

STRATEGIC ROLE OF OFFSHORE SOFTWARE DEVELOPMENT: THE CASE OF FINNISH-RUSSIAN OUTSOURCING

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ABSTRACT

The purpose of this paper is to study the use of contractual agreements in software product development. The literature on the established models of strategic interfirm cooperation, product development and outsourcing of software development is reviewed, indicating a research gap. This type of outsourcing is illustrated by material gathered in four Finnish case companies, which practice offshore outsourcing to Russia. Contrary to conventional ideas, the findings indicate that outsourcing is used also for strategically important activities, such as product development. If successful, outsourcing can provide a company with additional resources, shorten the development time and optimise the cost structure.

INTRODUCTION

The success of product development is premised on the cornerstones of process, strategy and resources (Cooper 1996). For software companies product development is typically the core function of the company and there is merely any production at all. Therefore, to be successful software companies should refine their development processes, crystallize the company strategy and make sure that they possess enough resources. In some cases, internal resources alone are not sufficient or cannot be obtained fast enough. International cooperation of various types (e.g. marketing, sales, distribution) is commonly used to complement firm's own resources and capabilities (Nummela 2000). An interesting question is if also strategic functions, such as product development, can be outsourced abroad and what are the implications of such decisions.

Software development likewise other high-tech industries suffers from major pressure on time-to-market. The time between development of a concept and actual release must be made as short as possible, and at the same time the company has to ensure sufficient quality of the end product. Software development processes are increasingly distributed worldwide and becoming both multi-site and multicultural in search for lower costs and skilled resources (Prikladnicki et al. 2003). For small or even medium-sized enterprises, global distribution of operations is often possible only in concert with crossing the company's boundaries. This study aims to highlight some models for the use of external resources in order to enhance product development in small firms.

The paper studies the role of international outsourcing in software product development. It is hypothesised that outsourcing can be utilised not only for routine functions but also product development activities, especially in case of small companies, which typically do not have the same prospects for establishing alliances or partnerships as multinational enterprises. The goal of the research is to determine the factors affecting outsourcing decisions, particularly their strategic background and relationship to competitiveness. The research results clarify outsourcing process and its relation to the overall strategy of the firm providing a point of comparison for firms contemplating outsourcing of product development.

PRODUCT DEVELOPMENT IN SOFTWARE INDUSTRY

Product development in general can be defined as the transformation of a market opportunity and a set of assumptions about product technology into a product available for sale (Krishnan and Ulrich 2001). Another way of defining new product development (NPD) is to underline the new types of product performance as is done by Cohen et al. (2000), who argue that NPD can be seen as a product performance production process that requires scarce development resources. This perspective is particularly useful in the outsourcing context as it emphasizes the scarcity of resources. Another important issue is that flexibility in managing the product development process has become an important variable for the firm (Maunuksela 2003). Especially in industries where high levels of product development flexibility can be necessary, there are new types of contingency requirements for product development processes (MacCormack 1998, Iansiti 1998). Small companies, which are defined by the European Union as the ones having less than 50 people, are often personified in their founders or the key personnel. This leads to the situation where people's abilities and experiences guide how the ways of working are selected (Schein 1999). Thus, in small companies, also strategic choices regarding product development are strongly affected by the prior experiences and personal opinions.

Research on software product development in particular, has to a great extent been focused on process and models (e.g. MacCormack et al. 2001). On the other hand, the literature regarding strategic management or new product development management is mostly founded upon a large company context and cannot be applied directly in smaller companies (Jennings and Beaver 1997). Berry (2002) argues that it is more difficult for small software companies to integrate a strategic perspective into product development decision-making than for larger firms with established strategy processes. Small software companies are divergent in that they typically concentrate on few products instead of having multiple business units or several product lines.

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). However, few companies possess enough own resources for operations in a global scale. Especially small and medium-sized enterprises (SMEs) face the lack of resources, experience, skills and knowledge in their internationalisation (Bell et al. 1992). On the other hand, the small size of the organisation is claimed to make it more flexible and enable fast reaction time (Nunes and Cunha 2000).

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 typical to these industries 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). As Hellman et al. (1993) remark, increasing number of cooperational agreements implies that the attention of the managers has shifted from internal resources to the capabilities of external factor exploitation.

INTERFIRM COOPERATION

Interfirm cooperation or collaboration has become a popular research topic in the academic field in the recent years, although first definitions were made already in the 1950's (e.g. Simon 1957, Thompson and McEwen 1958). Many authors have

contributed to this subject, resulting in disparate terms and definitions, as well as variegated taxonomies of the terms. The definitions are typically based on duration, independence of participating firms, voluntariness, partners' motives, for example common goal and division or exchange of resources. Hellman et al. (1993) provide a synthesis of these definitions when stating that *cooperation is generally supposed to be a long-term activity of separate independent organisation voluntarily aiming at a common goal*. Cooperation has been studied in several contexts, including much discussed transaction costs perspective (Williamson 1975), which is omitted in this study.

Models of cooperation

Partnership is sometimes used as a general term to describe cooperation (e.g. Doz 1988). Typically, the type of cooperation is then defined with a more specific term (Hellman et al. 1993). High-tech industries have gained a dominant position in R&D partnering as illustrated by the fact that most partnerships are in the fields of information technology and pharmaceutical and biotechnology (Hagedoorn 2002). In the 1990s, these two industries accounted for 50 % and 30 % of technological partnerships, respectively.

The concept of *strategic alliance* has been used in a large variety of ways. According to the literature review of Hellman et al. (1993), several operational forms have been regarded as strategic alliances by various authors, including interorganisational marketing and distribution agreements, and joint technology development programs and agreements. Also the concept of joint venture is sometimes used as a synonym of strategic alliance. Thus it can be stated that no universally agreed definition of the concept exists. The same variation relates to the key characteristics of strategic alliances, which can be described as equity or non-equity (contractual), formal or informal arrangements, and having either high or low level of mutual commitment.

The strategic aspect in alliances is more or less agreed upon in different studies to mean that cooperation is of long-term nature and the relationship has a strategic objective, such as securing, maintaining or enhancing a company's competitive advantage (Hellman et al. 1993). Alliances established for product development purposes have been described as *interorganisational arrangements, in which the partnering firms combine engineering and other personnel for the joint design of new products that at least one partner will sell* (Eisenhardt and Schoonhoven 1996).

The research on *joint ventures* has to a certain extent concentrated on international business context, especially international joint ventures (IJV) created by Western companies in developing countries (Beamish 1988). This is rather natural taken into account the historical focus on utilisation of IJVs for entering foreign market (e.g. Connolly 1984). Later on, the research has highlighted the growing strategic importance of joint ventures, including their effect on competitiveness and use in new product development (Harrigan 1988, Hladik 1985).

The two aspects common to the majority of IJV studies are their emphasis on multinational enterprises and equity arrangements (Reus and Ritchie 2004). Equity joint venture is neither an external, market-based arrangement, nor a traditional intrafirm structure, but a hybrid of high organisational complexity (Hellman et al. 1993). Structure of an individual joint venture depends on its equity distribution, contribution formulas, contractual agreements, and management control agreements. There is large variation between different joint ventures in terms of structure. Thus, no single definition of this arrangement exists.

Contractual agreements are typically referred to as arm's length relations. Besides, some authors distinguish equity and contractual (non-equity) joint ventures (e.g. Wang et al. 2005, Wei et al. 2005), although the examination is often limited to the equity context (Reus and Ritchie 2004). According to Hellman et al. (1993) a contractual joint venture can be described as any distinct form of interfirm cooperation based purely on a contract, for example subcontracting or licensing. Another concept, synonymous to contractual joint ventures, is industrial cooperation, which was often used in the context of East-West trade (Hill 1983).

Tidd et al. (2001) group different cooperation models in terms of their duration, advantages and disadvantages (Table 1). They classify contracting and licensing as being tactical; whereas strategic alliances, formal joint ventures and innovation networks are strategic arrangements. The advantages of subcontracting are seen to be in cost and risk reduction along with reduced lead time.

Type of collaboration	Typical duration	Advantages	Disadvantages
Subcontract	Short term	Cost and risk reduction. Reduced lead time.	Search costs, product performance & quality
Licensing	Fixed form	Technology acquisition.	Contract costs and constraints.
Consortia	Medium term	Expertise, standards, share funding	Knowledge leakage. Subsequent differentiation.
Strategic alliance	Flexible	Low commitment. Market access.	Potential lock-in. Knowledge leakage.
Joint venture	Long term	Complementary know how. Dedicated management.	Strategic drift. Cultural mismatch.
Network	Long term	Dynamic, learning potential	Strategic inefficiencies

Table 1: Forms of collaboration (Tidd et al. 2001)

Collaborative product development

The main focus of research on collaborative product development has so far been on strategic alliances (Gerwin and Ferris 2004, Millson et al. 1996, Eisenhardt and Schoonhoven 1996), joint ventures (Harrigan 1988) and partnerships (Hagedoorn 2002, Ingham and Mothe 1998), with lesser consideration given to contractual agreements. The problem of the first mentioned arrangements is their high organisational complexity and typical long-term duration. In general, the lower the equity involvement, the more limited the alliance control, but the greater the organisational flexibility (Millson et al. 1996). High-tech industries are characterised by rapid environmental and technological change, thus there is need for flexibility that these forms of cooperation lack. Global product development within the boundaries of one organisation, for example with involvement of overseas subsidiaries (Subramaniam et al. 1998), is rarely an option for SMEs because of their small size. Engaging in alliance or partnership also requires a kind of credibility and legitimacy rare for a small company, although there is evidence on asymmetric R&D partnerships in the ICT (information and communications technology) sector (Hurmelinna et al. 2002).

Product development in an outsourcing context has received less attention, because it is limited in volume and there is a general lack of information on contractual agreements (Hagedoorn 1990). Among exceptions is a study on choice between internal and external R&D (Narula 2001). The study points out the fact that firm's size and amount of resources available to it is an important impulse in using non-

internal resources. Due to their limited size, SMEs are less likely to be able to preserve their competitiveness through sole in-house R&D. The rapid pace of technological progress and shortening product life cycles pose such requirements to development activities, that cooperation may be crucial for viability. The internationalisation of product development through contractual agreements is a less described phenomenon, which nonetheless provides a potential solution for the lack of resources experienced by high-tech SMEs.

INTERNATIONAL OUTSOURCING OF SOFTWARE DEVELOPMENT

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). Both terms could be used in this context to delineate the activities carried out by the firms developing software outside their boundaries. Van Mieghem (1999) distinguishes these concepts by pointing out 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. However, such distinction is rarely made within the information and communication technology industry, where outsourcing is frequently used to mean any provision of services by an external company. Supplementary definition offshore is used to describe outsourcing to any foreign country. The focus of this study is on outsourcing of software development by a firm whose intent is to sell the jointly developed appliance further to its own customers. Such setting rather resembles joint R&D activities (Hagedoorn 1990, Narula and Hagedoorn 1999). Despite this fact, within the paper outsourcing is used as a cover term because of its establishment among the practitioners.

Outsourcing of software development is widely discussed in the literature, but so far the main interest has been on information systems (e.g Goldsmith 1994, Lacity and Willcocks 1998, Jennex and Adalakun 2003, Nicholson and Sahay 2001, Petkova and Petkov 2003, Sabherwal 2003) with special stress on cost-consciousness. Typically this concerns outsourcing of a non-core function as opposed to partial outsourcing of own product development, which has received less attention.

From the point of view of transfer, software related tasks should be relatively easy to outsource as there are no transportation or storage issues. The transportation costs of digital products are very low and delivery time is effectively zero (Espinosa and Carmel 2003). In that sense, it does not matter where the working force is located for the lines of code can be effortlessly delivered to the customer. However, because of dense know-how content, communication and coordination are of utmost importance. After the delivery is made, the customer has to be sure that no additional support is needed from the provider or such support is agreed upon beforehand.

Product is rarely standardised, instead it is tailored according to the customers' needs. This fact also aggregates the importance of communication and mutual understanding between the parties. Cultural differences cannot be forgotten, but organisational practices of different parties are of greater importance.

According to Paasivaara and Lasenius (2003), software projects developing new products are often faced with uncertainties regarding requirements and implementation technologies. However, subcontractors need to be involved in the development process long before these uncertainties are resolved within the firm. In such situation, close cooperation and communication are required during the whole project. Also the issue of trust becomes critical in these circumstances (Blomqvist 2002).

CASE STUDY DESCRIPTION

Motivation for the study of Finnish-Russian cooperation

Case study incorporates four Finnish companies providing their customers software products and related services and having previous experience in outsourcing to several countries. The emphasis is on the software product development cooperation between Finnish and Russian companies. According to a survey made for Ministry of trade and industry of Finland (Market-Visio 2002), Finnish software companies are interested in outsourcing to Russia, but few have any subjective experience. In addition, those companies who outsource prefer not to give their experiences out, as was noticed in the process of finding case companies for this research. Such references would however be a good basis for a well-founded decision-making. In seeking competitive advantage and shorter times to market, international cooperation becomes a necessity for firms located in small countries such as Finland.

Russia has a well-endowed technology potential well-suited for collaborative efforts (Hagedoorn and Sedaitis 1998). The potential of its software industry is widely acknowledged, but the prejudices concerning Russian firms are still a major obstacle for cooperation (Terekhov 2001), which may also be the reason for adhering to arm's length relationships. For example, in their research on international strategic technology alliances, Hagedoorn and Sedaitis (1998) noticed that the majority of alliances between Western and Russian companies were contractual with only one fifth being equity joint ventures. Also Vonortas and Safioleas (1997) observed that contractual agreements were one of the most common types of alliances, which involved firms from non-OECD countries.

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 case companies 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 outsourcing activities to Russia. 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 outsourcing.

Four case 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 case companies can be described as SMEs or even small companies. The experience in outsourcing varies in length between twenty years and a couple of years. All four companies are familiar with outsourcing to several countries, but each of them has at some point used services of a Russian company for software development.

In each company, the person responsible for strategic decisions, including outsourcing, was interviewed. Company Alpha was larger than the others and had a more complicated organisational structure. The person interviewed was an executive, who had substantial amount of experience in contracting out different activities. In the rest of the companies, them being small in size, the strategic responsibilities were 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 was

also responsible for operative management. The interviewees in companies Gamma and Delta were the managing directors.

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

Table 2: Case companies

The material was gathered through semi structured interviews. The questions were grouped into five themes: background issues, strategic decision-making, launch of outsourcing, process of outsourcing and possible ending of relationship. All the interviews were recorded and transcribed.

PRODUCT DEVELOPMENT COOPERATION IN THE CASE COMPANIES

Reasons for outsourcing

For company Alpha, the main reason for outsourcing is that it is neither reasonable nor cost-effective to do everything yourself. Thus, outsourcing of certain activities is considered a matter of course. During the years, the amount of outsourced activities has grown, and currently company has hundreds of subcontractors. Alpha has both long-term cooperative relationships and temporary subcontractors, which are found on the market and go through a competition. However, because of the world wide economic problems since 2000, new projects tend to be started with already existing proven partners. Some of the long-term relationships have continued for more than ten years.

In company Beta, the initial reason for outsourcing was the lack of project management capabilities in own organisation. Local labour market could not provide personnel equipped with such skills. 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 outsourced the entire project. On the other hand, Beta itself sometimes rented out personnel because of their technical skills, so the company was familiar with different aspects of cooperation. Later on, the main reason for outsourcing became the regulation of costs. Utilising outsourcing 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. Outsourcing is necessary when a sudden peak in demand occurs and internal personnel is insufficient to fulfil the demand. Yet another reason for offshore outsourcing is the access to specific knowledge of foreign markets, although it is not present in all outsourcing relationships of Beta. Typically, outsourcing cooperation has been based on an already existing personal relationship – academy acquaintances, company's trainees, and colleagues known through third party projects.

Company Gamma performs product development and consulting for construction engineering and energy sectors. The software projects are an essential part of these activities. Outsourcing 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 outsources rest of the activities to keep its organisation lean. With time, pure outsourcing has converted into network-like structure with certain strategic partners. 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. Temporary subcontractors are still used, but only if the task in question cannot be contracted to an existing partner. Cooperation partners are sought through personal contacts, never through the market.

Company Delta began outsourcing because of the lack of resources. At that time, the company needed to 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. Cooperation was initiated by contacts and collaboration suggestions from other parties. This led Delta to consider outsourcing as an option and start developing models for cooperation. Those outsourcing relationships that have been successful have continued, but the company has not actively sought new collaboration partners. Despite higher costs and slower pace of internal development, the interviewee at Delta estimated that the company will now downsize its outsourcing network to only couple of proved partners, both domestic and foreign. The company has cooperated with these partners since the beginning of outsourcing, and they are already accustomed to Delta's practices. Therefore it would be waste of effort to end the cooperation now.

Offshore outsourcing

Company Alpha has foreign subsidiaries. The primary practice is that these subsidiaries engage in cooperation relationships, including outsourcing, on domestic basis. In Alpha, it has been noticed, that outsourcing is smoother when both parties are in the same country. However, the parent company participates in these activities in the role of a supervisor. Sometimes, outsourcing is meant to contribute to access to a new market. The existing products and systems also have to be adjusted to each market, either in-house or through outsourcing.

According to the opinion of the interviewee in company Beta, the organisational culture of potential partner is more decisive for cooperation than its nationality. Problems have mainly occurred when attempting cooperation with companies used to monopolistic position on their market. These organisations tend to have tight operational models, making collaboration with a small creative company rather difficult. In experience of the company Beta, Eastern Europe provides best expertise in programming. The most technically skilful people, with whom Beta has cooperated, have originated from Russia, Serbia or Poland. Outsourcing to Western Europe has typically been based on former international trainees, who have after their return to home country established a company and continued cooperation. These partners tend also to be responsible for customer contacts in their local markets.

According to interviewee in company Gamma, offshore outsourcing does not differ from domestic outsourcing, if both parties are mature enough. For cooperation to succeed, partners must share common set of values and rules. New partners are always tested for compatibility and quality, regardless of their origin. The reason for

offshore outsourcing in particular, was that the company wanted to provide its customers with the best knowledge.

Company Delta has been outsourcing to two foreign firms, one in Russia and one in Iran. As compared with domestic outsourcing, communication is more difficult with the foreign firms, because of both language and culture 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 outsourcing arrangement, but when some problems occur, things become too complicated and take too much of the company's time. Communication is a complicated issue – on the one hand, there has to be enough communication so that mutual trust can be developed, and on the other hand, communication takes time and effort away from actual development, thus slowing the process.

Outsourcing to Russia

In company Alpha, the experiences of outsourcing to Russia have so far been mainly positive. According to the interviewee, none of the risks Finnish companies tend to associate with Russia has materialised. The mathematical education and modelling skills in Russia are of a high standard. Thus, there is potential for product development cooperation. However, Russian outsourcing companies 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.

Company Beta has had one outsourcing project to Russia, which lasted around six months. The experience was only moderate, as the parties were unfamiliar with each others' methods of work and the outsourced task was not clearly defined. Beta was unprepared for the kind of well-structured approach needed for cooperation with an unknown subcontractor. Then again, the company has good experience of long-term cooperation with individual Russian colleagues.

Company Gamma has cooperated with Russian institutions or firms since 1995. The connection was established through a Russian academic organisation. At first, it was joint product development project, but later the business perspective and commercialisation came along. Gamma has been uncommonly open about its collaboration with Russians, which has provoked criticism, especially in the early 1990s. Nowadays, the attitudes have become more unprejudiced, because of accumulated references. However, the Russian partner has to work particularly hard to get a good reference, as compared to a Western partner. Also any negative turn of events with the Russian partner is easily dramatised.

Company Delta was contacted by a Russian firm, which suggested cooperation. As the outcome was found to be good in quality, the cooperation continued. The Russian partner has proven itself in such a way, that the collaboration is planned to be continued even after downsizing of the outsourcing network. Outsourcing to Russia in general is tempting, as the costs are low and there is plenty of talent available. However, low cost alone is not decisive aspect for Delta, but the quality needs to be sufficiently high at the same time.

Outsourcing of product development

Outsourcing in company Alpha is twofold. On one hand, it has productional outsourcing with established practices and stable processes. On the other hand, company needs special know-how of good quality for individual projects, which are

often related to product development and interlocked with higher amount of uncertainty. The level of specification, which is possible to provide, is also dependent on the domain of outsourced tasks; some already have formal descriptions and others are yet undefined. In the latter case, there is need for partnership and cooperative development. For Alpha, the ideal situation is outsourcing to a partner who concentrates particularly on the tasks in question and perfection of their efficiency and quality. 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.

The interviewee in company Beta 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. Cooperation calls for trust and familiarity, creating partnership instead of mere subcontracting. When there is need for bigger capacity, additional cooperation is primarily sought with the already-known partners, instead of searching at the market. Thus, there is a certain continuity in the outsourcing practice. Besides better flexibility, for Beta outsourcing cooperation is also a source of specific proficiency, especially in programming. Some of the most demanding development tasks have been done by outsiders, though cooperation with experienced foreign professionals, who sometimes are employed by Beta and sometimes act as entrepreneurs. Another reason for cooperation is access to knowledge of a particular industry (meaning target market), as the company aims at tailoring its products for specific industries.

The interviewee in company Beta brought forth, that sometimes outsourcing of a certain product development task is a smaller risk than having that knowledge in-house – in case of downturn, it may become necessary to decrease the amount of employees, thus the know-how of the fired personnel would be lost. On the contrary, if this know-how is obtained through outsourcing, there is no similar pressure on optimising the size of organisation according to the current profits or number of customers. Such an approach to product development does require that the outsourcing relationship is a well-established one, and that the partners trust each other. Clear complementarity of skills and goals is a great help in attaining such trust.

Each player in Gamma's network has a specific role and responsibilities in a project, which are clearly defined. The know-how and skills of different partners complement those of Gamma, who initially develops the framework for each project and in later stages is responsible for guidance and problem-solving. Cooperation is based on a common set of values and mutual trust, as the partners retain a certain degree of independence in their work. For Gamma, development activities in a network-like structure have not caused substantial overhead in communication or paper work. Outsourcing of product development has also evolved in such manner, that nowadays foreign subcontractors may sell the outcome of cooperation on their home market and pay royalties to Gamma, providing an additional source of income.

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. The firms of the second kind usually 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 in product development.

From Delta's point of view, the optimal situation is outsourcing of the whole package (meaning everything related to a certain game). 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 partner 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 who developed the product. The company seeks long-term relations with the partners who have performed well, as it is expensive to teach a new partner to follow one's practices. However, if the quality provided by the subcontractor is insufficient or the communication is not working, Delta does not hesitate to terminate the relationship. 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. Also the training expenses are higher when crossing organisational boundaries. Therefore, in Delta, there will be more internal development and less outsourcing in the future.

DISCUSSION

The case companies operate in different branches and outsource to various countries. However, all four provide their customers software products and related services. Also, each company has been outsourcing to several countries, Russia included.

In the beginning of the research process, it was presumed that the Finnish companies would engage in outsourcing mainly in order to lower their expenses. Thus the outsourced functions would be of a non-core nature. However, each company has practiced offshore outsourcing in the product development context, which implies the arrangement to be of strategic importance. Company Alpha outsources both routine and development functions, which can be explained by its maturity and larger size. For other case companies, outsourcing provides resources complementary to the internal ones or enables temporary increase in the work force. Outsourcing, instead of hiring own staff, is also a way of minimising risks related to changing economic trends. It is easier to downsize cooperation than dismiss own personnel.

For the case companies, outsourcing is a multidimensional phenomenon with clear linkage to strategic planning. It can be even claimed, that in these relationships outsourcing is rather a partnership than an arm's length relation, as it is typically described in the literature (e.g. Tidd et al. 2001). For example, in company Gamma outsourcing has evolved into a network of partnerships complementing company's internal capabilities.

Low cost of development is not an irrelevant issue, which is natural at the time, when all firms struggle to minimise their overheads. For example, company Beta stresses cost regulation as an important impulse for outsourcing. As compared to other potential outsourcing 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. Hence, there are good preconditions for cooperation in the development of high-end, complex software. The price-quality ratio of Russian development has proven to be rather good. As one of the interviewees put it: "We would not take it even for free, if it was of poor quality". From the point of view of the case companies, outsourcing to Russia seems not to differ from outsourcing to any other foreign country. The opinions varied on whether offshore outsourcing is different from domestic outsourcing. The factors brought forth were

maturity of the partner, organisational values, language difference and actual physical distance. Also, factors generally contributing to success or failure of organising product development through international outsourcing were highlighted (Table 3).

Success	Failure
<ul style="list-style-type: none"> - Complementary skills - Knowledge of business processes - Understanding development process as a whole - Initiative partner - Mutual values - Good communication and problem solving capabilities - Trust 	<ul style="list-style-type: none"> - Rigid operational models - Ambiguity in goals - Lack of commitment - Differences in organisational culture - Poor language skills - Negative attitude of company's customers

Table 3: Success and failure factors of product development outsourcing

Fluency of an outsourcing arrangement seems to depend on organisational practices and the branch of the industry. Company Delta, which develops mobile games, has noticed that many companies in their branch have problems with outsourcing of software development. Theoretically, additional resources should enable the company to shorten the development time. However, outsourcing arrangement often requires additional communication and coordination as compared to internal development. Thus, shorter time frame is not to be taken for granted, but only possible if the communication and work practices of both sides are compatible. Also, it means, that there may be need for additional investments in compatibility of the parties in the beginning of the relationship. On the other hand, prior contacts on personal level facilitate the communication routines and help to build trust.

CONCLUSIONS

The research on collaborative product development has to large extent focused on different equity agreements and multinational enterprises. The operational logic of the multinationals cannot be directly applied in small firms, which nonetheless seek competitive advantage and shorter time to market as well. For a small firm, distribution of product development activities is rarely possible without crossing the company's boundaries. Many software companies, including the small ones, operate internationally since a very early stage. Offshore outsourcing is another manifestation of internationalisation as development resources can be obtained through cooperation regardless of their physical location.

There is an important difference between outsourcing a non-core or routine function, and a strategically important activity, such as product development. Though, this kind of cooperation is still a contractual agreement, it has many features of equity agreements, typically referred as strategic. However, because of the contractual nature, it provides flexibility unlike any equity agreement. Such outsourcing model cannot be applied rashly, but requires proper consideration of both pros and cons. If successful, outsourcing can provide a company with a pool of resources otherwise inaccessible, shorten the development time and optimise the cost structure. However, it can also burden with communication overhead and even fail, if the partners do not understand each others objectives and working methods properly. Adaptation according to the partners requirements takes time and effort. Thus, fine-tuning a new cooperative relationship cannot be done overnight. Continuous change of partners poorly suits product development activities. Instead, long-term relationships, even on

a contractual basis, enable a high-tech company to obtain additional resources and retain flexibility at the same time.

The findings of the study support the argument that outsourcing can be utilised for product development activities. However, the study has some limitations. The findings are based only on four cases making the results only a tentative ones. Nevertheless, they provide managers with examples and success and failure factors of organising product development through international outsourcing and illustrate one way of decentralising development activities to overcome resource and time constraints.

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