

8th Vaasa Conference on International Business

Inward internationalisation in product development: the strategic role of offshore sourcing

Anna Kyrki
Lappeenranta University of Technology
P.O. Box 20 FIN 53851 Lappeenranta, Finland
Email: anna.kyrki@lut.fi

Abstract

Software development industry is characterised by its global nature and knowledge-intensity. The firms are often small, specialised and operate in limited domestic market. Therefore, different aspects of internationalisation form an essential part of the firms' reality. At the same time, they need to deal with different resource constraints. In such circumstances, it does not surprise that the amount of inter-firm cooperation across national borders has been growing. The aspects of inward internationalisation have received little attention in the literature despite some observations on their importance and possible impact on the outward internationalisation. The purpose of this paper is to study the use of inward internationalisation in product development with a specific focus on offshore sourcing of software development. The literature on the inward internationalisation and specifics of internationalisation in software firms are discussed, along with brief review on offshore sourcing. Furthermore, the case study of sourcing arrangements of four Finnish software companies supplementing their internal product development by subcontracting to Russia is presented. The findings indicate that offshore sourcing is a multidimensional phenomenon with clear linkage to strategic planning instead of being a clerical activity. The inward operations can enhance firm's internal processes, such as product development, and even have an impact on a firm's success in outward internationalisation.

Keywords: inward internationalisation, sourcing, strategy, software business, Russia

1 Introduction

The paper focuses on inward internationalisation through offshore sourcing of software development. It is hypothesised that inward internationalisation can be used to replenish the strategic capabilities of the firm. In fact, if the cooperation is used for product development purpose, it can become a substantial component of outward activities. If the inward activities are an essential part of product development, their effectiveness can indeed determine the success of outward internationalisation as brought forward by Welch and Luostarinen (1993). The paper presents results of a qualitative study of four Finnish information and communication technology (ICT) companies, which utilise offshore sourcing in their product development. The focus of this study is on sourcing of software development by a firm whose intent is to sell the jointly developed appliance further to its own customers as opposed to information systems outsourcing.

The internationalization process of a firm is one of the major topics in the international business literature. Much of the research has concentrated on expansion of the firms to foreign countries, that is outward internationalization. The studies which emphasize the importance of inward-outward connections in a more holistic way are few in number (Luostarinen, 1980; Korhonen, 1999; Welch and Luostarinen, 1993; Fletcher, 2001). Furthermore, inward operations tend to be regarded as supporting activities, with more strategic importance assigned to outward operations (Korhonen, 1999). Also the firms' motivation for inward internationalisation is poorly described (Fletcher, 2001). The main body of the internationalisation literature has been focused on traditional manufacturing organisations. A more recent approach have brought forth peculiarities of small and high-tech firms, which more often than not behave differently than established manufacturing firms (e.g. Bell, 1995; Coviello and Munro, 1997). The speed of business operations has increased to such an extent that the international operations of the small firms are nowadays typically started earlier than before (Hurmerinta-Peltomäki, 2001).

Outsourcing and subcontracting can both be described as models of global interorganisational software development, a phenomenon which is becoming increasingly common (Heeks et al., 2001). The subject of offshore sourcing of software development has attracted a lot of managerial attention and more recently even some scholarly publications (e.g. Carmel and Nicholson, 2005; Nicholson and Sahay, 2004). Nevertheless, the general agreement on the definition and appropriate use of the terms *outsourcing* and *subcontracting* in this context has not been achieved. Both terms have been used to delineate the activities carried out by the firms developing software outside their organisational boundaries. Van Mieghem (1999) distinguishes these concepts in such way that subcontracting is acquisition of an item that could be produced in-house whereas outsourcing is related to not being able to manufacture something internally. This paper uses the term *sourcing* as an all-embracing concept, for it encompasses both outsourcing and insourcing (Carmel and Nicholson, 2005). Supplementary definition offshore is used to describe sourcing to any foreign country. In the empirical part, also the term *subcontracting* is used, because it was utilised in the interviews.

The empirical part incorporates a case study describing four Finnish companies which provide their customers software products and related services. Each company has been engaged in offshore development activities in several countries. They represent different branches of the industry with three of the companies being SMEs. The emphasis is on the software product development cooperation between Finnish and Russian companies. In seeking competitive advantage and shorter times to market, international cooperation becomes a necessity for firms located in countries where the domestic market is small. Russia's software industry's potential is

widely acknowledged, but the prejudices concerning Russian firms are still a major obstacle for cooperation (Terekhov, 2001). According to a survey made for Ministry of trade and industry of Finland (Market-Visio, 2002), Finnish software companies are interested in sourcing to Russia, but few have any subjective experience. In addition, those companies which outsource prefer not to give their experiences out, which was noticed in the process of finding companies for this research. Such references would however be a good basis for well-founded decision-making.

The paper is structured as follows. First, the aspects of inward internationalisation are overviewed. Second, the peculiarities of internationalisation in software firms are discussed. Third, some characteristics of offshore sourcing are described. Furthermore, the material and analysis of the case study are presented. The paper ends with suggestions for further research and a discussion on the limitations of the study.

2 Inward internationalisation

Welch and Luostarinen (1988) define internationalisation as the process of increasing involvement in international operations. The research considering this involvement has for the most part been dealing with various activities related to outward internationalisation, including the evolution from export activities into further penetration of foreign markets (e.g. Johanson and Vahlne, 1977; Luostarinen, 1980; Johanson and Vahlne, 1990). Changes in the international business environment call for a more dynamic approach to internationalisation as the national borders are becoming increasingly irrelevant and strategic alliances are formed across national boundaries (Fletcher, 2001). As a consequence, the international behaviour of the firms is far more complex than the incremental models of internationalisation suggest. Thus, internationalisation of a firm should be viewed as a global activity rather than involvement confined to a specific overseas country (ibid.).

Despite the fact that inward activities can contribute to the internationalisation process of a firm as well, they have received less attention (Welch and Luostarinen, 1993). Inward international activities may have an important impact on the likelihood and outcome of outward international steps (Korhonen et al., 1996). Welch and Luostarinen (1993) argue that "the inward process might precede and influence the development of outward activities, in such a way that the effectiveness of the inward activities could determine the success of outward internationalization". Furthermore, internationalisation has evolved in such manner, that the inward and outward activities have become interlinked, as illustrated in strategic alliances, cooperative manufacturing and countertrade (Fletcher, 2001). Thus, restricting the analysis to outward operations is providing a rather constricted picture of a firm's internationalisation.

The factors causing internationalisation can be categorised into management characteristics, organisational characteristics, external impediments or external incentives to engage in international business (Fletcher, 2001). Whereas the factors concerning external incentives are to large extent specific to outward operations, many management and organisation characteristics (table 1) can be applied to describe the reasons for inward internationalisation as well or as Fletcher (2001) brings forward, they reflect a tendency towards international involvement regardless of the form it takes. The external impediments for their part, present a general picture of reasons behind cautious internationalisation. One external incentive worth mentioning, because of its connection with offshore activities, is reduction in costs of production (Reid, 1983).

Table 1: Factors causing internationalisation (adapted from Fletcher, 2001)

| Management characteristics | Organisational characteristics | External impediments |
|--|--|---|
| Demographic: - age - education | <ul style="list-style-type: none"> - willingness to develop products for overseas market - technological advantage - willingness to fund international activities - size as measured by employment - willingness to research overseas markets - having a focus on R&D - nature of the product | <ul style="list-style-type: none"> - marketing activities by competitors in overseas markets - perception of higher risks in overseas markets - tariff and non-tariff barriers - exchange-rate movements - knowledge of the market and how it operates - issues related to agents and control - cost issues - lack of export training and government assistance |
| International exposure: - country of birth - time spent living overseas - frequency of business trips overseas | | |
| Knowledge of international business: - familiarity with the culture and IB practices - international transactions experience | | |
| Structured approach to management: - planning orientation - having a strategic or proactive approach | | |

List of possible inward internationalisation activities includes but is not limited to: indirect importing, direct importing, becoming a licensee for a foreign firm, being the joint venture partner with an overseas firm in its domestic market, and manufacturing overseas to supply the home market (Fletcher, 2001). Any of these activities can contribute to the firm's becoming internationalised.

Korhonen (1999) reviews the literature on the process of inward internationalisation dividing it into four stages according to the purchased product: goods, services, know-how, and systems. This dynamics was also confirmed by the empirical part of her study. The import of physical goods was dominant, with services staying at a low level, and know-how and systems operations being non-existent or at a minimal level. However, the sample consisted of manufacturing SMEs. It can well be questioned, whether this continuum would be valid for knowledge-intensive firms.

For innovative small companies, internationalisation can pose specific kind of challenges. Luostarinen et al. (1994) cite the study of innovative Finnish SMEs, in which the main problems were found to be shortage of employees conforming to international demands and lack of managements experience in internationalisation, shortage of financial resources, and credibility in the customers' eyes. These problems were seen connected with the demand for speed and force in entering new markets. The demands, for their part, are due to the fact that successful internationalisation requires marketing to be aimed at several different market areas both rapidly and at an early stage. Therefore, internationalisation demands investments that are both fast and sufficient in their volume. (ibid.)

The issues of employee shortage and speed can be addressed by engaging external resources. However, finding a specialised supplier, especially for a niche company operating on a small

domestic market, may turn out to be difficult without crossing national boundary (Hallén, 1982). Earlier research has already remarked the grown significance of international purchasing (Servais and Præst Knudsen, 2004) and subcontracting (Carter and Narasimhan, 1990) for global operations. Also international acquisition of technology through external cooperation has become more common (Granstrand and Sjölander, 1992). Thus the external and international sourcing in general has increased. Madsen and Servais (1997) propose that rapidly internationalising firms utilise sourcing from firms with complementary competences more often than other exporting firms, because of the insufficiency of their internal competence and routines. Supply relationships in high-tech industries are far from being supportive or clerical activities, when key suppliers can be engaged even in new product development. Shortages of certain key components can lead to missing the time-to-market or using first mover advantages (Törnroos, 2000).

3 Internationalisation in software business

The internationalisation of the software industry has become a popular topic in the international business literature due to the industry's global nature, fast growth and pervasiveness (McDougall et al., 1994; Oviatt and McDougall, 1994). Globalisation is an essential force in software industry's development and a growing number of companies are global from the very beginning of their existence (Knight and Cavusgil, 1996; Oviatt and McDougal, 1994). Overall, in the ICT industry, rapid internationalisation has become more a rule than an exception because of the industry dynamics. The software development firms are characterised as high technology, knowledge-based and service- intensive (Coviello and Munro, 1997). Rapid internationalisation is especially common among small firms that target narrow, highly specialized global market niches and operate in small, open economies with scarce domestic market (Bell et al., 2001). However, few of these companies possess enough own resources for operations in a global scale. Especially SMEs face the lack of resources, experience, skills and knowledge in their internationalisation (Bell et al., 1992). International cooperation of various types (e.g. marketing, sales, distribution) is commonly used to complement firm's own resources and capabilities (Nummela, 2000). The domestic markets of European software companies are rarely large enough to provide the desired growth, especially in the case of Nordic countries. Therefore, the firms resort to building different types of arrangements or networks abroad in order to carry out outward internationalisation activities.

According to Nummela et al. (2005) it seems that SMEs, particularly in knowledge-intensive industries, are both pushed to and pulled by international markets. The explanatory power of the stages theory is often found weaker in the knowledge-intensive context than in the other sectors (Kuivalainen, 2003), despite the fact that born globals exist in a wide range of industries (e.g. Oviatt and McDougall, 1994). Jones (1999) lists number of factors which encourage rapid internationalisation of knowledge-intensive firms. These include shortening product life cycles, drive for innovation, need for technology transfer, rapid development of information technology and global telecommunication. Other factor shown to speed up the internationalisation of software and Internet start-ups are monopolistic advantages, network externalities and economies of scale (Schmid and Schmidt-Buchholz, 2002). Network externalities mean that the value of the network increases with the number of users. In software and internet industry, the size of the existing customer base strongly affects the value perception of potential customers. Economies of scale mean that the costs per unit decrease with the number of units sold. In software and internet industry, fixed costs are typically high and marginal costs low, if any. The positive feedback loop

caused by these factors can only be exploited with a high number of users. To reach such market share, international business activities are needed. Also the timing is critical, positive feedback effects require rapid actions in order to gain dominant position before the competitors do. Thus the internationalisation process has to be rapid and start early. (ibid.)

Rapidly internationalising firms are often specialised, niche-oriented and have unique products and services. Therefore, home market is scarce and there is need for international expansion in order to achieve adequate growth (Preece et al., 1999). In high-tech industries, R&D costs are high and have to be invested before any payments are received to finance them. Therefore, initial expenses need to be quickly covered by growth providing another incentive for international expansion. Furthermore, the competition is very intense and products become obsolete rather quickly (ibid.). Thus, the firm needs to penetrate several markets at once instead of incremental expansion from one market to another. As a consequence, the international strategy of such firms is proactive and they tend to use hybrid structures for their international activities in order to acquire the necessary resources (Madsen and Servais, 1997; McDougall et al., 1994).

According to Luostarinen and Welch (1990), inter-firm cooperation can successfully solve some problems related to international competitiveness. Cooperation combined with own specialisation may provide economies of scale in various activities including research and development. Especially high-tech industries benefit if the substantial and constantly growing R&D costs can be spread out. Therefore it is not unexpected that interfirm cooperation seems to increase in high-cost, high-tech market (James and Weidenbaum, 1993). Because of the global nature of software business, the inward activities do not necessarily precede the outward ones as suggested by earlier research (e.g. Welch and Luostarinen, 1993). Instead, these activities can be carried out simultaneously. Nonetheless, the research on the rapidly internationalising firms has mainly concentrated on the sales of outputs that is to say outward operations. Dominguihos and Simões (2004) comment that rapid internationalisation is defined in terms of downstream activities despite the fact that an increasing number of firms go global also in upstream value chain areas, such as R&D activities and manufacturing. Typically, this means using subcontracting agreements. Thus, not only can rapid internationalisers be studied from a resource based perspective (ibid.), but the role of external sourcing of resources should be examined as well. Taken into consideration the scarcity of specialised suppliers, the topic of offshore sourcing needs more elaboration. It can be even questioned, whether large amount of inward activities suffice for a firm to be considered as international regardless of the origin of its customers.

4 Offshore sourcing

Offshore sourcing has been a growing trend since the middle of the 1990s. Both the dot-com boom and approaching year 2000 (Y2K) amplified the demand for information technology (IT) skills. In Western countries, this resulted in insufficiency of domestic supply of IT professionals in combination with risen wages. As a consequence, the development services provided by offshore vendors became an attractive and welcome offer. The U.S. companies have pioneered this development by sourcing their application development to countries such as India, China, Russia, Eastern Europe and the Philippines (Carmel and Nicholson, 2005). Nowadays, even an increasing number of Western European and Japanese firms use offshore software sourcing (Carmel and Agarwal, 2002; Sahay et al., 2003). Software development companies in different countries are competing for contracts on the basis of industry maturity, labour skills, technology

infrastructure and governmental support (Pries-Heje et al., 2005). The main motivation for offshore development has long been seen as cutting the production costs (Sakthivel, 2005), but also skills, quality and availability of human resources have been cited as increasingly important factors (Robb, 2000; Jennex and Adalakun, 2003). Other reported significant factors are flexibility and a bandwagon effect (Carmel and Nicholson, 2005; Lacity and Hirscheim, 1993).

Despite the growing body of research on offshore development, the main focus has been on IT service and information systems outsourcing (e.g. Goldsmith, 1994; Lacity et al., 1995; Lacity and Willcocks, 1998; Jennex and Adalakun, 2003; Nicholson and Sahay, 2001; Petkova and Petkov, 2003; Sabherwal, 2003). This kind of research provides valuable information on managing relationship with an offshore provider, covering issues such as risk mitigation, coordination and control. However, it does not explain the strategic reasoning for offshore activities of software development firms utilising sourcing in their product development. On the contrary, traditional view is that only the companies with large IT staff should consider offshore software sourcing and even then the assignments should be highly structured and predictable (Amoribietta et al., 2001; Jennex and Adalakun, 2003). More over, offshore software development differs from co-located development in three aspects: the diversity of organisations and cultures involved, variety in the type of the work, and the processual nature of the offshore relationship (Nicholson and Sahay, 2004).

Contradictory to the common notion that offshore sourcing is practised mainly by large organisations, Carmel and Nicholson (2005) mention cases of small U.S. and U.K. technology firms engaging in offshore software development already in the late 1990s. The amount of small client firms has been growing since and this trend appears to continue further despite their lack of resources to overcome difficulties and costs related to contacting, contracting and controlling their offshore software development (ibid.; Robb, 2000). The resources of the small firms are inevitably limited when compared to larger companies. They are short on the management staff and cannot provide the same kind of incentives in their recruitment. Neither can they afford to maintain technical specialists in house in narrow areas or ramp up for one-time large projects. As a consequence, the economies of scale and scope offered by offshore providers appear attractive for small firms. (Carmel and Nicholson, 2005)

According to Heeks et al. (2001), successful offshore sourcing is based on realistic expectation of what can be achieved. The expectation should take into account several factors, such as the level of attrition, the limitations of technological infrastructure and the cultural difference. Despite globalisation, distance, borders and place still do matter, as illustrated by American-Indian sourcing experiences (Heeks et al., 2001). Communication problems may arise whenever interacting companies come from different cultural environment (Laage-Hellman, 1997). Additional challenge is posed by the nature of software engineering itself, as procedures for quality control and project management have not fully evolved yet due to the novelty of the field (Amoribietta et al., 2001).

The empirical part of the paper describes offshore development activities of four Finnish companies. The emphasis of the case study was chosen to be on the software product development cooperation between Finnish and Russian companies. The reason for such selection was that the domestic market of Finnish companies is small constraining the firms not only in the amount of customers but also in their pool of potential suppliers. On the other hand, the resources and price-quality level of the Russian software development industry, provide an incentive for offshore sourcing within a short geographical distance.

The progress of the software development industry in Russia has attracted substantial interest. The acknowledged advantages include level of education, personnel quality and certification by international organisations (Pries-Heje et al., 2005). Some major Western companies, including Motorola, Sun Microsystems and Intel, have established software development departments in Russia (Terekhov 2001). Such activities effectively illustrate their belief in the potential of Russian research and development abilities. Naturally, there are also problems to be encountered, for example software piracy and poor legal and financial infrastructure. Nevertheless, a certain level of maturity has been achieved due to substantial improvements in domestic input factors, infrastructure and software industry characteristics (Hawk and McHenry, 2005).

5 Offshore sourcing in Finnish software companies

5.1 *Research design*

This research is a multiple case study (Yin, 1994). A qualitative approach was chosen because of the scarce amount of information on the subject. Selection of the companies for the case study was based on purposeful sampling (Patton, 1990). The criteria were having software product development activities and prior experience of cooperation with Russian companies. Chosen companies were known to have been utilising sourcing to Russia in their software development activities. This information was acquired from references of the Russian outsourcing companies published on their web sites. As a consequence of the selection method, the sample is in a certain sense biased. It can be assumed that if granting permission to use the company's name in the public reference, a company has more or less positive attitude towards offshore development. However, according to a survey made for Ministry of trade and industry of Finland (Market-Visio 2002), the total number of Finnish software companies utilising offshore sourcing is limited and such arrangements are rarely publicised. Therefore, the chosen selection method can be considered justifiable.

Based on the Internet references, eight Finnish companies were approached by phone and asked to participate in the study. Four of the contacted companies agreed. One company declined because of strategic importance of the subject to their operations. From their point of view, participation in the research was considered a breach of security. In another company the explanation for refusal was that they do not tell about their activities in Russia unless there are some direct benefits for business. One company was going bankrupt and its managing director refused on the basis that the issue was not current to them anymore. One company was discarded because it proved to be from a different industry. At this point, the representatives of the companies that agreed to participate were asked who would be an appropriate interviewee. The sourcing activities of the companies were briefly discussed in order to provide basis for composing the actual interview questions.

The companies represent different branches of ICT industry (table 2). Company Alpha is a communications operator. Company Beta develops mobile software. Company Gamma is a software project organisation and company Delta a developer of mobile games. Three of the companies can be described as small companies as they have less than 50 employees which is the criterion used by EU for categorising small-sized firms. The experience in subcontracting varies in length between twenty years and a couple of years. All four companies are familiar with

subcontracting to several countries, but each of them has at some point used services of a Russian company for software development.

Table 2. Company descriptions

| | Company Alpha | Company Beta | Company Gamma | Company Delta |
|-------------------|------------------------------------|---|-----------------------------|----------------------|
| Business offering | Communication | Mobile software | Software projects | Mobile games |
| Sourcing since | 1980s | 1994 (domestic) 1997 (offshore) | 1995 | 2002 |
| Domestic sourcing | Yes | Yes | Yes | Yes |
| Offshore sourcing | Several countries including Russia | Poland Serbia Romania Russia USA West-Europe | Germany Norway Russia | Iran Russia |

In each company, the person responsible for strategic decisions, including offshore development, was interviewed. Company Alpha is larger than the others and has a more complicated organisational structure. The person interviewed was an executive, who has substantial amount of experience in contracting out different activities. In the rest of the companies, them being small in size, the strategic responsibilities are typically accumulated to one person. In company Beta, the person interviewed was both the founder of the company and chairman of the board of directors alike. He is also responsible for operative management. The interviewees in companies Gamma and Delta were the managing directors. The material was gathered through semi structured interviews. All interviews were recorded and transcribed. In company Alpha, the interview material was supplemented with two presentations given by the interviewee. In other firms, secondary material regarding their offshore development activities was not available. The following chapters describe how the inward internationalisation activities contribute to the product development in the companies.

5.2 Company Alpha

Company Alpha has utilised subcontracting for at least 20 years and the scope has grown over the years. Currently company has hundreds of subcontractors in different countries. The subcontracted entities have become larger and the providers are assigned more responsibilities. Some of the long-term relationships have lasted for more than ten years. Alpha has both long-term cooperative relationships and temporary subcontractors, which are found on the market and asked to submit tenders. The main reason for engaging external resources is that it is neither reasonable nor cost-effective to do everything yourself. Alpha uses subcontracting for both production and development. For the productional subcontracting, which means routine programming, the company has established practices and stable processes. When choosing offshore location or provider for routine programming, the price is decisive factor. In the development activities, the company needs special know-how of good quality for individual projects and there is higher amount of uncertainty. Here, the decisive factors are competence and trust. The aspect of trust is vital because the telecommunication industry and the roles of different

player have been transforming rapidly and this trend seems to continue also in the future. Thus, there is a risk of current subcontractors becoming future competitors.

The goal of the company is to be able to concentrate on its core functions and contract out the rest to a partner who concentrates particularly on the tasks in question constantly improving their efficiency and quality. Thus, the resources obtained through sourcing are clearly complementary. According to the interviewee, innovativeness of the products is very important for the competitiveness in this branch and it is also sought through partners and their know-how. For cooperation to be successful, the partner should be able to easily understand the assignment and participate in the whole development process, including the initial planning. Building a relationship takes time and effort. Therefore, it is not desirable to engage in short-term relations.

Company Alpha has foreign subsidiaries. The primary practice is that these subsidiaries engage in cooperation relationships, including subcontracting, on domestic basis. For example, in Russia the subsidiary typically uses the services of Russian outsourcing companies. In Alpha, it has been noticed, that sourcing is smoother when both parties are in the same country. The parent company participates in these activities in the role of a supervisor. Offshore sourcing sometimes contributes to access to a specific market. In which case, the offshore provider should have a good knowledge of customer industry, business processes and trends. Also adjusting existing products to a new market is preferably done by engaging local firms. Another way to extend one's market is globally cooperating with a partner in order to get access to one another's customers.

Occasionally, the reason for offshore sourcing has been that domestic resources were insufficient for the company's needs. For example, subcontracting to Russia was initiated by such situation. Especially, in the field of mathematical modelling, it was difficult to find enough skilful work force. The mathematical education and modelling skills in Russia are of a high standard. Thus, there is potential for product development cooperation. However, Russian subcontractors should also learn to understand the assignments on a higher conceptual level and develop their concept as a whole, to become better partners for foreign firms.

5.3 *Company Beta*

In company Beta, the initial reason for subcontracting was the lack of project management capabilities in own organisation and local labour market. At the same time, the company's business partners employed staff more experienced in this matter, so either Beta borrowed project managers from its partners or contracted out the entire project. On the other hand, Beta itself sometimes rented out personnel because of their technical skills. Later on, the main reason for offshore development activities became the regulation of costs. The arrangement provided flexibility at the same time as the amount of own permanent staff could be kept to minimum. This was particularly important during the depression of IT industry. Neither could the company afford internalising all the necessary competences and maintaining them on a sufficiently high level. As a consequence, this means careful balancing between the risks of dependency and costs. Subcontracting is also necessary when a sudden peak in demand occurs and internal personnel is insufficient to fulfil the demand.

Nowadays, Beta acquires both complementary and similar resources through offshore development. Certain tasks, such as interaction with the customer, product planning and lately also project management, are kept within the company. When there is need for bigger capacity, additional resources are primarily sought for among the already-known partners, instead of

searching at the market. If the relationships were to be changed all the time, the probability for the organisational cultures to match instantly would be unlikely. The interviewee stressed that the parties have to get to know each other and learn how to work together, before liable tasks can be allocated to a subcontractor. This is especially important, when well-defined specification is not available or possible to compose (e.g. due to own ongoing negotiations with the customers), or if development requires creative effort. It has proven to be a good practice, for the manager from a foreign firm to spend some months working for Beta in Finland to build understanding. Besides better flexibility, offshore development is also a source of specific proficiency, especially in programming. The most technically skilful programmers, with whom Beta has cooperated, have originated from Russia, Serbia or Poland. The company has good experience of long-term cooperation with individual Russian colleagues, one of whom has been working for Beta throughout the whole existence of the firm, either in Russia or in Finland. Foreign specialists have provided company with some of its most technically demanding solutions. Typically, cooperation has been based on an already existing personal relationship – academy acquaintances, company’s trainees, and colleagues known through third party projects. The multinational projects financed by EU have proved to be particularly fruitful mean for finding foreign partners.

Yet another important reason for offshore sourcing is access to specific knowledge of foreign markets or particular industry as the company aims at tailoring its products for specific industries. For example, customer contacts in Western Europe are often taken care of by company’s former international trainees, who have after their return to home country established a company and continued cooperation through a sourcing arrangement. When Beta considers developing a new product for a specific industry, the idea is evaluated with the help of subcontractors more knowledgeable of that industry.

According to the opinion of the interviewee, the organisational culture of potential partner is more decisive for cooperation than its nationality. If problems occur, they are rather related to a specific situation in hand instead of national characteristic. For example, the subcontracting project to Russia was evaluated to be of a moderate success, as the parties were unfamiliar with each others’ methods of work and the task was not clearly defined. Cultural differences do exist, not only with foreign subcontractors but also customers. Beta has been considering shifting some of the project responsibilities regarding the Greek customers to the Serbian subcontractor, because of the shorter physical and cultural distance.

Beta’s subcontractors are, with one exception, small firms as well. The interviewee believes, this is one of the reasons for the success and fluency of company’s sourcing. The only relationships that have caused trouble have been with bigger companies enjoying monopolistic advantage in their industry. Seeking small companies with complementary resources has meant crossing national borders. However, because the company aims for global operations, this is not seen as a challenge. According to the interviewee, engaging offshore subcontractors gives company more extensive touch of product’s potential on the market.

5.4 *Company Gamma*

Company Gamma performs product development and consulting for construction engineering and energy sectors. The software projects are an essential part of these activities. Subcontracting was chosen because company needed specific knowledge and skills unavailable within own organisation. Gamma concentrates on certain tasks, such as planning and supervising the project,

and contracts rest of the activities out to keep its organisation lean. With time, pure subcontracting has converted into a network-like structure with about ten strategic partners, both research institutions and firms, which are complemented by short-term tactical subcontractors depending on a project. Cooperation partners are sought through personal contacts, never through the market. Both price and quality of the trial project are evaluated, but quality and organisational compatibility tend to be the decisive factors. New partners are always tested for compatibility and quality, regardless of their country of origin.

Gamma's core competences are project management and knowledge of the customers' industry. Each player in Gamma's network has a specific role and responsibilities in a project. The know-how and skills of different partners complement those of Gamma, which initially develops the framework for each project and in later stages is responsible for guidance and problem-solving. The partners participate in the planning stage according to their designated role, ensuring better commitment to the entire project. In the beginning of a project communication is constant, but after the requirements are specified the partners perform their tasks with more independence and their progress is checked on a quarterly basis. Such arrangement could not be possible without sufficient trust and mutual values.

Gamma has cooperated with Russian institutions or firms since 1995. The initial connection was established through a Russian academic organisation. At first, it was a joint product development project, but later the business perspective and commercialisation came along. The interviewee compared different partners to different departments within a firm. Gamma itself is rather a marketing department, whereas for example its Russian partner is a production or software development department. According to the interviewee, cooperation became strategic when the partners started to put forward some innovative ideas and think about mutual benefit of the arrangement. Cooperation is based on a common set of values and mutual trust, as the partners retain a certain degree of independence in their work.

If both parties are mature enough, offshore sourcing does not differ from domestic sourcing. The reason for offshore development activities was that the company wanted to provide its customers with the best knowledge at the same time as it did not want to grow organisationally or broaden internal competences. The operations have evolved to a situation where foreign subcontractors may sell the outcome of cooperation on their home market and pay royalties to Gamma, providing an additional source of income. Besides this royalty arrangement, the customers are from Finland and the company is not interested in expanding abroad.

5.5 *Company Delta*

According to the interviewee in company Delta, there are two kind of firms which develop mobile games. The first kind, Delta included, has direct contacts with the teleoperators and the second kind does not have such distribution channels. The firms of the second kind are usually small teams who develop games for the ones with the contacts or act as a kind of a wholesaler. Therefore, it is natural for these small development firms to approach more established players seeking cooperation. Likewise, Delta was approached by a foreign firm which offered game development services. At that time, the company needed to rapidly broaden its product portfolio, which was not possible with own limited resources. Cost efficiency was essential as the company's financial resources were also limited. All these circumstances led Delta to consider subcontracting as an option and start developing models for cooperation. Usually, in the first joint project, Delta provides the outline for the game; but in the following projects, it is considered an

advantage if the provider can come up with own outlines. Also the after-care, typically adapting the product for new models of mobile phones, is preferably done by the same company that developed the product. The external resources obtained through cooperation are similar to the internal ones. Thus, the company is not seeking complementarity but volume, despite the fact that subcontractors' knowledge and competence have enabled Delta to add some really good products to its portfolio. In the interviewee's opinion, subcontractors could not provide any knowledge of market or technology additional to the one the company already possess.

Those subcontracting relationships that have been successful have continued, but the company has not actively sought for new partners. From the company's point of view, the added efficiency brought by faster development pace is on the other hand reduced by additional communication required in cooperation, especially if any problems occur. The training expenses are higher when crossing organisational boundaries. According to the interviewee, other firms developing mobile games have complained about problems with their subcontracting relationships as well. In addition, there is always a risk of subcontractor turning into competitor. Therefore, Delta now plans to downsize its sourcing network to only couple of firms, both domestic and foreign, and shift more emphasis to the internal development despite its higher costs and slower pace. The company has cooperated with these particular firms since the beginning of subcontracting activities. They are already accustomed to Delta's practices and proven to be trustworthy. Therefore it is perceived as a waste of effort to end the cooperation now.

Delta first started offshore sourcing and then found some domestic subcontractors. Offshore development in countries of lower cost level is tempting. For example, in Russia not only the costs are lower than in Finland but there is also plenty of talent available. Price alone is not a decisive aspect for Delta, but the quality needs to be sufficiently high at the same time. The subcontractor is expected to deliver the same or better quality as the internal development. If the quality provided by the subcontractor is insufficient, communication is not working or there is any doubt about trust, Delta does not hesitate to terminate the relationship. The cooperation with the Russian subcontractor has continued for several years and is planned to carry on even after downsizing of the network, because the outcome was found to be good in quality. Delta has also recruited one of the employees of the Russian firm to itself. As compared with domestic subcontracting, communication is more difficult with foreign firms, because of both language and cultural differences. Face-to-face communication is important in game development, as the exact specification of the end product is difficult to compose. The distance and language matter, especially in problem situations, which have been easier to solve with domestic partners. As long as there are no problems, Delta is satisfied with the subcontracting arrangement, but when some problems occur, things become too complicated and take too much of the company's time.

6 Discussion

Several researchers (e.g. Karlsen et al., 2003; Korhonen, 1999) have suggested that inward connections could be of a greater value to a firm were they not typically considered low-status activities. Obtaining necessary resources through inward internationalisation can even be seen as a precondition for outward operations. This tendency has been illustrated for manufacturing firms (Korhonen, 1999), but it is worth elaboration for knowledge-intensive high-tech firms as well. For example, this case study showed how in the companies Beta and Delta, the inward and outward internationalisation were closely intertwined. Beta uses some of its subcontractors for

both inward and outward operations. For Delta, building a sufficient product portfolio was a precondition for establishing relationship with the customers, but the internal resources were not sufficient for fast realisation of this task.

The main incentive behind offshore sourcing has often been claimed to be cutting down costs. However, this argument does not hold such importance when sourcing is used for product development purpose. Instead of price, the competence of the provider appear to be the decisive factor. The importance of quality of offshore development work was brought forth in all the companies described in the paper. Considering that the jointly developed software product is to be sold further to the firm's customer and affect sales and reputation, this emphasis is rather natural.

Surprisingly, the national origin or geographical distance of a subcontractor did not prove to be of significant importance. Small firms often find their subcontractors through personal networks, prior acquaintance resulting in lower significance of nationality in the actual sourcing arrangement. Management's attitude has a decisive role in implementing international activities (Schmid and Schmidt-Buchholz, 2002). This was also noticed in the case study, as the interviewees mainly had positive attitude towards cooperation with foreign partners and were dedicated to continue the cooperation with established partners. Conditions in offshore sourcing were comparable to the domestic ones if both sides were mature enough and had similar values. Communication and coordination of offshore sourcing are supposed to pose difficulties to small firms (Carmel and Nicholson, 2005). However, in the case, it was found that such difficulties diminished with growth of trust and familiarity between parties.

The study was initially intended to describe the peculiarities of Finnish-Russian sourcing, but the interviewees seemed to unite in that cooperation with Russian counterparts did not considerably differ from the one with partners in other countries. Instead, the decisive factors of compatibility were organisational culture and internal processes. As compared to other potential offshore development destinations, Russia may not be the cheapest, but it has an extensive pool of human resources with technical inclination. The level of mathematical modelling is also high. The price-quality ratio of Russian development has proven to be rather good. Hence, there are good preconditions for cooperation in the development of high-end, complex software.

Besides Alpha, the described companies do not operate in Russian market or consider entering it. Beta does not have a sufficient feeling of Russian market. Gamma does not want to expand internationally. Delta considers the Russian market of mobile games to be unattractive as it is still in its infancy. Thus, all sourcing relationships do not necessarily serve as a source of market information, although such purpose was mentioned in the context of some other markets. Instead, the sourcing arrangement can also provide a firm with complementary resources and capabilities, or shorten the development time through more extensive availability of similar resources. It can also be used to reduce the overall development costs, despite the additional costs of coordination and communication. Overall, if successful, offshore sourcing can provide flexibility needed to cope with turbulence of the industry and market. When contributing to the quality of the final product or speeding up its development process, the sourcing also contributes to the outcome of the outward internationalisation activities.

7 Conclusions

The characteristics of software industry pose several challenges to the firms, but also provide opportunities for international distribution of operations in search of profitable combination of resources and costs. The global nature of the industry and the immaterial nature of the products have lowered the significance of national boundaries in such way that the country of origin of subcontractor takes second place to its competence.

It has been argued that in the high-tech industries, inward and outward operations can be carried out simultaneously instead of continuum in which inward activities provide firm with information on the market. Furthermore, inward operations can contribute to outward internationalisation but they need not necessarily take place in the same market. Instead, a firm can operate in an international network which is not restricted to a specific foreign country.

The findings of the study support the argument that it is beneficial to study sourcing as a mode of inward internationalisation. For the companies presented in the case, offshore sourcing is a multidimensional phenomenon with clear linkage to strategic planning instead of being a clerical activity. Their inward operations are strategic in nature because of the use in product development and can even have an impact on a firm's success in outward internationalisation. This emphasis differs from the strong focus on costs, which has received much attention especially in U.S. studies, or sole outsourcing of information systems.

Qualitative approach was chosen for this study because of the poor availability of information on the subject. The findings are based on a case of four companies making the results only tentative ones. Nevertheless, they point out an important topic that needs more elaboration, that is the strategic role of sourcing in the internationalisation process of high-tech enterprises. In the future research, more expansive data collection would provide a better support for the argument. More rigorous qualitative research could reinforce or disprove the findings. If such amount of data was available, it would even be interesting to get a broader generalisable picture by using quantitative methods.

References:

- Amoribieta, I., Bhaumik, K., Kanakamedala, K. and Parkhe, A. D. (2001) Programmers Abroad: A Primer on Offshore Software Development, *McKinsey Quarterly*, 2, 128-140.
- Bell, J., Murray, M. and Madden, K. (1992) Developing expertise: an Irish perspective, *International Small Business Journal*, 10/2, 37-53.
- Bell, J. (1995) The internationalisation of small computer firms – a further challenge to “stage” theories, *European Journal of Marketing*, 29/8, 60-75.
- Bell, J., Murray, M. and Madden, K. (1992) Developing expertise: an Irish perspective, *International Small Business Journal*, 10/2, 37-53.
- Bell, J., McNaughton, R. and Young, S. (2001) “Born-again global” firms – an extension to the “born global” phenomenon, *Journal of International Management*, 7, 173-189.
- Carmel, E. and Agarwal, R. (2002) The maturation of offshore sourcing of IT work, *MISQ-Executive*, 1/2, 65-78.

- Carter, J.R and Narasimhan, R. (1990) Purchasing in the international marketplace: implications for operations, *Journal of Purchasing and Materials Management*, 26/3, 2-11.
- Carmel, E. and Nicholson B. (2005) Small firms and offshore software outsourcing: High transaction costs and their mitigation. *Journal of Global Information Management* 13/3, 33-54.
- Coviello, N.E. and Munro, H.J. (1997) Network relationships and the internationalisation process of small software firms, *International Business Review*, 6/2, 361-386.
- Dominguinhos, P. M. and Simões, V. C. (2004) Born globals: taking stock, looking ahead. Paper presented at 30th EIBA Conference, December 5-8, 2004, Ljubljana, Slovenia.
- Fletcher, Richard. (2001) A holistic approach to internationalisation, *International Business Review*, 10/1, 25-49.
- Goldsmith, R. F. (1994) Confidently Outsourcing Software Development. *Journal of Systems Management*, April, 12-17.
- Granstrand, O. and Sjölander, S. (1992) Internationalization and diversification of multitechnology corporations. In O. Granstrand, L. Håkanson and S. Sjölander (eds.). *Technology management and international business: internationalization of R&D and technology*. Chichester: John Wiley.
- Hallén, L. (1982) *International industrial purchasing: interaction, channels and governance structures*. Ph.D. dissertation, Acta Universitatis Usaliensis Studia Oeconomiae Negotiorum 13, Uppsala, Sweden.
- Hawk, S. and McHenry, W. (2005) The Maturation of the Russian Offshore Software Industry, *Information Technology for Development*, 11/1, 31-57.
- Heeks, R., Krishna, S., Nicholson, B. and Sahay, S. (2001) Synching or Sinking: Global Software Outsourcing Relationships, *IEEE Software*, 18/2, 54-60.
- Hurmerinta-Peltomäki, L. (2001) *Time and internationalisation. The shortened adoption lag in small business internationalisation*. Publications of the Turku School of Economics and Business Administration, Series A-7:2001, Turku.
- James, H. S. and Weidenbaum, M. (1993) When businesses cross international borders: strategic alliances and their alternatives. Westport, Conn: Praeger.
- Jennex, M. E. and Adelakun O. (2003) Success factors for offshore information system development, *Journal of Information Technology Cases and Applications*, 5/3, 12-31.
- Johanson, J. and Vahlne, J.-E. (1977) The internationalisation process of the firm – a model of knowledge development and increasing foreign market commitments, *Journal of International Business Studies*, 8/1, 23-32.
- Johanson, J. and Vahlne, J.-E. (1990) The mechanism of internationalization, *International Marketing Review*, 7/4, 11-24.
- Jones, M.V. (1999) The internationalization of small high-technology firms, *Journal of International Marketing*, 7/4, 15-41.
- Karlsen, T., Silseth, P.R., Benito G.R.G. and Welch, L.S. (2003) Knowledge, internationalization of the firm, and inward–outward connections, *Industrial Marketing Management*, 32/5, 385-396.

Knight, G.A. and Cavusgil, T.S. (1996) The born global firm: a challenge to traditional internationalization theory, *Advances in International Marketing*, 8, 11-26.

Korhonen, H. (1999) *Inward-outward internationalization of small and medium enterprises*. Ph.D. dissertation, Acta Universitatis Oeconomicae Helsingiensis, A-147, Helsinki School of Economics and Business Administration, Finland.

Korhonen, H., Luostarinen, R. and Welch, L. (1996) Internationalization of SMEs: Inward-outward patterns and government policy, *Management International Review*, 36/4, 316-329.

Kuivalainen, O. (2003) *Knowledge-based view of internationalisation – studies on small and medium-sized information and communication technology firms*, Acta Universitatis Lappeenrantaensis, 156, Lappeenranta University of Technology, Finland.

Laage-Hellman, J. 1997. *Business Networks in Japan*. London and New York: Routledge.

Lacity, M. and Hirscheim, R. (1993) The information systems outsourcing bandwagon, *Sloan Management Review*, 35/1, 73-86.

Lacity, M., Willcocks, L. and Feeny, D. (1995) IT Outsourcing – Maximize Flexibility and Control, *Harvard Business Review*, 73/May-June, 84-93.

Lacity, M. C. and Willcocks, L. (1998) An empirical investigation of information technology sourcing practices: lessons from experience, *MIS Quarterly*, 22/3, 363-409.

Luostarinen, R. (1980) *Internationalization of the firm*. Helsinki School of Economics, Series A:30, 2nd ed., Helsinki.

Luostarinen, R., Korhonen, H., Jokinen, J. and Pelkonen, T. (1994) Globalisation and SME – globalisation of economic activities and small and medium-sized enterprises (SMEs) development, Finland. Ministry of Trade and Industry, Studies and Reports 59/1994, Helsinki.

Luostarinen, R. and Welch, L. (1990) *International business operations*. Helsinki: Kyriiri Oy.

Madsen, T.K. and Servais, P. (1997) The internationalization of born globals: an evolutionary process? *International Business Review*, 6, 561-583.

Market-Visio. (2002) Suomalaisten ja venäläisten ohjelmistoyritysten offshore-yhteistyö – kokemukset, kiinnostus, valmiudet (Offshore Cooperation of Finnish and Russian Software Companies – Experiences, Interest, Readiness). Research report. 137 p.

McDougall, P.P., Shane, S. and Oviatt, B.M. (1994) Explaining the formation of international new ventures: the limits of theories from international business research, *Journal of Business Venturing*, 9/6, 469-487.

Nicholson, B. and Sahay S. (2001) Some Political and Cultural Issues in the Globalisation of Software Development: Case Experience from Britain and India, *Information and Organization*, 11/1, 25-43.

Nicholson, B. and Sahay S. (2004) Embedded knowledge and offshore software development, *Information and Organization*, 14/4, 329-365.

Nummela, N. (2000) *SME commitment to export co-operation*. Ph.D. dissertation, Publications of the Turku School of Economics and Business Administration, Series A-6:2000, Finland.

- Nummela, N., Puumalainen, K. and Saarenketo, S. (2005) International growth orientation of knowledge-intensive SMEs, *Journal of International Entrepreneurship*, 3/1, 5-18.
- Oviatt, B.M. and McDougal, P.P. (1994) Toward a theory of international new ventures, *Journal of International Business Studies*, 25/1, 45-64.
- Patton, M. Q. (1990). *Qualitative research and evaluation methods.*, Newbury Park: Sage Publications.
- Petkova, O. and Petkov, D. (2003) Improved understanding of software development productivity factors to aid in the management of an outsourced project, *Journal of Information Technology Cases and Applications*, 5/1, 5-22.
- Preece, S.B, Miles, G. and Baetz, M.C. (1999) Explaining the international intensity and global diversity of early-stage technology-based firms, *Journal of Business Venturing*, 14/3, 259-281.
- Pries-Heje, J., Baskerville, R. and Hansen, G. I. (2005) Strategy models for enabling offshore outsourcing: Russian short-cycle-time software development, *Information Technology for Development*, 11/1, 5-30.
- Reid, S. D. (1983) Firm internationalization, transaction costs and strategic choice, *International Marketing Review*, Winter, 44-56.
- Robb, D. (2000) Offshore Outsourcing Nears Critical Mass, *InformationWeek*, June 12, 89-98.
- Sabherwal, R. (2003) The evolution of coordination in outsourced software development projects: a comparison of client and vendor perspectives, *Information and Organization*, 13/3, 153-202.
- Sahay, S., Nicholson, B. and Krishna, S. (2003) *Global IT outsourcing*. Cambridge University Press.
- Sakthivel, S. (2005) Virtual workgroups in offshore systems development. *Information and Software Technology*, 47/5, 305-318.
- Schmid, S. and Schmidt-Buchholz, A. (2002) Born globals: what drives rapid and early internationalisation of small and medium-sized firms in the software and internet industry? In Jorma Larimo (ed.) *Current European research in international business*, Proceedings of the University of Vaasa, Reports 86, 44-63.
- Servais, P. and Præst Knudsen, M. (2004) SME's International Engagements – Import, Exports and Intra-industry trade. In J. Larimo and S. Rupunen (eds.). *Recent European Research on SME Export Behavior and Internationalization*, Proceedings of the University of Vaasa, Reports 111, 115-131.
- Terekhov, A. (2001) The Russian Software Industry, *IEEE Software*, 18/6, 98–101.
- Törnroos, J.-Å. (2000) Challenging internationalisation theory: Some new trends forming the international and global business. Paper presented at 16th IMP-conference, Bath, U.K.
- Van Mieghem, J.A. (1999) Coordinating investment, production and subcontracting, *Management Science*, 45/7, 954-971.
- Welch, L.S. and Luostarinen, R. (1988) Internationalization: evolution of a concept, *Journal of General Management*, 14/2, 34-64.

Welch, L.S. and Luostarinen, R. (1993) Inward-outward connections in internationalization, *Journal of International Marketing*, 1/1, 44-56.

Yin, Robert K. (1994) *Case study research, designs and methods*. Thousand Oaks, CA: Sage Publications.