distributed through electric channels, e.g. the Internet (McConnell 2001).

On the other hand, the presented models operate on a somewhat abstract level and provide insight to the phenomenon of internationalization and to a broad range of strategic choices within internationalization. The ambition of the authors is to develop a broad framework of internationalization that works as a tool or reference for firms within the software cluster to understand the prerequisites and challenges arising as internationalization progresses.

While the current body of knowledge is insufficient in its consideration of the specifics of software, it nevertheless provides an excellent starting point for the research. The previous international new ventures research provides models for internationalization of technology-based small and medium size firms (Autio, Sapienza, & Almeida 2000). The models can be

explored in the software product business context. As part of the research, the network theory (Johanson & Vahlne 1998) and the Nordic model (Luostarinen 1979) are also examined as possible contributors to the descriptions or construct.

Context

The research on internationalization models pertains to the strategic-level context of managing software business. There is apparent need to study issues of productization and business models due to their nature as prerequisite knowledge for understanding software product firms' internationalization. Figure 1 below presents the positioning of the research area in the field of software engineering and business. The research relates to three areas: internationalization, productization, and business models. The horizontal division in the figure demonstrates the positions of software engineering and software business as fields of research. The authors have also indicated research's position with the grey shading.

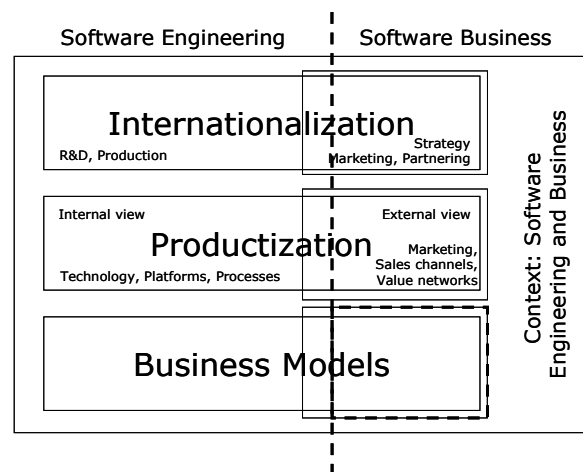


Figure 1. Context of the research.

Stakeholders

The main stakeholders of the research are 1) the software product companies of small, open economies, 2) public policy-makers of such countries, and 3) researchers of universities and research institutes operating within the field of inquiry.

For software product firms, the research provides the following: development of frameworks, models and practical guidelines for firms aiming to be successful on the international arena, taking into account the specific internationalization features and requirements of software product businesses and the implications of software business models the firm operates. More specifically, the following contributions are planned in the research:

- Strategy: A framework for strategic analysis and recommendations for selecting an appropriate internationalization strategy anticipating the peculiarities of software product business, and
- Business Models: A framework describing the alternative internationalization models for various software business models.

For researchers and policy-makers, the research provides (i) a comparative synthesis of current research in internationalization, and (ii) a framework for conducting research within internationalization of software product firms.

The exploration and dissemination of the results will include the case firms, the software industry at large and the related research institutions.

Information needs

The information collected in the project is qualitative in nature. The authors will use the case firms and current literature as the primary source on information. Secondary sources include previous studies and concurrent research conducted in the field.

4. Proposed Approach

The research is conducted in three parts: 1) Theoretical part, 2) Empirical part and 3) Construction part. Parts are sequenced so that the theoretical part is initialized first.

The first phase of the research is a theoretically oriented literature study reviewing the research base associated with internationalization. The deliverable of the first phase is a comparison and analysis of internationalization models and theoretical propositions for the second phase of the study.

The second phase of the study builds directly on the outcome of the first phase. The phase is primarily carried out according to the multiple case study approach with a primary emphasis on the semi-structured interview technique in data gathering. The outcome is description, comparison, and analysis of the internationalization models of the case firms.

The third part builds on both the first and the second parts of the study. The aim is to build a construct based on the descriptions and the associated theory. The proposed research questions are:

- Which models of internationalization are relevant for different types of software firms?
- What are the linkages between business models and internationalization models in software product business?

Previous work

The internationalization of small and medium sized enterprises has been an area of research in

management research for three decades. The internationalization hypothesis, suggested by (Johanson & Vahlne 1990; Luostarinen 1979) focuses on the gradual acquisition, integration and use of knowledge about foreign markets and operations, and on the incrementally increasing commitments to foreign markets. Internationalization is viewed as a process where a firm moves from exports to joint ventures and then on to fully owned subsidiaries as it gains experience. The network approach of internationalization (Johanson & Vahlne 1998) builds on the Nordic model. Internationalization is viewed as a process in which relationships are continuously established, developed, maintained and dissolved with the aim of achieving the objectives of the firm.

Previous theories are not applicable to the so-called international new ventures. These firms have emerged during the new era of rapid technology development and globalization. The early work of international new ventures has been dominated by two researchers, McDougall and Oviatt (McDougall & Oviatt 1996; McDougall, Shane, & Oviatt 1994; Oviatt & McDougall 1995; Oviatt & McDougall 1997). A series of publications have followed their example, including (Autio, Sapienza, & Almeida 2000; Barkema & Vermeulen 1998; Crick & Jones 2000; Preece, Miles, & Baetz 1999).

Papers on theories of international new ventures claim that established theories, the monopolistic-advantage theory, the product cycle theory, the stage theory of internationalization, and the oligopolistic reaction theory fail because they focus on large, mature firms (McDougall, Shane, & Oviatt 1994). The central focus of international new ventures theory is a new venture seeking to derive significant competitive advantage from the use of resources and the sale of outputs in multiple countries as it is established (Oviatt & McDougall 1994). The competitive advantage of international new ventures is based on private knowledge (Oviatt & McDougall 1994), which creates differentiation or cost advantages that help to overcome the advantages of local firms in many countries simultaneously. Survival and prosperity of born-global firms could be explained by their ability to learn, adapt, and innovate in new dynamic environments more rapidly than older firms (Autio, Sapienza, & Almeida 2000). In addition, an increasingly popular way to conduct international business is to establish a network of international strategic alliances (Oviatt & McDougall 1995).

Taken together, current and prior theorizing on new venture internationalization cannot always be considered valid in the case of software product companies. Building new theory is required in which

the distinct features introduced to internationalization behavior by software product companies' various business models are taken into account. The resulting analysis is likely to point out fertile directions for new research.

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Biography

Matti Heikkinen (M.Sc., Eng) works as a researcher in Helsinki University of Technology. He has a business development and management background in the software industry. Since 1996, he has worked as a project manager, marketing manager, managing director and consultant in various companies, including Sandvik Tamrock, Identia, Done Solutions, and Triple Check. He is currently board member in the Finnish Software Entrepreneurs' Association. His areas of expertise include internationalization, strategy process and business models.

Markus Mäkelä (M.Sc., Eng, M.Sc., Econ) is a research manager at Helsinki University of Technology, Software Business and Engineering Institute. In 2004, he will defend his doctoral dissertation that studies venture capitalist support to the management of software ventures in the international context. He conducts research in the fields of software firms' strategy, internationalization, technology management, and finance. He has previously worked at Stanford University, Helsinki School of Economics, and Morgan Stanley Dean Witter.