

A VALUE NET BASED APPROACH TO SOURCING IN SOFTWARE BUSINESS

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Abstract

This paper presents the reasons to study value nets in the context of software business. This paper is part of research, which will be performed during the Spring 2003 from January to June. The research itself includes both literature study and interviews, but this paper presents only part of the literature study. Traditionally the embedded software sourcing decisions have been approached as make or buy questions. In addition to the development of the components in-house, the embedded system vendors have recently studied and deployed the acquisition, integration and delivery of the externally developed software components. The dimensions of the sourcing decisions include not only the costs of sourcing but also the value creating activities and resources, which are the competence of the supplier, the competence of the company itself, organizational factors such as knowledge and management practices and appreciations of the end customer.

Keywords

software business, value net, networking

INTRODUCTION

The aim of this paper is to present the reasons to study value nets in the context of software business. In addition to develop components in-house, the embedded system vendors have recently studied and deployed the acquisition, integration and delivery of the externally developed software components. Currently an essential part of an embedded software system development is to acquire and integrate Component Of The Self (COTS) and Open Source Software (OSS) components into the system, e.g., (Helokunnas 2002), (Helokunnas & Nyby 2002). Traditionally the embedded software sourcing decisions have been approached as make or buy questions. In-house software implementations have been preferred and sourcing activities have been focused on body shopping and software project subcontracting. A typical situation to make a software sourcing decision has just been a software project with tight

schedule and too few people to implement all the needed functionality. Resources outside the have often needed because the company have lacked particular competence and the hiring of the employees would have taken too long time compared to the projects schedule.

The nature of the research presented in this paper will be hermeneutic: understanding and explaining a phenomenon. The phenomenon to be studied is software sourcing. The objective of the research is to find out more things related to software sourcing decisions than just make or buy –questions. The research will identify the dimensions of embedded software sourcing. The research has a value net -based approach to the identification of the dimensions of the sourcing decisions. The dimensions include not only the costs of sourcing but also the value creating activities and resources such as the competence of the supplier, the competence of the company itself, organizational factors such as knowledge and management practices and appreciations of the end customer.

PROBLEM RECOGNIZATION

The research is only on it's beginning and the actual research is performed during the Spring 2003 from January to June. The research includes literature study and interviews. To this article we have done part of the literature study. The interviews and more profound literature study will be performed during the year 2003. The interviews will be performed among the personnel of the case organization. The interviews will include both closed and open questions.

The first part of the research itself, of which this article is one part, will concern the theory behind the subject of the research. The theory study will be performed as a literature review and it will follow the conceptual analytical research method. The purpose of the theory study is to create a context for the empirical material of the research by presenting the main concepts and theories behind the research itself.

The examination of the processes and ways of action in the case organization follows the activity analytical research method. In this part of the research the purpose is to clarify and understand case organizations' actions related to sourcing in software business. There is also an idea within the research to create recommendation-based criteria for choosing subcontractors for software projects but the testing of the criteria in real conditions is not the goal of this research.

The aim of the research is not necessarily to create new scientific information but its idea is to solve case organization's planning problem related to make or buy decisions in software sourcing. The final results of the research will be based on the theoretical and empirical study that will be performed during Spring 2003 and the conclusions done by the researchers.

CONTEXT OF THE RESEARCH

Software business

In general the term software means various kinds of programs used to operate computers and computer related devices and software is a necessary part of a computer. Software can be divided into application software that are for example programs that users use directly and system software, which includes for example operating systems and any program that supports application software (Anon. 2002).

Business can be seen as an activity, which purpose is to create benefit for the owner of the company and the customer. So, software business covers all the activities that are related to software. Typically, the term software business is defined in the literature by classifying software markets. For example, Hoch et al (2000) defined that software market segments are professional software services, enterprise software solutions and mass-markets product software. However, Hoch et al (2000) did not cover embedded software integration business. According to Nukari and Forsell (1999) software industry covers software products, customer-tailored software and embedded software and related services.

This research applies the market segment classification into the embedded software sourcing on the telecommunications field. Software services and software product providers are the source of embedded software. Software services include software project subcontracting and software people hiring. Software products include embedded mass-markets products like real time operating systems and high availability providing database management systems as well as enterprise software solutions for telecommunications' system integrators. On the other hand, the embedded software integrators are enterprise solution providers like telecommunication network system vendors and mass-market product providers like mobile equipment vendors.

Software business value chain covers a software company and the nets and networks of software companies as it can be seen on the figure below. Software business does not include only for software research and development or marketing activities.



Figure 1. Software business value chain

Value nets and networks

Currently the concepts of value, value creation and value nets are widely discussed especially in the industrial marketing and management literature. In fact, value creation can be seen as the very basic aim of any business. According to a rather general view, the concept of value can be regarded as the trade-off between benefits and sacrifices (Parolini 1999). Value can be defined not only in financial terms but also in a wider context including non-monetary assets like competencies, market position and social aspects as well. In this paper the concept of a value net is understood as a single actor view to network of organizations or actors that are interconnected with direct / indirect exchange relationships. The important issue in a value net is to understand that the concept includes not only actors that compose the entity, but also different kinds of interrelated activities and resources, e.g. (Gadde et al. 2001).

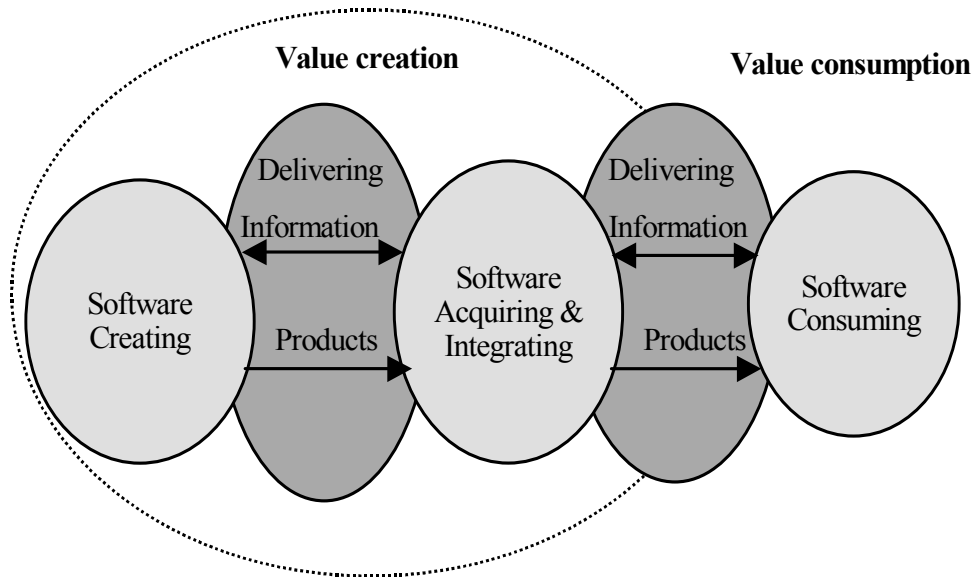


Figure 2. Software business value net

Network can be defined as selectively chosen relationships and connections between intended partners in an operational environment where a company forms its market relations and where it sources its resources (Camagni 1991, 135). Network, or a value net, is not just about manufacturing or supplying but it is also about creating value for customers, its suppliers and the company itself. According to Gradher (1993) network relationship is a co-operation relationship which purpose is to bring in synergy and typical of network relationships are reciprocity, bilateral dependence on each other, loose mutual connections and relative strengths (Paija 1998a, 46).

Networking can be considered as an alternative for a relationship that is based on market economy or hierarchy. It can also be seen as an option between market economy and hierarchy and behind the networking decision is a company's consideration whether it should do something by itself or buy it from other companies or make business by collaborating with other companies. In a network a company can achieve an adequate level of know-how and quality of work by focusing on company's core competencies and in addition to that it can improve its ability to react more flexibly to fluctuations in capacity and reallocate business related risks with other companies (Luomala et al. 2001, 20). Enterprises have for a long time implemented co-operation that exceeds organisational boundaries for example by licensing their know-how or by co-operating with the companies that have the knowledge needed. Networking changes fundamentally the competitive and operational environment of the companies and the challenge is that there are no models ready and waiting for new ways of action what it comes to co-operation (Luomala et al. 2001, 7).

In practise networking means ability to create relationships and connections and ability to form functional unities with other actors in circumstances that are varying (Ståhle & Grönroos 1999, 73). This means that in networking there is a question about bilateral collaboration between companies and the balance in the co-operation can differ in process of time. The

target in any case is to join resources to reach better competitiveness. Schrage (1995) defined that collaboration is the process of shared creation: two or more individuals with complementary skills interacting to create a shared understanding that none had previously possessed or could have come to on their own. Sonnenwald and Pierce (2000) further emphasize that collaboration includes the completion of tasks with respect to a mutually-shared superordinate goal and takes place in a particular social or work setting. It is a primary mechanism to generate intellectual capital.

Putting the co-operation into practise requires certain conditions in order that it can be successful. Ståhle & Laento (2000, 76-77) specify requirements to co-operation: intellectual capital, trust between the actors and ability to produce additional value to the business. Intellectual capital plays a key role in co-operation, because if the company has nothing to contribute to the relationship between companies, there are not so good conditions to collaboration. Other important things, which can be shared in collaboration, are for example production goods, reputation of other companies, business premises, marketing or distribution channels and market shares of the companies. Second thing that is in a key role in co-operation is trust between the companies that are in collaboration. Without the trust the co-operation relationship between companies cannot be built up and activities between companies could not be so adaptable, open, regenerative or continuous. Thirdly the ability to produce additional value to the business is very important. Companies always have to invest time and money as regards to collaboration relationships and therefore there is also expectation of earnings from the co-operation. In networking added value can be tangible (for example productive means) or intangible (for example know-how). In software business there is usually question of intangible assets like immaterial property rights in connection with value adding.

Investments that companies have done to the collaboration create positive dependence between the companies because not only the profits but also the risks are shared between the parties that co-operate. Partners in co-operation can concentrate to their core competencies and work in interaction for example by combining new things or practises that are invented in the network (Ranta 1998, 6).

One of the important goals in networking is to accommodate efficiently to market conditions that are changing all the time (Ollus 1998, 3). So the target of the networking is to achieve competitiveness as a whole by combining competences and resources in a way that the network can attain a competitive position compared to other actors in the market. The entity, that all the companies of the network form, becomes more than the sum of its parts. According to Ståhle & Grönroos (1999, 102-103) the more and the quicker the information is changed between the companies the more regeneration potential the companies have. In network based environment the information should flow freely, unforeseeably and without control. So the vitally important thing related to companies competitiveness and success is how they can connect their competencies and form viable business conditions.

Because the competition in global markets is more and more tight and resources like capital and know-how are limited for one company, the solution is often do business in the network. According to Finnish Ministry of Labour (2000, 38) the following factors can be found behind the decisions of collaboration.

- 1) Even the biggest companies' resources are not alone enough to get through massive product development projects.
- 2) With co-operation there is possibility to attain wider and more diversified intellectual capital and know-how than by oneself.
- 3) By networking it is possible to achieve advantages in efficiency when a company focuses on its core business and lets its subcontractors do some other activities.
- 4) With collaboration companies can also attain competitive advantage against other competitors.
- 5) In network there is change to learn from other companies practices

With co-operation it is also possible to supply customer more complicated and bigger products than it would be possible by the company itself. The resources of the companies can better be balanced by collaboration in relation to changing market demands. Networking is also one solution to resource problems for example when there is need for employees in the course of expansion of business.

There has also been discussion that in the future the competition in the markets will take place between the networks, not only between the companies.

CONCLUSIONS

Preliminary dimensions of software sourcing are the costs of sourcing and the value creating activities and resources related to sourcing itself. The value creating activities and resources are the competence of the supplier, the competence of the company itself and organizational factors such as knowledge and management practices. An appreciation of the end customer is also one of the value creating activities.

The key point in networking is to achieve growth in the turnover of the company by coordinating resources and competences of two or more companies. So the idea is to attain competitive advantage compared to the competitors and reach bigger market penetration, growth of the business and to have an increase in productivity.

Behind these goals can be found the core idea of networking, which is the partnership itself because the business in action is based on it. So the idea behind the networking in the long run is to achieve growth in business and form different kinds of partnerships with other companies but in a in the short run the goal can be related more to the everyday functions of the company for example to the improving a shortfall in capacity or covering the lack of needed competence by hiring employees from outside of the company.

Because companies invest to co-operation relationships, there are also expectations of some benefit from the collaboration. Generally speaking, investments to collaboration should basically follow the same rules, criteria and return requirements than any other investments.

From the point of view of the network's central company the weakness of co-operation can be the fact that subcontractor is not developing as good as it was first expected. For example the quality of the software can be far from the level that was agreed. In this case there can be additional costs for the central company instead of savings. From the subcontractors point of

view co-operation in network with bigger companies can be risk because when the resources are not needed, the subcontractors can be without work. Because of this it is often useful for subcontractors to belong to more than one network at the same time to lower the risk.

All the companies that belong to the network should be committed to collaboration. Even a single company's exit can be fatal for the whole network because vital know-how may be lost and the market position of the network can be under threat. The risk for the central company of the network is that the know-how that forms the base of the network's innovativeness can be lost when companies leave the network. Because of this there is an interesting question how much activities related to company's core business could be outsourced without taking too big risks.

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