DYNAMIC CAPABILITIES IN GLOBAL VALUE CHAIN MANAGEMENT OF A SMALL SOFTWARE COMPANY

Track: Internationalization process, entrepreneurship and international marketing

ABSTRACT

Small software companies are facing various challenges as their value chains internationalize and customers increasingly demand total solutions. Moving towards solutions business and managing a globally dispersed value chain necessitate the ability to reconfigure the limited resources and capabilities, i.e. a dynamic capability. This study examines the dynamic capabilities of a small software firm that is moving towards solutions business and managing a globally dispersed value chain. The focus is on the employees' evaluation of their own capabilities and issues that might explain their ability to cope with the changes. This is a mixed methods study where qualitative interviews served the design of a quantitative survey. The results show that the personnel evaluates its capability level rather high both in the current situation in the product-based business and in the solutions business. However, managerial level people, who are the best aware of the challenges of the transformation, mainly perceive that their capabilities are not sufficient for the solutions business.

Key words: Internationalization, dynamic capability, software firm, value chain

INTRODUCTION

Background and problem setting of the study

The business environment of high tech firms has changed considerably in recent years and companies increasingly enter international markets right after their inception. These 'born globals' have been a hot topic for some time already. However, there are also a significant number of companies which have been operating on those markets successfully for decades. Also these companies have now come to a turning point. Their stay and continuing success requires adaptation to the novel business environment in many respects.

On one hand, their value chain has gradually been dispersed globally and the management of this scattered, virtual organization brings quite a lot of challenges. The internationalization of an SME and its value chain lead to a situation where the value creating operations are spread all over the world. This situation is comparable to the global factory, which has thus far been associated mainly with large multinationals (see e.g. Buckley & Ghauri 2004; Buckley 2009). On the other hand, customers on the market have started to call for more solution-based offering and better understanding of their needs. This means that SMEs must be very close to the customers and have a thorough understanding of the customers' business to be able to provide valuable solutions to the customers' problems (Kumar 2004). Coordinating the globally dispersed value chain to

provide a better solution to the customers' problems than the competitor poses a variety of challenges for an SME.

With all this turbulence and change going on it is often forgotten that the key resource of the company – its personnel – often remains quite unchanged, particularly in small and medium-sized enterprises. Our knowledge of how the personnel reacts to all this is, hence, very limited. The internationalization of an SME has been only rarely discussed from the viewpoint of the employees. They are, though, a vital resource for an internationalizing SME and the ability of the personnel to cope with the change is important for the functioning of the organization.

The purpose of this paper is to investigate how the personnel evaluates the capabilities needed for the change and which factors affect the personnel's ability to cope with the change. This study will contribute to the body of literature in international business and entrepreneurship by taking a capability-based perspective into the management of globally dispersed value chains. A number of studies have described how the larger MNEs are moving their assets globally (see, e.g. UNCTAD, 2003). However, we still have an incomplete view of how small and new ventures may leverage their value chains both in terms of the resource and the market opportunities that global markets offer. With the increasing prevalence of various hybrid organizational forms in international business we should try to find out what will be the coming architecture of globally operating smaller businesses (Griffith et al., 2008) and what types of dynamic capabilities are required in managing such a creature.

In presenting this study, we first outline the literature on value chain management. We then address the decisive role of dynamic capabilities in managing value activities that disperse and cross national borders. We establish that the literature lacks a coherent framework that would link the dynamic capabilities and the value chain management in globally operating smaller ventures. The research design and methods adopted in the empirical study are then explained. The remainder of the paper develops the key findings from the analysis, discusses the implications, future research avenues and limitations of the study.

Changing software industry as research context

The software industry is growing dramatically in the entire world. PC is becoming standard worldwide and the Internet technology is enabling the mushrooming of new innovative applications for both, business to business customers and to end-consumers. The software industry has possibly generated the largest amount of new companies in the shortest period of time in the history of business. The industry is characterized by high rate of innovation, short life cycles, intense competition and highly dispersed value chains.

The global competition in high-technology industries such as software industry has demonstrated the need to expand the paradigm to understand how competitive advantage is achieved (Teece et al. 1997). Well-known companies such as IBM have seemed to

follow the resource-based strategy accumulating valuable technology assets. The global competition and the increased pace of innovations has forced the small software firms to concentrate on their core capabilities, thus requiring more network-intensive business behavior (Rajala & Westerlund 2007). Moreover, one aspect of the strategic problem facing an innovative firm is to identify those difficult to imitate internal and external capabilities that match the requirements of changing environment. (Teece et al.1997).

Previous studies have concentrated on software industry-level analyses or focused on major players in the industry. Therefore there is a need to understand the institutional context and firm specific capabilities of software SME's as they account for a vast majority of European and U.S software companies. Despite the notion that competitive advantage requires the exploitation of existing internal and external firm-specific capabilities and developing new ones, only recently researchers have begun to focus on the specifies of how firm's first develop firm-specific capabilities and how they renew capabilities to respond to the changes in the business environments. Moreover, resources have not been sufficiently analyzed in connection with types of business models and the robustness of the value in different business models. (Teece et al. 1997, 515; Rajala and Westerlund 2007, 115 Pynnönen et al. forthcoming).

Small software firms must constantly cope with extremely rapid changes that demand an innovative technological but also managerial response. (Nambisan 2002, 145-146; Capaldo, Iandoli, Raffa and Zollo 2003, 343) To respond to these challenges companies have focused on their core capabilities, which in turn requires more network-intensive

business models. This development has lead companies to increase efforts to gain and develop essential assets and capabilities through networks, particularly in software industry. (Rajala & Westerlund 2007, 115)

The role of networks has also been highlighted in the literature on internationalization of software firms (Ojala 2009, Moen et al 2004, Bell 1995, Coviello & Munro 1995, 1997). In software industry the growth of a company and its internationalization are very much linked together. Therefore, internationalization should not be seen as an isolated activity in a firm's strategy. Knowledge-intensive firms, such as software firms, can take various routes for international markets (Nummela et al. 2009). Their internationalization is characterized by low entry barriers, high-value and low-volume offering and concentration of markets, for example (Bell 1995), and all these have an impact on the companies' internationalization strategies.

However, the special nature of software business – in comparison to other knowledge-intensive industries – is the fact that in addition to the above mentioned, it faces these and other challenges at the same time (cf. Kuivalainen et al. 2006). An additional major, ongoing change is the shift from product- to more solution-based business model. It is relatively well known that the product and process-based competitive advantage can quickly erode due to imitation by competitors in today's competitive business environments. This means that it has become difficult for technology-based companies to differentiate based on technical features and quality alone.

Companies have a chance to overcome this by offering total solutions that meet customer needs. (van der Haar, Kemp & Omta 2001, 629) Companies that have traditionally sold packaged goods are changing their strategies and creating solutions by integrating numerous products and services to solve a customer problem (Foote, Galbraith, Hope & Miller 2001) Take for example IBM that has successfully transferred from PC giant to end-to-end IT solutions provider. IBM's success has also led other IT companies such as Cisco and Compaq or even Microsoft, which was usually considered as the ultimate product company, to transform from product to providing solutions (Kumar, 2004, 56, 58) Furthermore, the customers are demanding more complete solutions from the providers.

The total solution is in fact what offers value for customers and therefore technology-based firms has started selling customer value instead of products. Solutions provider can create customer value for example by helping the customers to increase revenue, transferring the customer risk and responsibility for a certain part of the business to themselves or by reducing customers' total cost of consuming a product or service. Therefore it is crucial for technology-based firms to understand the value of their offering (van der Haar et al. 2001, 627; Kumar 2004, 62). Kumar (2004) argues that a successful solutions company is a networked organization that has the ability to integrate different production skills and multiple streams of technology from variety of companies. Core capabilities are the key for a company to deliver superior value because they provide the means to add superior performance on the attributes that are important to the customer

(Kothandaraman & Wilson 2001, 382). However, all this requires ability to manage the company's value chain effectively.

VALUE CHAIN MANAGEMENT OF A SOFTWARE FIRM

For technology-based firms, in particular, the customer value has become the strategic focus point in recent years. The important nature of value and the value chain in business to business marketing have been discussed for decades (Evans & Berman 2001, 135). These days the concept of value is considered as one of the most popular notions among business managers and academia (Ulaga & Chacour 2001, 525). A company that rests on product-centric mindset and whose product differentiation is based on features has difficulties in sustaining in the global competition (Sawhney 2006, 366).

Multinational enterprises are simultaneously moving their mobile assets (including technology, skills, brands and production) globally in order to create a perfect fit with their immobile assets of different locations (UNCTAD 2003), and as a result the value chain of the company (cf. Porter 1985) is disintegrated and scattered worldwide. The outcome is a 'global factory', i.e. a structure reflecting the combination of innovation, distribution and production of both goods and services (Buckley 2009, Buckley & Ghauri 2004). In other words, even the value chain of a small software company may be a global one, consisting of R&D made in India, manufacture in China, sales in the US and home base in Europe.

Understanding the value chain requires that we go back to its roots. The concept was popularized by Michael Porter (1985) and soon it was extended beyond single organizations to apply whole supply chains and networks. This is important as these days the relevant knowledge is very often found to reside not within firms alone, but within networks of companies (Helander & Kukko 2009; Hinterhuber, 2002). If managing the value chain inside a single firm could be considered a more trivial task, the challenges start to accumulate when trying to orchestrate the value creating activities externally through partnering, mergers and acquisitions and joint ventures.

When aiming to manage the value chain effectively, one should start with the analysis of firm's internal value chain, i.e. the managers should examine what is the total value added and effectiveness of in-house operations (Hinterhuber, 2002). As the internal value chain is hardly ever the only point where value is created one should then continue to scrutinize the value created by external partners both upstream and downstream of the chain (see e.g. Möller & Törrönen 2003). The orchestration of internal and external activities requires a bit different skill set and capabilities from the company management. Inside the firm, the control is easier to maintain whereas wide array of globally dispersed external value adding partners requires careful consideration of governance.

The value chain of a software firm is typically disintegrated and global. The software production value chain can be seen to follow the lines of Porter's value chain drawn in the 1980's. However, the special nature of the business necessitates some adjustments to

the value chain. A generalized software production value chain is presented in figure 1
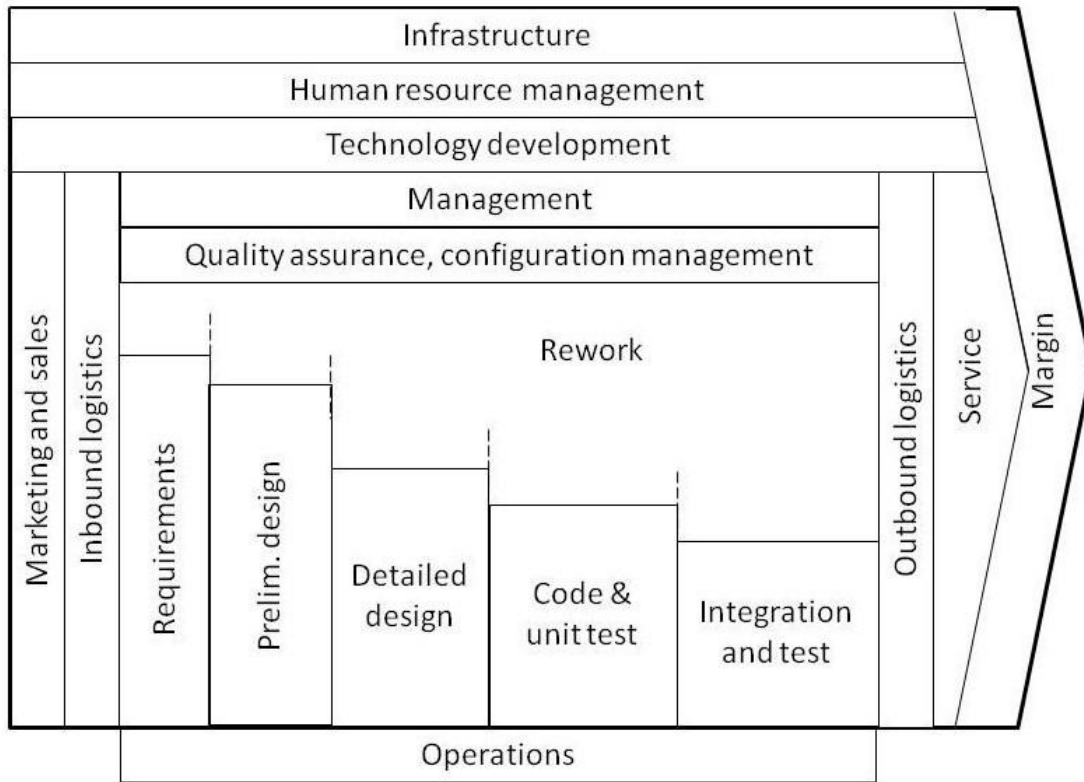below.

Figure 1 Software production value chain (adapted from Boehm 1987)

In software production value chain operations is the largest single element. It covers
majority of the value production, and hence it is split into smaller pieces to better
illustrate the value creation. As opposed to the traditional value chain, in the software
value chain marketing and sales activities mainly take place before the operations
(Boehm 1987; Segelod & Jordan 2004). In addition, the actual production and product
development are very much the same thing. As the software is designed to meet the
customer's needs, it is simultaneously produced. (Boehm 1987; Hätönen 2008)

In addition to the software production, many software providers also provide hardware. This means that the production of the physical product is added to the value chain illustrated above. The hardware may be provided as a part of a total solution for the customer so that it does not have to contact any other firms, i.e. the software provider may act as a system integrator (cf. Kumar 2004). On the other hand, the hardware may be necessary to enable the use of the software. The production of the hardware may, though, be contracted to an external provider, but it is an essential part of the value production.

Nowadays, due to the increased focusing on core capabilities and the consequent specialization, various parts of the value chain are performed by partners of the focal organization. All the components of the software value chain are, furthermore, labor intensive (Boehm 1987). As majority of software firms are small or medium sized, they all operate with very limited resources. Hence, it is vital for them to have partners in the value creation. This is also the case with the case company of this study. The company has partners, for example, in software development and sales.

It has been argued that the characteristics of the software have an influence on what kinds of relationships the focal company is willing to develop with its partners. Three essential issues are: 1) how critical the software is for the overall functionality of the solution, 2) whether there is need for modification, and 3) how closely the software is related to the focal firm's core capability. (Helander & Kukko 2009) Hence, software firms form

different kinds of relationships with different kinds of partners. These partnerships form the globally dispersed value chain of a small software firm.

The management of the internationalizing value chain requires various capabilities from the organization (Svahn & Westerlund 2007); partnering with other organizations from all over the world and accessing new markets. i.e. spreading the operations of the value chain internationally, necessitate new kinds of capabilities from a small software firm. For example, forming international partnerships in the value chain necessitates a specific set of capabilities (Knight & Kim 2009). On the other hand, anticipating change in the market and adapting the firm to respond to the dynamism of the market call for dynamic capabilities (Teece 2009). Therefore, the dynamic capabilities in the context of internationalization of a software firm are discussed in the following section.

CAPABILITIES AND INTERNATIONALIZATION OF A SOFWARE FIRM

Capability exploitation and development play a decisive role in shaping the outcome of geographically dispersed yet globally integrated business operations (Luo 2000). Thus, especially in internationalizing businesses it is becoming increasingly important to explore how firms build, integrate and reconfigure valuable asset positions (Teece et al. 1997). This is challenging as previous research indicates that international expansion becomes progressively more complex and performance begins to suffer. Well-functioning capability exploitation aids firms to make use of interdependencies across borders and to achieve international performance.

Dynamic capabilities are essential in a dynamic operating environments (Eisenhardt & Martin 2000; Teece, 2009; Winter 2003), such as the software industry. Hence, it is argued here that dynamic capabilities are needed in the organizational transformation from supplying products to providing solutions to customers' problems. Dynamic capabilities deal with change and involve usually a long term commitment of specialized resources. As opposed to ad hoc problem solving, dynamic capabilities involve a patterned element. (Winter 2003) Furthermore, they are often combinations of simpler capabilities and the routines related to these (Eisenhardt & Martin 2000).

Dynamic capabilities consist of the structures and processes that constitute the firm's ability to reconfigure its asset base to match the requirements of the changing environment (Teece et al. 1997; Eisenhardt & Martin 2000; Winter 2003). In other terms, dynamic capabilities stand for the firm's ability to sense and seize opportunities (Teece 2000). Hence they reflect the entrepreneurial facet of management (Teece 2003). Value creation through the recognition of entrepreneurial opportunity and a proactive strategic orientation, as well as sustaining value through disciplined strategic-management actions are both essential elements in the dynamic-capability framework. These are also very important factors in the international expansion of a small firm (cf. Knudsen & Madsen 2002).

Expanding operations internationally offers a firm an opportunity to exploit its capabilities that may be underutilized at the home market. On the other hand, becoming

involved in international operations necessitates developing certain strategic and organisational capabilities. (Luo 2000, 357) Similarly, the management of internationally dispersed value chain necessitates new capabilities as opposed to managing the value chain in domestic environment.

Dynamic capabilities necessitate strong resource base as well as strong established capabilities from the firm. The ability to create new resource configurations and to effectively and productively deploy the accessible resources are prerequisites for dynamic capabilities. (Luo 2000, 358) The resource base of SME's is, nonetheless very limited. Hence, access to external resources is important. Despite the lack of tangible and financial resources, SME can succeed internationally. It has been suggested that the international success of SMEs bases on skilful use of intangible resources. Furthermore, skilled personnel has been argued to be an important factor in the international success of SMEs. (Knight & Kim 2009) Especially in knowledge intensive sectors, such as the software industry, the skills and know-how of personnel is essential.

Knowledge of an SME is largely embedded in the individuals employed by the organisation and in the relationships between them (Kogut & Zander 1992). The capabilities of the employees are fundamental resources of the organisation. Through established routines, the employees' capabilities contribute to the capabilities of the organisation (cf. Ulrich 1993). For example, in software development the technological strengths of the firm are built on the technological know-how of the employees involved in software development. Due to the differences between large multinationals and SMEs,

distinct capabilities are required from SME to succeed internationally. Moreover, the capability requirements for internationally operating SMEs are quite different than for the ones operating only domestically. The antecedents of these capabilities have not, however, been studied much, if at all. (Knight & Kim 2009)

To uncover the sources of capabilities that contribute to the management of an internationalizing value chain of an SME in software industry, this study examines the employees' capabilities. The focus is on the personnel's subjective evaluations of their capabilities when the business moves from supplying products to providing solutions. The employees' subjective view of their capabilities in the new situation is seen to be important in their ability to cope with the change and adapt to the new situation.

The development towards providing solutions stems from customers' demands. It may be problematic for a customer to be in contact with numerous actors relating to the software solution it is acquiring. Interacting only with the focal firm, the system integrator is more convenient, and hence acquiring complete solutions is nowadays preferred. (cf. Helander & Kukko 2009)

Even in the era of virtual organization and advanced communications technologies, internationalization is a challenge for SMEs. Expanding operations across national borders may require resources that the small firms do not have. Furthermore, the pressure to move towards solutions business poses various challenges to the small software firms. Facing these challenges simultaneously calls for dynamic capability; an ability to

reconfigure the organizational resources, including employees' capabilities, to correspond to the requirements of the new situation.

RESEARCH DESIGN

This study describes and analyses personnel's subjective perceptions of the capabilities needed in change from product to solution-based international business. For this exploratory study, a single-case approach was considered to be an appropriate research strategy. Case study allows inductive investigation of the research topic, analysis of the phenomenon in its contextual setting, and more holistic coverage of the companies selected (Ghauri, 2004). In order to minimize the effects of environmental and situational factors, the number of cases was limited to one. However, in order to preserve the anonymity of the informants, the case company was disguised and given a fictional name – EduTech.

The selection of cases is a crucial decision in the research process and should therefore be made after careful consideration and a critical evaluation of the alternatives. Random selection is neither necessary nor desirable, and theoretical sampling is recommended (Eisenhardt and Graebner, 2007). This involves choosing cases that are likely to replicate or extend the emergent theory (Eisenhardt, 1989). The theoretical qualifications of the case must also be kept in mind, in other words how well they fit the conceptual categories and the extent of their explanatory power (Eisenhardt, 1989; Smith, 1991).

In this study it was particularly important to find a company which would be currently ongoing this kind of change, so that the phenomenon could be studied real-time. However, this requirement posits one of the greatest challenges of this kind of a study: how to get access? Companies are normally very reluctant to reveal information of strategic processes which are ongoing. Luckily the authors had a collaborative research project with a suitable company, and with the help of good personal relationships the study was possible.

The case company employs 69 people, of which roughly half is located in Finland and the other half in other countries all over the world. The headquarters of the company is situated in Finland and the company has sales offices also in Europe, North America, South America and Asia. In addition to these the company operates through it resellers in more than 70 countries. In 2007 the turnover was roughly 9.5 million Euros. The company provides products for educational sector and the main customers are public sector organizations. It actually provides a combination of hardware and software, but the production of hardware is outsourced. The company has a vision of becoming a solutions provider concentrating on customized solutions and large-scale projects.

The empirical research process started with qualitative interviews in February – April 2009. First the upper management of the case company was interviewed; altogether five interviews, which lasted each between one and two hours. These people were asked if they could think of someone of whose interview the study would benefit. This yielded two more interviews of also managerial level persons.

The interviews dealt with the current state of the company's value chain and the managers' perceptions of the capabilities and competencies in the organization. Both the current state and the one after the change were discussed. Based on the capabilities brought up in the interviews, the survey questionnaire was crafted. The themes to the questionnaire were got from the interviews and the specific sets of questions were based on literature.

The population of interest was defined as the personnel of EduTech and the questionnaire was sent to the whole population. The data was collected with an electronic survey in May 2009. A link to the survey was sent by e-mail to the whole personnel of EduTech on May 15th. They were given time to respond until May 21st. This yielded 49 responses. The response time was extended until May 28th and new e-mail was sent to the personnel on May 26th. Three more responses were given, and hence altogether there are 52 responses. The CEO of the firm sent the e-mails to the personnel to encourage responses. The researchers and the CEO together crafted the message along which the link to the survey was sent. The topic of the survey, one's own skills and abilities is a very delicate matter, especially in the current economical situation as many firms are laying off people. Therefore, anonymity was emphasized and carefully maintained.

The personnel of the company is 69 people, which means that the response rate is 75,4%. Despite the very high response rate, the choice of analysis methods was limited due to the small number of the employees. The response scale used for each set of statements in the

survey was a seven point Likert scale ranging from 1= totally disagree to 7=totally agree. Forming summated scale measures was seen to be the most suitable method of analysis. The summated measures were created for each of the capability areas to evaluate the individuals' views on their capabilities.

Data triangulation played an important role in this study; the interview data was used, in addition to the design of the survey questionnaire, also to support the interpretation of the survey results. Data triangulation has been recommended for studies focusing on the international entrepreneurship and SMEs, for example by Fillis (2007). Since the nature of the phenomenon studied is neither linear nor simple, creative multi-method approach was seen to be suitable. Mixing qualitative and quantitative research methods in complex research designs can yield a holistic description of the phenomenon (Jick 1979) and hence lead to deeper understanding of the issues examined. The results of the study are presented in the following section.

CAPABILITIES AT EDUTECH

About the case company and the data set

In this exploratory study we examine the phenomenon in a real-life context, in a case company. The company – EduTech – is a small firm offering technical product to the education sector. At the moment the company is undergoing several major changes. First,

it is moving from product-based business to a more solution-based business by aiming to increase the service and software component of its offering. Second, although the company has been operating globally already for some time, its partner network is created for small-scale operations, while the market is developing towards larger project deals. Consequently, a major change is necessary both in the company as well as in its network in order to stay competitive in the business.

The organisational capability to change from a product company to a solution provider and to manage the consequent changes in the international value chain were seen to stem from the capabilities of the employees. The capabilities were examined with question sets measuring the: customer orientation, market orientation, teamwork orientation, partnership orientation, international orientation, creative potential and technological orientation of the employees. In addition, the employees evaluated subjectively the level of their own capabilities.

In our study we obtained the usable information from 52 respondents. The majority of them were male, only one third were female. In terms of age, the respondents represented well all different age groups. Additionally, the respondents include representatives from all organizational levels: 19 per cent being at the upper management level, 31 per cent at the managerial level, 21 per cent specialists, and the remaining 29 per cent other staff. The data set includes also observations from all the main functions of the firm: research and development (19 per cent), sales and marketing (56 per cent), logistics and administration (14 per cent) and technical support (11 per cent). As mentioned earlier, the

case company operates globally, so it is relevant to state also that about half of the respondents were positioned at the same country as the company headquarters, 44 per cent were located in other countries.

Almost half of the respondents (48 %) had a very good understanding of the company's international value chain, as they were in daily contact with the company's international partners. Also the ones who had weekly contacts (19 per cent) can be considered to have a good understanding, whereas those with monthly or less frequent contact with the international partners probably have only appropriate knowledge of the international value chain. Nevertheless, the data set also included some respondents (10 per cent) with limited understanding of the international value chain, as they were never in contact with the international partners directly.

Describing the capabilities

Our analysis of capabilities is based on the employees' subjective perceptions of the situation now and in the future. The respondents were asked to evaluate their capabilities both at the current situation and after the change from product to solution business on a scale from one to five (very weak to very strong). The mean of the evaluations of the capabilities at the current situation was 3,69[1] and in the new situation after the change 3,50. The difference is statistically significant.

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[1] n= 52, **current** capability level: st. deviation 0,101；**after change** capability level: st. deviation 0,097; sig. 0,024.

On average the employees feel that their capability level will be lower after the change. This means that they perceive that their current capabilities do not correspond to the requirements of solutions business as well as they do correspond now to the requirements of the more product-based business. Nonetheless, majority of the respondents see that their capability level will remain the same. It must be noted with regard to these questions that the lower extreme of the scale was not used, i.e. the responses ranged from 2 to 5. In addition, only very few respondents chose the second weakest option 2 (n=2 in both questions).

Men seem to evaluate their capability level at the current situation little higher that women, though the difference is not statistically significant[2]. This is not surprising, as this gender difference can be seen in most of the evaluations done in Finnish context. The respondents' evaluation of their capability level after the change is more interesting. The mean of men's responses is 3,62 and that of women's responses is 3,20. The difference is statistically significant[3]. In other words, male respondents perceive that they are clearly better equipped for the forthcoming change.

The evaluation of the current capability level does not vary much between different age groups. Nonetheless, there are differences between age groups' evaluation of their capability level after the change. Younger respondents evaluated their capability level after the change significantly higher than older employees. The mean for the respondents

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[2] **Men**: mean = 3,76, n=37, st. deviation 0,723; **women**: mean = 3,53, n=15, st. deviation 0,743; sig. 0,321.
[3] **Men**: n= 37, st. deviation 0,721; **women**: n= 15, st. deviation 0,561; sig. 0,048.

whose age is 45 or less is 3,68 and for the respondents older than 45 the mean is 3,00[4]. This finding is also in line with earlier literature on change management; older employees tend to resist change more than younger employees.

There are no notable differences between the means of the responses between respondents working in different functions of the company, neither on the evaluations of current capability level nor the capability level of the change. Similarly, the location of the respondent does not seem to have an influence on the evaluation of the capability level; in the current situation or the situation after the change.

The respondents' evaluations on their capability level in the current situation do not differ much between different levels of the organization. Nonetheless, it is interesting that the specialists do not expect their capability level to change at all, i.e. the mean of the responses is 3,64[5] in both questions. It may be that they do not actually expect their job content to change much, not even in the new situation. Among the managerial level people and the other staff there is a slight expectation of decrease in capability level, whereas the upper management expects the largest drop in the level of their capabilities, the mean dropped from 3,70 to 3,30. The difference is not statistically significant[6], but it indicates that the upper management is perhaps the best aware of the risks and challenges related to the new situation and evaluates their own capabilities also accordingly.

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[4] sig. 0,001; **45 or younger**: n= 38, st. deviation 0,702; **older than 45**: n= 14, st. deviation 0,392.
[5] n=11, st. deviation 0,924.
[6] for both: n= 10, st. deviation 0,483; sig. 0,104.

To conclude, the personnel's evaluation of the changes in their capability levels are summarized in the matrix below (Figure 2).
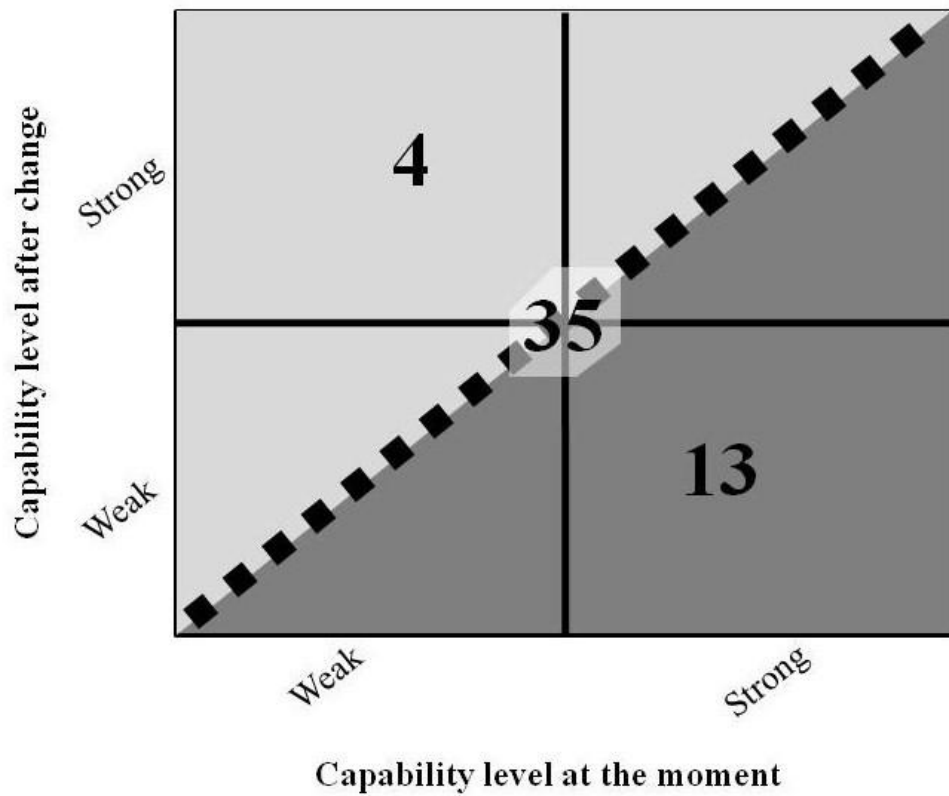

Figure 2 Capability level matrix

One fourth of the respondents (below the diagonal in the figure) evaluates that their capability level will be lower after the change. They are very evenly distributed between genders, different age groups and functions. 46 percent of them are located in the same country where the company headquarter is, and 54 percent elsewhere in the world. With regard to the position in the organization, they are mainly managerial level employees. Half of the upper management respondents feel that their capabilities do not correspond to the requirements of the solutions business as well as to the requirements of current

product based business. Also one third of the other managerial level employees perceive that their capability level will be lower after the change.

Only a few employees feel that their capability level will be higher in the solutions business (above the diagonal in the figure). They are all male and 45 years old or younger, which again reflects male respondents' stronger belief in their own capabilities as well as younger peoples' more positive attitudes towards change.

Majority of the respondents evaluate that their capability level will not change with the change (the diagonal in the figure). In other words they feel that their capabilities are equally valuable in the solutions business as they are currently in the product-based business. These respondents are rather equally divided between genders and different age groups. Furthermore, they represent all functions of the company and all organizational levels. Two thirds of them are located in the same country as the company headquarters and only one third are located elsewhere in the world.

With regard to the sets of statements of which the summated scale measures were formed, great majority of the respondents score very high on each of the sets, which means that the distributions are somewhat skew. The summated scales measures were built to measure the orientations of the employees (customer orientation, market orientation, team work orientation, partnership orientation, international orientation, innovativeness and technological orientation). The average score ranges from 3,53[7] to

[7] 7-point Likert scale

6,53, the mean being 5,38[8]. The average score for each set of statements is shown below in table 1., where the respondents are grouped according to their evaluation of the change in their capability level.

Table 1. Average score for the summated scale measures.

Capability change	Customer orientation	Market orientation	Team work	Partnership orientation	International orientation	Innova-tiveness	Technological orientation
Negative	6,26	**5,14**	6,10	**5,30**	**6,72**	**4,95**	**5,05**
Neutral	5,99	4,49	5,79	4,97	6,29	4,78	4,71
Positive	**6,42**	4,58	**6,81**	4,21	5,92	4,15	5,00

As it can be seen in the table, the ones who perceive that their capability level will be lower in the solutions business score the highest in five out of the seven summated scale measures. Only in customer orientation and team work orientation the ones expecting positive change in their capability level score higher than the ones expecting drop in the capability level (yet, their number is very small). In market orientation the ones expecting negative change in their capability level score notably higher than the other respondents. This is the case also in partnership orientation and international orientation. In innovativeness and technological orientation they score a little higher than the others.

Even though none of these differences in statistically significant, the result is interesting. When contrasting this result against the respondent's position in the organization, it is found that the scores differ significantly between organizational levels. The difference is statistically significant in the case of customer orientation, market orientation, team work

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[8] st. deviation 0,71

orientation and partnership orientation [9]. This result reinforces the notion that the management level employees, and especially the upper management is more aware of what the change to solutions business means to the company. Therefore, it is not surprising that they score the highest and yet expect the lowest capability level in the solutions business.

CONCLUSIONS

The level of employees' capabilities at EduTech is high, according to their own judgment. Majority also sees that their current capabilities are equally valuable in the solutions business, and hence that their capability level will remain high. This indicates that the firm is well prepared to the change from product to solutions business. There are also a few employees who feel that their capabilities are more valuable in the solutions business than in the current situation. This supports the view that the firm is well prepared. Nonetheless, there are employees who feel that their capability level is now rather low, and it will remain low also in the solutions business. It is important to consider what should be done to this; how to enhance the capabilities of these employees.

This study focuses on the employees' own evaluation of their capabilities. Their evaluation of the level of their own capabilities after the change is based on their view of what the change from product to solutions business will be. All the employees, however,

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[9] Customer orientation sig.=0,001; market orientation sig.=0,000; team work orientation sig.=0,008; partnership orientation sig.=0,045.

are no well aware of, for example, the risks involved in the change of the business model. This was seen in the survey as the respondents were given opportunity to write freely their comments on the survey and the planned change in the business model. Many commented on not knowing what the change is about, in addition to which some wrote that the change is not going to be anything major. The way knowledge of the change affects one's evaluation of the level of one's own capabilities could be seen in the managerial level employees' responses. It can be reasonably assumed that the managerial level people best know about the organizational change. Their evaluation of the change in their capabilities was clearly more negative than the evaluation of the other employees. Hence, it seems that knowledge about the change process and the risks and requirements of the solutions business affect people's evaluations of their own capability level. On the other hand, it seems that the employees whose knowledge about the change and solutions business is not as thorough as the managerial level employees', are more optimistic about the value of their current capabilities in the solution-based business.

In addition to the above mentioned limitation, it must be remembered that this is an exploratory case study. The results cannot be generalized, since they base on one case company. We continue with further analysis and particularly try to find explanatory factors which would help us to understand how capabilities could and should be developed. We also continue with data triangulation as we have also conducted six face-to-face interviews and one telephone interview at the company

Successful management of the company's value chain calls for variety of dynamic capabilities. It is important that a small software firm is able to proactively detect the changes in the market. In addition, having personnel with capabilities that enable the company to change its business if needed is vital for a small software company.

This was, in a way, a gap analysis, and we have been able to point out challenges in the organization. Yet, in order to be complete the analysis needs to include also the value chain of EduTech – what are the capabilities that can be acquired through collaboration. Hence, further research is needed so that also other organizations in the value chain can be included in the analysis, since studying both the internal and external parts of the value chain is, according to, for example Hinterhuber (2002), the way towards more innovative ideas on value creation. Therefore, only after that we would be able to suggest which parts of the value chain as well as the organization would need further development, which is the most important managerial contribution of this research undertaking.

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