Value Network Positioning of Expected Winners: Analysis of the Top Software Business Start-ups

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Abstract. The focus of this paper is on trying to answer the question how the most promising ICT start-ups are positioned with regard to value creation in growing markets. The results of the study show that there are clearly a few most promising positions in the value network of emerging markets: either an infrastructure or application software supplier, or an application service provider.

Keywords: *ICT, Start-up, Value network analysis, Business ecosystem*

1. INTRODUCTION

Plenty of efforts have been paid to understand how start-up companies develop to future winners. Research data has often been gathered from individual case companies or from small groups of companies. For this reason many of the studies have been qualitative in their nature, and have thus tried to generalize findings from a rather restricted volume of primary company-specific data [1-3]. In this study we have chosen a different approach as far as the research approach is concerned. We decided to use secondary data that has been put forward by market analysis practitioners with regard to the industry as a whole, and by individual companies themselves for external observers. In order to make explicit and understand the positioning of companies in value networks, we selected a group of fast growing companies suggested as potential winners by business analysts. We analyzed their market position using the basic software value network framework proposed by Messerschmitt and Szyperski (later M-S) [4], to see also if this framework can help in explaining why certain positions are favored for rapid growth. The companies were selected for the study from the Red Herring lists of the *Top 100 Private Companies in North America*. The chosen companies are high-tech firms that can be categorized to software or software-intensive product and service companies, as well as to hardware companies.

In the following we will first discuss the M-S framework that is applied in this study. We will then present the data collection principles and analyze the value network positions of selected companies, in order to understand why they have sought for certain positions. Finally, we will augment the contemporary frameworks based on

the results of the analysis, i.e. propose a justified view to winning positions in the value network of emerging markets.

2. SOFTWARE BUSINESS ANALYSIS FRAMEWORKS

Perhaps the most extensive present view to software industry is provided by the study of the software ecosystem in a treatise by M-S [4]. They present a framework that describes the value network of the software industry, Figure 1. In this framework software development includes eight business functions and their linkages to each other to form the overall value network.

As illustrated in Figure 1, the *industry consultant* analyzes and conveys the needs of a vertical industry segment or horizontal business functions. The *business consultant* spreads these results into practice, when the same or similar applications have been addressed in other companies. Basically the industry consultant focuses on the needs of all firms and the business consultant on adapting applications in specific firms.
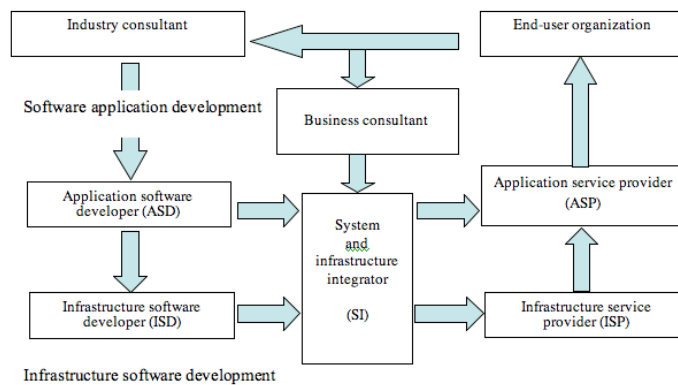

Figure 1. The Software Value Network Framework [4]

The *applications software developer (ASD)* produces the software application. The ASD thus tries to maximize its market share by attempting to meet the needs of the multiple end-user markets, and emphasizing the company's core competences, such as technical and project management skills in software development. The *infrastructure software developer (ISD)* has knowledge of a wide range of applications, requirements and the needs of application developers. The ISD thus benefits from the economics of scale from infrastructure related standardization processes and outcomes.

The *system and infrastructure integrator (SI)* specializes in the provisioning of software. It acquires application and infrastructure software from ASD and ISD supplier companies, making all the software to work together as well as installing and testing the whole system. The *application service provider (ASP)* licenses and operates applications, whereas the *infrastructure service provider (ISP)* purchases and

operates the required software and hardware infrastructures, like computers, operating systems, networks and data storages.

3. PRINCIPLES OF DATA GATHERING AND ANALYSIS

The U.S. based Red Herring magazine publishes annually a list called *Red Herring 100* that features each year's most promising high-tech companies in the article *Top 100 Private Companies in North America*. We examined all the one hundred companies posted to these lists in May 2005 and May 2006, using not only the data found in the article, but also the information given in the listed companies' web sites.

We started the analysis by classifying the two hundred companies according to the value chain framework presented by M-S [4]. First we categorized the empirical data coarsely to fall either into the framework or outside of it. From the two analyzed lists of 100 companies we found 61, respectively 60 companies to fall inside the framework. In a few cases a company could be classified in two categories, e.g. companies that were both infrastructure developers and infrastructure providers. Therefore the total count of businesses summed up over the respective number of individual companies.

The analyzed companies fell in software business categories as shown in Table 1. One of the immediate findings was that there were no companies belonging in any of the two consultant business categories of the framework, although [4] see these as an integral part of the software value network. This may indicate that to be a notable consulting start-up company is not an easy task, especially qualifying the requirements set up by this sample group.

Table 1. Distribution of the Data

2005	Developers	System Integrators	Providers
Application Software	11	0	12
Infrastructure Software	31	0	7
Total	42	0	19
2006	Developers	System Integrators	Providers
Application Software	10	0	8
Infrastructure Software	31	0	11
Total	41	0	19

Table 1 shows clearly that businesses focus on the developer side, in particular on infrastructure software supply. This indicates that especially infrastructure software provisioning businesses are still under development. However, among the data set application software provisioning already matches with the level of application software development, which may reflect the overall change from shrink-wrapped software products to software-as-service type of offerings.

The most striking finding from the data was that there were absolutely no firms represented in the system integrators' category. Intuitively, this may be due to the small size and short existence of the analyzed companies, as system integrator

operations demand an established position in the middle of the value network based on a wide set of business relationships and a strong resource base, cf. the analysis of system house type software businesses in Sallinen as an example [5]. Yet, the current business trends are favoring system integration, as big customer companies are concentrating on their core businesses and are more and more reducing the number of their direct subcontractors, thus giving space and opportunities for companies that are capable to integrate and supply various entities for brand owners [6]. It thus seems that system integration business opportunities are not in the focus of or are missed by the fast growing start-up companies.

Among the analyzed data Infrastructure Software Developers (ISD) are represented best. One may thus ask, if growth-seeking software business is more lucrative in the infrastructure field. In other words, it seems that there is a large potential for various infrastructure related software offerings. On the other hand, the supply side may also be more interesting for an infrastructure company, because markets are possibly more standardized than on the Application Software Developer (ASD) side. The ISD business may be either more lucrative for growth-seeking software start-up companies or just 'easier' to enter, compared to ASD business. In any case, the distribution of the supplier side business categories shown in Table 1 is interesting, as it indicates that the "secrets of software success" may after all not stem from the classic application software product supply position [7].

4.   PARTNERING   AND   BUSINESS   ROLES   IN   THE DEVELOPER SIDE

We analyzed the software supplier category more thoroughly in order to find out patterns of partnership development for value creation among these companies. Our aim was to find out the "direction of arrows" in the M-S framework, i.e. what is the partnering behavior in the supplier and developer side, using the classification shown in Table 2. This classification was based on actual findings of the data available on each companies own websites, rather than on any pre-conceptualization of the types of business relationships of software companies. Classifying the data we used the membership categorization device -method as described by Silverman [8].

4.1 Application Software Developers

The analyzed data shows a tendency of application software developers to form networks with several different partner categories. Though, the data varies between the analyzed years, but to this may influence the fact that two websites of these 10 companies (year 2006) lacked totally any information about partnering and one of the companies did not have any website at all. In other words, their business relationships are created, in terms of the M-S framework, horizontally towards service provider businesses. On the other hand, the figures indicate also clear partnering intention with *Consultants*. Analyzing the information available on the web sites of these companies, we found out that consulting partners were sought mainly for *software selling and distribution* purposes.

Table 2. Partnering Tendency of Application Software Developers (ASD)

Year	SI	Strategic partner	Technology partner	Service and implementation partner	Channel	Consulting partner	ASP	Number of companies
2005	6	2	5	5	5	6	5	11
2006	-	-	3	2	3	1	-	10

This is contrary to the M-S value creation thinking, where consultants are more or less seen as knowledge distributors from a specific industry to software supplier and system integrator businesses. Therefore, the data indicates that this part of the value network is functioning in a reversed direction compared to the M-S framework.

4.2 Infrastructure Software Developers

Table 3 shows the respective distribution of partnering tendency among the ISD businesses represented in the data. These figures show a clear difference compared to the partnering tendency of the ASD businesses described in Table 2. The interest of ISD businesses is to seek partnering with technology providers, so that such relationships can be strategic or operational in their nature. M-S discuss the role of technology in software business to some extent, but the data indicates that on the supplier side the importance of technology-driven business relationships is very high indeed. Therefore, the lower left-hand corner (Figure 1.) of the basic software value network should be expanded to describe the role of strategic and operational technology suppliers, too, especially for the needs of ISD businesses.

Table 3. Partnering Tendency of Infrastructure Software Developers (ISD)

Year	SI	Strategic partner	Technology partner	Service and implementation partner	Channel	Consulting partner	Number of companies
2005	12	10	14	5	32	7	31
2006	3	2	10	4	14	6	31

ISD businesses have also strong interests in finding channel partners. This may indicate a better possibility, compared to ASD businesses, to sell more standardized software products via SI and service provider channels. The products that ISD businesses included in the data offer are mostly network related.

The above analysis describes networking of ISD businesses with intermediary organizations of the value network, as described in the M-S framework. In other words, it supports the idea of coordinated value creation activities spanning from suppliers via integration and service provisioning to end-customers. However, most of the studied ISD businesses have relationships directly with end-customers, too. Altogether 28 businesses had direct sales (year 2005) operations (90%) and 5 of these businesses practiced also Web-based sales. This behavior may be due to the small size and emergent stage of the businesses. On the other hand, it can also indicate the importance of being able to short-circuit the value network by having direct access to end-customers, keeping in mind that one of the most fundamental aspects of software

business is a tendency of winning companies to gather most of the customers in a specific market [7]. The rapidly growing ISD start-ups that are conceptually located farthest away from the end-customers in the value network, may this way seek for ensuring their future market position.

5. TOWARDS AN EXTENDED SOFTWARE VALUE NETWORK

In the analyzed context three main types of businesses exist: *development, integration*, and *provisioning*. The M-S framework illustrates well the relationships between these types of businesses. However, based on the analyzed data we were able to identify several interesting features that are not found in the aforesaid framework, as the real life operates differently from a conceptual framework, Figure 2.
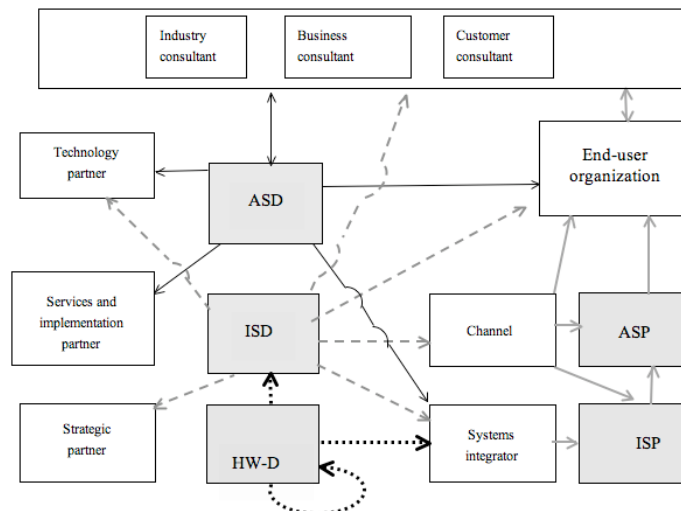

Figure 2. Landscape of the Most Promising High-tech Companies

The four main findings are as follows:

1) Value network short-circuits. In 90% of the analyzed cases the value network is short-circuited between the software developers (ASD or ISD) and the end-users (customers).

2) The different role of consultants. The consultants did not only act as information relaying actors from customers towards developers, instead the ISD and especially ASD businesses used consultants as their promotion channel towards end-customers.

3) Lack of system integrator businesses among these start-ups.

4) The HW developing firms belong organically to the ecosystem and have an important role especially for ISD businesses.

Figure 2 shows the value creation landscape derived from the data. In the figure we have depicted only those actors that emerge as the most interesting elements or partners, ref. Table 2 and Table 3. Next, we will discuss the four main findings.

5.1 Short-circuiting

With the term short-circuiting we mean the information and process flow for end-
user access, contrary to the M-S framework. The empirical data shows clearly ISD
and ASD types of companies had established or were interested to develop their
cooperation directly with end-user organizations, without relying solely on different
kinds of channel partners. This way of action may originate from several reasons that
occur during the evolution and growth of the developer type firms in question:

- The developers have not yet established any extensive supply channel network or
are under their way of building this.

- The firms have learned in the past to operate using direct end-user contacts, as in
the early stages of development there have been only a few customers and interaction
with them is economical and controllable.

- Some of the analyzed firms run this business also using the Internet that may
indicate a new way of getting end-users involved.

Internet can also be used as a complementing sales channel or the companies can
use it as their main channel especially when they are searching international
customers [9]. This development can be justified also by the fact that firms interacting
directly with their end-users secure continuous and current feedback concerning their
product development and innovations in the market. This gives a better visibility to
start-ups that operate with their own brand name instead being hidden behind
partners. However, in the future problems can emerge for these companies, because
when their business evolves, they must growingly trust on channel partners in order to
attain larger markets.

5.2 The Role of Consultants

Short-circuiting can be also found between consultants and ASD and ISD
businesses, as these firms use relationships to an opposite direction compared to the
M-S framework. Information is not flowing from the industrial and business
consultants to developer firms. Instead, according to our findings, the flow of
information and relationships (or aspirations towards relationships) between ASD or
ISD firms and consultants are established in order to use the latter as new business
lead finders and promotional partners.

This phenomenon gains strength, when "moving up" in the value network from
HW-D to ISD and ASD, i.e. consultants are most useful for firms that operate in or
with the application environment. Hardware firms do not need consultants, they know
what they need and are buying, but this is not the case with software. It may also be
the case that product needs and possibilities are unclear between software provider
companies and end-users, and thus they need intermediate actors that can facilitate
and communicate the needs of both sides. Consultants operate thus in several
capacities: lead finders, implementators and information distributors.

5.3 The Role of System Integrators

Davies [10] emphasizes that "Recent literature on business strategy argues that firms should concentrate less on making stand-alone physical products and more on delivering high-value services and customer-focused solutions". He further argues that new successful businesses are "built on new forms of vertical integration".

From this standpoint the observed lack of the SIs in the analyzed group of firms was a surprise. There may be several reasons for this, though. As being an SI firm, the company must have a wide-ranging knowledge base, enough own resources, as well as an extensive complementing partner network. This is seldom the case for a new start-up. On the contrary, it may have difficulties to convince a bigger company of its resources and integration capabilities that are a strategic issue for the customer. The occurrence of SIs can also depend on the maturity and competition level of the industry in question [11]. This is again a question of when and how SIs start to develop, i.e. when the industry is mature enough to support SIs in the value network.

According to our former studies on the Finnish software industry, the most promising stage in technology lifecycle to establish integration business is when the secondary or customer industry is in a turning point, just before a steady state of the industry development [12]. At this turning point key business processes, core technologies and system interfaces have typically been standardized, industry segments' have become rather homogenous and markets grown, and thereby enough room for integration business has been created. Later on, during a steady state, the customer industry has typically reached a technologically mature phase, the markets have been divided among big actors, and system supply and integration networks have been optimized.

5.4 The Role of Hardware Developers

The hardware development business in the left hand lower corner of Figure 2 is an interesting element not only in relation to software businesses, but also because it has contacts inside the business branch. In other words, HW-D firms carry out businesses between themselves. Thus, some of these companies play a developer's role and other a system integrator's role. Especially ISD and HW-D partners (technology or strategic) are typically hardware, software, Internet, and networking companies, and act at the same time as developers and customers.

HW-D firms were not in our main focus in this study, but it is clear that they would deserve a separate in-depth analysis, referring to the kind of research work that has been done for introducing M-S type of value-creating framework. The reason is that, as opposed to being far away from rapidly growing software businesses, HW-D companies seem to play an important role in the overall ICT value creating system.

6. CONCLUSIONS

Our focus in this paper was to answer the question how the most promising ICT start-ups are positioned with regard to value creation in growing markets. In particular, we were interested in why these companies are obviously able to position themselves better in the value network in terms of the evolving market than their

competitors. In order to understand this we selected a group of top-ranked companies and analyzed them using the software value network framework proposed by Messerschmitt and Szyperski. We found it to fit well with the reality, but at the same time to be somewhat too robust to describe the entire ICT industry ecosystem as a whole. We found the following major proposals to improve the framework:

a) Hardware producing companies should be integrated in the framework, in order to reflect more holistically the software and hardware business interplay and dependency from each other.

b) The framework should also describe how companies establish and maintain relationships with other companies in direct ways, without making use of any middlemen.

c) The analyzed companies use consultants in a different way than what is proposed in the framework, as many companies have established or sought for relationships with consultants as business lead hunters and sales force.

In real life the HW-D businesses form an essential element in ISD business development, because ISD businesses typically build their infrastructure software innovations, development, and usage opportunities on advance knowledge of hardware innovations. Thus, the closer the cooperation with technology innovators and hardware developers, the better business opportunities and possibilities to grow and succeed in competition.

In our analysis of ISD businesses we found that they characteristically establish direct relationships with end-user organizations. This may be due to the fact that the companies are young firms that have started their business with direct customer contacts, and only later extend their business relationships to include intermediaries in customer interfaces. The need for fast and direct feedback and ideas from customers is obviously a stronger value creating force for start-ups than a well-organized and orchestrated distribution channel. Moreover, companies that are positioned in this way in the value network make heavily use of business consultants, but not in the way that M-S have proposed. In Figure 2, it is shown how ASD businesses approach end-user organizations directly, whereas consultants can be seen operating in both directions. From end-users they give feedback, market information, and technology development information to ASD businesses. On the other hand they represent ASD businesses as a marketing and sales channel, thus forming another distribution channel for ASD businesses than SIs and service provisioning companies. Yet, ASD businesses cooperate with technology partners and service and implementation partners, too. ISD businesses also benefit from technology and strategic partners, and approach directly end-user organizations. They seek for networking with consultants, not for acquiring market needs information, but for using them as selling partners and new business opportunities trackers.

Finally, the results of the study show that there are clearly a few most promising positions in the value network of emerging markets: either an infrastructure software developer or application software developer, or an application service provider. According to our findings based on the *Red Herring 100* companies start-up companies have understood the demands of business, as they are very relationship-minded in order to grow their businesses as fast as possible in

highly volatile and rapidly emerging markets. The partnering tendency strengthens their internal knowledge base and reduces business risks.

From all the analyzed business categories we found infrastructure software developers (ISD) to be the most promising business category that has the best potential to grow rapidly. Furthermore, an interesting aspect among the analyzed start-ups was the total lack of system integrator (SI) companies, even though this line of business has a strong potential for future growth – as well illustrated by the world's biggest ICT companies.

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