

ENTREPRENEURSHIP IN THE KNOWLEDGE-INTENSIVE SECTOR: INFLUENTIAL FACTORS AT THE START-UP AND EARLY GROWTH PHASE

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May 2004

Abstract

The importance of SMEs for economic growth and employment has long been recognised, although the entrepreneurial activity in SMEs has not been understood all that well. In the light of this, a better understanding of entrepreneurs and their local environment might be helpful, since these are usually key factors in the discovery and exploitation of new opportunities. In order to research this situation into more details, a framework taking into account aspects of social, human and financial capital has been developed. Therefore, the purpose of this paper is to address the influence of these factors on the entrepreneurial process in technology based new ventures.

Key words: Entrepreneurship; Financial Capital; Human Capital; Social Capital

1. INTRODUCTION

New business creation and entrepreneurial churning are increasingly recognized as being among the most important drivers of a country's economic development and growth (Reynolds & White, 1996). In particular, the welfare of a country seems closely related to the capacity to exploit opportunities made available by new information technology, telecommunication, biotechnology and/or life sciences and by new markets through the establishment of new ventures. There is thus an increasing recognition of the importance of the positive correlation between the creation of new firms and their impact on the annual growth of the GNP and employment levels (Birch, 1981; OECD, 1996). Since entrepreneurs are usually the key actors in the recognition, exploration and exploitation of new opportunities, an improved understanding of the circumstances surrounding new venture foundation is necessary, particularly in technology- and knowledge-intensive ventures.

The provision of various forms of capital is critical during the early process of venture launching and development. Previous studies have documented that various types of capital such as financial, human and social capital contribute to the growth potential and success of a new venture (Chandler & Hanks, 1998; Burt 2000; Johannisson & Ramírez-Passilas, 2001). However, most studies have typically focused on one type of capital. Studies on financial capital have primarily been concerned with the different forms of finance available to the entrepreneur, e.g. internal and external (Deakins, 1996). Human capital is one of the cornerstones of knowledge-intensive societies but many studies have given priority to personality traits and demographic characteristics (McCarthy & Leavy, 1998/99; Cooper et al,

1994; Cressy, 1999). With regard to social capital previous studies have typically equated this with social networks and primarily addressed the structural dimensions in terms of the strength of ties between founders and external actors (Aldrich et al., 1997). Although most authors agree that various types of capital are needed in the establishment process few have addressed the interdependence between financial, human and social capital. This paper aims to fill this research gap by incorporating all three types of capital in a more holistic theoretical framework, which is tested in a Danish context of knowledge- and technology-intensive ventures.

The paper is organized as follows: First the general theoretical framework is presented in section 2. Second, a section accounting for the applied methodology follows in section 3. Third, the analysis and results are presented in section 4. Finally, a discussion of the results and their implications are provided in conclusion in section 5 and 6.

2. THE ROLES OF FINANCIAL, HUMAN AND SOCIAL CAPITAL

In recent years the interest in the various forms of capital needed to establish and grow a new venture has been growing. However, the conception of what types of capital are essential in the venture foundation process varies. Some stress the importance of extrinsic types of capital for venture success, e.g. various forms of finance. Others focus on the intrinsic ones, i.e. those that rest within the entrepreneur and over which the entrepreneur can exercise influence, such as human and social capital. Each of these capital categories, however, impact separately on the success of a new venture.

We define the concept of ‘capital’ as a factor with a value that may be increased by the proactive action of the entrepreneur and it needs maintenance in order to provide a rent return. This definition excludes research focusing exclusively on the personal characteristics or traits of the entrepreneurs (Brockhouse 1982; Timmons 1985; McCarthy & Leavy 1998/9). Attributing entrepreneurial activity exclusively to some specific traits that individuals are born with is according to Sandberg & Hofer (1987) reductionistic. Deakins (1996) further argue that these approaches tend to underestimate the extent to which skills and learning can impact on new venture success. However, financial, human and social capital may be influenced by e.g. demographic factors as age and gender.

Further the three generic types of capital all constitute critical strategic assets that are needed during the establishment and growth of new business ventures. The entrepreneur can increase the value of financial capital through proper investment in activities. Human capital improves with education and experience, which the entrepreneur may actively increase the value of through participation in e.g. entrepreneurship or management courses. The value of social capital is enhanced through networking activities. Entrepreneurial activity and performance may thus be influenced by the overall effect of financial, human and social capital (see figure 1).

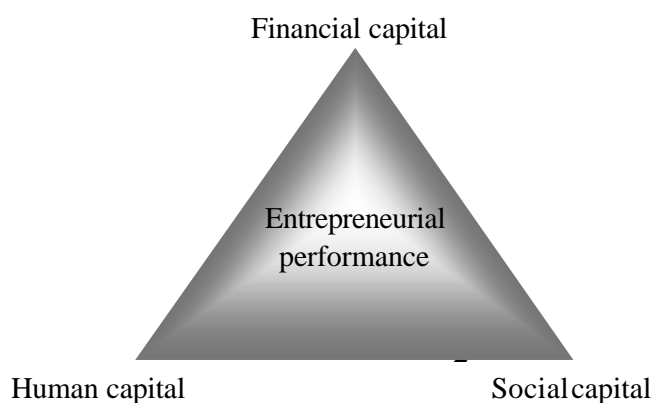


Figure 1. *The relationship between financial, human and social capital.*
Financial Capital

Following Shepherd (1999) we define financial capital as economic assets consisting of personal and general funds. Personal funds include an entrepreneur’s personal savings, financial assistance from family and friends as well as bank loans based on personal collateral whereas general funds consist of seed funding from a development agency, or government loans and grants and funds from venture capitalists (Shepherd, 1999). Table 1 shows the distribution between personal and general capital in the two first stages of investment.

Table 1. *Categorization and distribution of financial capital.*

Stage of investment	Type of capital	
	Personal	General
Founding stage	<i>high</i>	<i>low</i>
First growth	<i>low</i>	<i>high</i>

Extant research has shown that entrepreneurs and small firms in the founding stage are highly dependent on internal sources of finance (Deakins, 1996). Especially personal savings has been found to undertake the role as the principal source of initial capital for technological companies (Roberts, 1990). Moreover, research indicated that bank finance is by far the most important source of finance for entrepreneurs and SMEs (Deakins, 1996). Numerous factors may have an impact on the initial capital requirements of an emerging firm/venture. One of them is the industry in which the firm exists and competes (Roberts, 1990) due to differences in requirements for financing research and development at the pre-product or pre-service stage. Ventures with high initial capital requirements are likely to exceed the founders’ internally held resources. In such industries, it is therefore expected that a relatively smaller proportion of the initial financing will come from internal resources. Given this situation, it should be expected that ventures in technology- and knowledge-intensive industries are subject to very different financing practices a fact that seems to have been missing in previous research on this topic. Therefore, the findings presented here focus on identifying whether there are industry specific patterns in the sources of starting capital.

Therefore, an important focus in this study is to evaluate acquisition of financial capital in two knowledge-intensive sectors, to identify the sources of starting capital as well as any differences in this pattern according to type of industry.

Human Capital

Personality has often been included in the definition of human capital because entrepreneurs are seen as extreme types, in the positive sense of being “exceptional individuals” (McCarthy & Leavy, 1998/9). However, attributing entrepreneurial activity exclusively to some specific traits that not all individuals are necessarily born with can be characterized as reductionistic (Sandberg and Hofer, 1987), since it does not allow for learning to take place. Thus, although personality may constitute one part of human capital, it is by no means the most important part.

There have been a number of efforts to define and investigate human capital. One stream of efforts defines human capital as the natural abilities an individual possesses (Burt, 2000) or the demographic characteristics (Cressy, 1999). However, such attributes as charm, health, intelligence, age, gender, race and marital status are variables that are to a broad extent given

and in some way influence the acquisition of the various types of capital rather than being a part of them. Further, they cannot be changed or improved with entrepreneurial action. Although age has been shown to have an effect on entrepreneurship, it only tends to exercise an influence through the (non)possession, e.g. some studies show that young individuals have a greater tendency to establish a new fast-growing venture, but older individuals tend to establish ventures that survive. These findings may, however, be related to the fact that older individuals have e.g. longer experience. According to Honig (1998) education and experience play a major role in instigating entrepreneurial activity, productivity and the relative success of entrepreneurial ventures and thus constitute key components of human capital. Becker (1975) further divides experience and education into two types: specific and general. They are general if they are not specifically related to the business sector and entrepreneurial activity concerned. General experience is acquired through learning the ropes in previous jobs. It may lead to skills that are useful across a wide range of occupational alternatives, or be very specific to a particular occupation. Although work experience can be measured in years, it can also be signalled by the choice of career path, i.e. promotion to supervisory or managerial levels (Bates, 1990) thus resulting in experience that is of more specific use in founding a new venture. Table 2 below provides the categorization of human capital adopted in this paper.

Table 2. *Categorization of human capital.*

	General	Specific
Education	<i>College, university or business education Language skills</i>	<i>Specialist, technical, eg a Phd in computer science, engineering, biology</i>
Experience	<i>Experience from previous jobs or on the job training (non-managerial positions)</i>	<i>Previous entrepreneurship Management positions</i>

Social Capital

Social capital is probably the most elusive and intangible of the three forms of capital included in the research framework. It is by no means a new concept, but it is rapidly becoming a core concept in entrepreneurship research, and some have even seen it as the ‘final arbiter of competitive success’ (Burt, 2000).

There are several definitions of social capital, the majority of which can be found within the following four: i) social capital as being *the network*, e.g. Burt (1992) states that when social networks contribute to entrepreneurial goals, they constitute social capital; ii) social capital is *the value* of the network connections (Borgatti & Foster, 2003); iii) social capital is identical with *the resources* obtained through the social networks of actors” whether tangible or virtual (Gabbay & Leenders, 1999; Greve & Salaf, 2003); or iv) it is *a compound* of a number of variables including the network, e.g. Baron & Markman (2000) suggest that it consists of social networks (formal and informal ties), social skills (interpersonal and communicative ability) and social identity (status, identity and reputation), which help the individual entrepreneur obtain access to information and know-how. This study uses social networks as a proxy for social capital based on Burt’s (1997:355) definition of the value of social capital as ‘*a function of a network’s form and content*’.

The latter reflects Mitchell’s (1969) conceptualisation of social networks encompassing both the structure of the network and the interaction that takes place within it (as described in O’Connell et al, 2001). Further, it is increasingly recognised that network relationships

constitute one of the mechanisms playing a significant role in business development (Aldrich & Zimmer, 1986; Johansson, 1988; Larson, 1991; Dubini & Aldrich, 1991). Over the last decade, however, entrepreneurship research has produced increasing evidence that personal and professional networks are crucial in both founding and nurturing new ventures, hence entrepreneurs who can rely on a broad and diverse personal network tend to be more successful (Brüderl & Preisendörfer, 1998; Dubini & Aldrich, 1991). Both play an equally important role in the development of the entrepreneurial firm. The categorization is shown in figure 2.

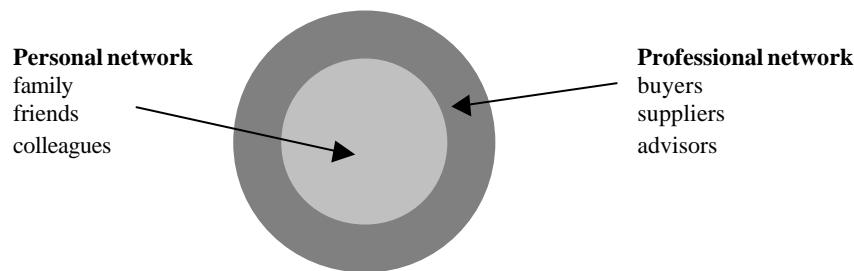


Figure 2. *Categorization of social capital.*

3. RESEARCH DESIGN

To study the aspects of human, social, and financial capital outlined above, research in a Danish start-up context in two knowledge-intensive sectors has been carried out. The study took place during 2000-2003 and the research methodology was based on a triangulation approach including a questionnaire-based survey as well as a number of in-depth interviews.

A major obstacle in the data collection was to identify the relevant population. Unlike other countries, such as the US, newly established ventures in Denmark are only registered in a very general central database, which is not subdivided on specific criteria. As an alternative, a list of relevant firms was drawn up which included all those supported by Technology-Based Incubators (TBIs) and all those identified by the research group outside TBIs (through contact to investor funds, press releases, Internet searches etc.). In consequence, the sample may neither be described as random nor as representative. However, it is estimated that the thorough search procedure resulted in an identification of the majority of the ventures in the target group, particularly since other sources arrive at approximately the same numbers (EFPIA, 2000; EFS, 2000)

The participating firms were selected on the basis of two main criteria:

1. The business sector in which the ventures were mainly active, e.g. high-tech and knowledge-intensive sectors. In this survey, all the ventures have been categorized as either related to Information and Communication Technology (ICT) or Biology or Medico Technology (BIOMED).
2. The age of the firms (all firms were established between 1996 and 2002).

The questionnaire-based survey instrument included over 200 variables and was designed on the basis of a theoretical framework incorporating dimensions of social, human, and financial capital (Christensen et al., 2000). The questions were generally formulated as closed questions using a 5-point Likert scale, or open-ended questions to be answered by stating a

value. The questionnaire was made accessible over the Internet and the respondents were sent a direct link by e-mail. Information was collected in spring 2001, and again in the autumn of 2002. A total of 155 individuals from 130 firms were directly contacted, and 102 individuals (representing 92 firms) completed the questionnaire. Some respondents participated in both surveys whereas others only participated in one of them. But since the participants should only reply once to the information of relevance for this paper all 102 observations can be used in the following analyses. Please observe that in detailed analyses when the observations are broken down into e.g. the ICT and BIOMED sectors the number of respondents in each subgroup falls below 100. In these cases, certain reservations apply to the results presented as percentages.

Along with the quantitative survey, founders of 24 ventures were interviewed twice, resulting in 85 individual and group interviews. The major focus during the interviews was on aspects of social capital difficult to collect by the questionnaire. The ventures chosen were sampled purposefully (Patton, 1990; Strauss & Corbin, 1990:187) according to the maximum variation strategy (MVS) in order to increase the robustness of the findings (Herriott & Firestone, 1983). Thus, half of the ventures were selected from the ICT sector and the other half from the BIOMED sector.

There were always two interviewers present at each interview, thus ensuring investigator triangulation and facilitating the comparison of observed themes (O'Grady & Lane, 1996). All interviews were subsequently transcribed and coded. In preparation of the interviews public data material like annual reports and newspaper articles as well as information published on the ventures' websites was used. This information was also used afterwards in order to crosscheck informant recollection.

4. RESULTS

As indicated in section 2 personal attributes like age and gender may play a role in human as well as social capital. Before presenting and interpreting the results related to the three capital issues it is considered relevant to inform about age and gender distribution in the sample of entrepreneurs in the knowledge-intensive sectors. In general, entrepreneurs in the knowledge-intensive sectors are in the range 21-66, with an average age of 37.6 years and they are predominantly males, only 4% being female. The interviews revealed that female founders of knowledge-intensive firms typically wait until their children are in their teens before becoming embarking on an entrepreneurial career. The only major difference was observed between the sectors as entrepreneurs in the ICT sector on the average was 8 years younger than their fellows in the BIOMED sector (viz.34.4 and 42.7 years).

Financial capital

In the knowledge- and technology-based ventures studied, sufficient amounts of financial capital were of the utmost importance. However, the complexity of the product and the time needed for product development influenced the amount of start capital. The financial patterns were clearly different in the two sectors (see table 3). Whereas half of the BIOMED ventures required a starting capital at 1 mill DKK or above this was the situation for only one out of five ventures in the ICT sector. Indeed, three out of four ICT ventures were established with a starting capital less than 3/4 mill DKK whereas only one out of four BIOMED ventures was

in the same situation. However, location inside or outside a TBI did not reflect a comparable difference in the distribution of starting capital.

Table 3. *Distribution of starting capital (percentage).*

Amount of starting capital (DKK)	Total	BIOMED	ICT	On-TBI	Off-TBI
0-99,999	8.3	0.0	14.8	3.8	12.7
100,000-199,999	15.6	8.5	21.3	20.8	10.9
200,000-499,999	11.0	6.4	14.8	13.2	9.1
500,000-749,999	14.7	8.5	19.7	15.1	14.5
750,000-999,999	16.5	27.7	8.2	17.0	16.4
1000,000-1999,999	11.0	12.8	9.8	11.3	10.9
>2000,000	22.0	36.2	11.5	18.9	25.5

In general government loans, personal savings, and venture capital were the three major sources. They were reported by 40-50% of the respondents to constitute a greater part of the starting capital. Loans from family and friends as well as business angles played a limited role in providing the starting capital.

There was a distinct difference between the two sectors concerning the source of their starting capital. New ventures in the BIOMED sector depended much more on government loans and venture capital than companies in the ICT sector. Companies in the ICT sector, on the other hand, relied to a greater extent on personal savings and bank loans based on personal collateral. In a few situations ICT companies relied on loans from family and friends, which none of the BIOMED companies did. Splitting the sample according to location, i.e. into on-TBI and off-TBI locations, results in a pattern similar to the sectoral difference. Thus, ventures established as on-TBIs relied heavily on government loans as starting capital whereas ventures established as off-TBIs relied on personal savings. However, there were no major differences concerning the remaining financial starting capital sources.

With regard to the degree of external funding, the results showed that in general there were two extreme situations: one out of four ventures reported no external funding whereas nearly half of the ventures report more than 80% external funding. These extremes may however be explained by splitting the sample into sectors. In the ICT sector it was much more common to have no external funding, whereas a high degree of external funding is dominant in the BIOMED sector. Among ventures established on- or off-TBIs there were also some differences. Thus, the majority of ventures established off-TBIs relying on a moderate external founding reported that the level of external funding was between 21% and 60%. For the majority of ventures established on-TBIs the level of external funding was 61%-80% in this situation.

The interviews further highlighted that although most entrepreneurs found it difficult to access venture capital, the women entrepreneurs interviewed reported that they had offers of capital investment way beyond their immediate needs. They judged that this was due to their excellent research record and reputation. The men, on the other hand, had difficulties in accessing venture capital.

Human capital

Nearly half of the respondents had a higher education, and more than a fourth had doctorates (see table 4). Of those entrepreneurs with a university degree, the majority were in the natural sciences (37%), engineering (20%), information and communication technology (15%), and

business administration (13%). In the BIOMED sector, almost all entrepreneurs had at least a master’s degree, and more than 65% had a Ph.D. In comparison, only 10% of entrepreneurs in the ICT sector had earned a Ph.D., although more than half of them had a master’s degree and more than a fourth a bachelor’s degree. The interviews indicated that the higher the technology component of the product, the higher was the educational level of the founders. There were fewer entrepreneurs outside a TBI holding a doctoral degree (viz. 17.8% and 40.3%) but more of these held a bachelor’s degree (viz. 27.4% and 11.1%).

Table 4. Educational level (numbers in percentage).

	Total	BIOMED	ICT	On-TBI	Off-TBI
Basic School	0.7	0.0	1.2	0.0	1.4
High School	6.2	1.9	9.5	2.8	9.6
Bachelor	19.3	0.0	28.6	11.1	27.4
Master	44.8	32.7	51.2	45.8	43.8
Ph.D.	29.0	65.4	9.5	40.3	17.8

About two thirds of the entrepreneurs had considerable general experience in technology and innovation management, and almost 60% had previous, specific experience in entrepreneurship and starting new firms. Furthermore, between a third and half of the respondents had experience in areas such as personnel management, accounting and financial control, as well as sales and marketing. However, the entrepreneurs generally seemed to lack experience in functional areas like business administration, logistics and production management, as well as finance and capital management. Eight out of ten indicated that they had very little experience in these categories.

Approximately 40% of the respondents said that previous experience as entrepreneurs is decisive for their continued efforts. A quarter of the entrepreneurs who actually has such previous experience perceived it as positive, whilst a fifth perceived it as negative. About half perceived both positive and negative elements in their previous experience. Whether positive or negative, previous experience did not seem to influence the desire to start a new firm, and almost 70% reported that their previous experiences had been crucial in developing their present business idea. This observation was confirmed during the interviews, i.e. for many of the entrepreneurs, the venture founded within the study period was generally not their first entrepreneurial attempt.

Social capital

About one fourth of the respondents were solo entrepreneurs (26.7%). The remaining ones had one or more partners when they started the venture. The size of the founding team was normally two or three (26.7% and 23.8% respectively). The remaining respondents founded their venture with more than three partners - typically four (10.9%) or five (4%). However, 7.9% reported that the founding team consisted of 6 or more members. Considerably more solo ventures were established off- TBIs than inside (viz. 29.2% and 9.3%) and there were more solo ventures in the BIOMED sector in contrast to the ICT sector (viz. 24% and 12.2%).

In founding teams, the partners were primarily previous work associates (39.2%). 14.9% reported founding ventures with friends or fellow students and 10.8% with other acquaintances. However, only 2.7% reported that they had founded ventures with kin. In these cases partners were never close family, such as a spouses or siblings.

These patterns of founder relationships were confirmed in the interviews, as most of the entrepreneurs interviewed were work colleagues, kin, or good friends from early school days or university. Frequently, informants would reply that it was very important to have personal knowledge of the other team members, and it was insufficient that one member knew only one of the other members. Contrary to the survey, however, ventures founded by kin were among those interviewed. In these cases, the ventures were either established with siblings or by spouses, or with more remote relations such as brothers-in-law.

The respondents generally considered the relationship with one of the other members as quite strong whereas it was considered less strong with the remaining team members. Likewise, they had generally known one of the other team members for a reasonably long time – on average 8 years but ranging from 0 to 36 – whereas respondents had known the remaining team members for a shorter time (see figure 3). In almost 80% of the situations, all co-founders were still part of the team at the time of the second survey.

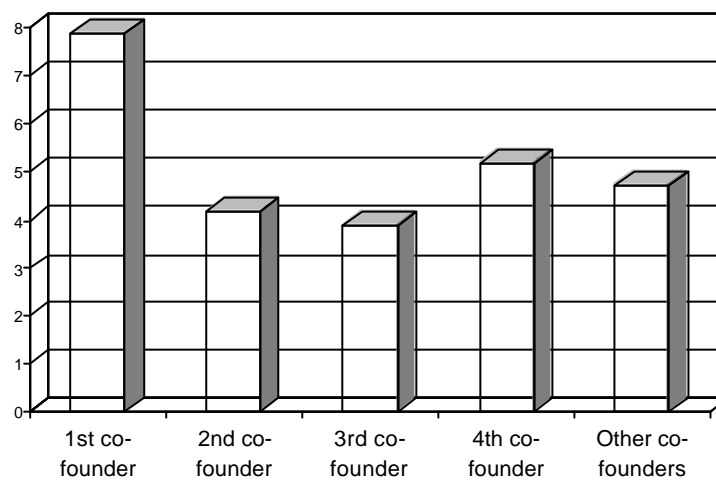


Figure 3. *Length of relationship with co-founders (average years).*

The purposes of an entrepreneur’s networking activities were primarily directed at market-related aspects such as identification of customers and new partners or to technical issues such as solving actual problems, obtaining advice on concrete issues and improving the technical knowledge. These purposes were reported by 70-80% of the respondents to be the most important. According to the interviews most types of advice and knowledge were found via indirect ties, through the CEO’s network or board members’ networks. Someone in the network would tell the CEO or board member where to go for assistance, thus reducing the uncertainty associated with contacting individuals not known personally. In many cases, however, the actual advice or knowledge was purchased. Only technical knowledge was primarily accessed through the network of the chief technical officer or secondarily, by hiring individuals with the needed skills, if suitable network contacts were lacking.

Moreover, the interviews revealed that the attitude to and perception of networking activities exercised an important influence on networking behaviour. Some entrepreneurs attached little importance to networking, and three even rejected its relevance altogether. They explained that they did not network, either because they did not see the need for it or because they did not like or want to network. These all had the title of chief technical officer or were in charge

of research and development which are internally oriented positions. One individual even replied that he leaned on the network of the CEO.

Although 60% of the founders reported networking for capital as an important activity, the interviews highlighted that if entrepreneurs did not have the networks to access seed-stage investors, they would rely on either the 'weak ties' of board members and their reputation or the strong ties of the CEO. More often, however, raising capital seemed to be a bit like a fishing expedition. The entrepreneurs would send out letters and emails describing the venture together with their business plan and just hope that venture capitalists would bite. Another aspect is that entrepreneurs in the BIOMED sector general spent more time on networking for capital than their colleagues in the ICT sector (viz. 77% and 49%).

The interviews also showed that the primary recruitment strategy of team-based ventures was to look to founders' networks. The first employees were generally previous colleagues, friends or fellow students from university. This choice was based on two factors: (i) general trust in competencies derived from personal knowledge of skills and experience and, (ii) emphasis on 'cultural fit' in the sense that new employees would also possess 'entrepreneurial values'. In half the interviewed ventures, most founding team members used their networks for recruitment until these were exhausted as a source of new employees. Then they would start to draw on the network of the early employees.

5. DISCUSSION

The dominance of male entrepreneurs is consistent with Roberts (1991), who found only one technology enterprise established by a woman. This may be due to the fact that fewer women take university degrees in technical subjects, such as computer science and engineering (Hisrick & Peters, 1995). The observed average age of an entrepreneur in the survey corresponds to that found in existing studies, which show an overall median age for technology entrepreneurs of 37 years (Cardullo, 1999). Similarly, the majority of entrepreneurs are between 25 and 44, which is similar to range found by Reynolds et al. (1999). However, our findings show that entrepreneurs in the BIOMED sector tend to be older than their counterparts in the ICT sector.

In general, the entrepreneurs in the two sectors included in the survey, indicate that the general level of formal education in Denmark is sufficiently high to provide an adequate basis for entrepreneurial activities in the knowledge-intensive sector. The difference in educational level found between the two sectors could be due to the fact that inventions and innovations in the BIOMED sector are generally more complex (see Christensen et al., 2001). However, the findings indicate that a lack of human capital generally is present with regard to the day-to-day running of a business. This may turn out to be critical when the founding ideas proceed to be developed into products that need to be distributed through market channels.

The majority of ventures were founded by entrepreneurial teams, typically by teams of two entrepreneurs. Team formation often occurred within a pre-existing network consisting of kin, friends or work associates, in other words 'trusted alters' (Ruef et al., 2003). Forming a venture with one or more partners rests on the criteria of trust, and long-standing relationships whether friendships or being colleagues often involve an accumulation of trust, or knowledge-based trust (Gulati, 1995) or strong ties (Dubini & Aldrich, 1991). Although strong ties may promote effective teamwork, the drawbacks of establishing a venture with

relations, friends or colleagues should however, not be overlooked. Disagreements concerning the strategic direction of the firm may be more difficult to solve when the partners are related or close friends.

When analyzing the purposes for which entrepreneurs used their networks, the results showed that these consisted mainly of market-related or technical issues. However, acquisition of new capital was a primary activity as well, and most of the ventures, apart from BIOMED ventures founded by women, had a hard time obtaining the funds needed for building production, equipment and working capital which are high in technology-based new ventures (Hambrick & Crozier, 1985).

Another important purpose of networking was recruitment. Very little has been published on recruitment strategies in knowledge-intensive ventures, but the selection criteria used by Danish founding teams are similar to those found by Baron et al. (2001). The networks of new employees consisted of indirect strong ties which increased the diversity of networks available to the venture (Dubini & Aldrich, 1991), particularly since the networks of the entrepreneurial founding teams themselves were limited due to team homogeneity. In other words, diversity was achieved through weak ties, whereas strong ties resulted in homophily.

6. CONCLUSION

Financial capital is a key strategic asset needed for the realisation, the survival and the growth of any new venture. In recent years a number of new financial sources have emerged in Denmark like public loans, venture capital, and business angles. Whereas the two first sources are frequently used business angles seem only to play a limited role. However, in spite of the increased number of financial sources the entrepreneurs generally find searching for financial capital – and especially external capital - very time consuming and full of difficult barriers to overcome. This means that while financial capital is an important resource in the entrepreneurial process, it is also an intermediate goal for the attainment of which other resources are spent, especially in terms of human and social capital.

The establishment of a new firm in the ICT sector required less equipment and research facilities investment compared to new venture in the BIOMED sector. Furthermore, most ventures in the BIOMED sector were characterized by a long time lag between research, product development, and sale of the final product or service. Therefore new ventures in the BIOMED sector required more initial capital. ICT entrepreneurs depended to a greater extent on internal sources of finance - especially personal savings and bank finance – which is quite different from the BIOMED entrepreneurs, where the use of external capital dominates. The explanation is most certainly that BIOMED entrepreneurs faced higher capital requirements. This was also reflected in the amount of time they spent looking for capital.

Another factor influencing the financial capital requirement concerns the complexity of the product. The more complex the technology, the more difficult the risk assessment procedure is for the potential investors and the less likely it is for the entrepreneurs to obtain external funding (Philpott 1994) or, put differently, the more efforts the entrepreneur will have to put into this activity. The results showed that entrepreneurs in the ICT sector generally spent less time on seeking capital than their colleagues in the BIOMED sector.

The results showed that the general educational background of entrepreneurs in the knowledge-intensive sectors was high, particularly with regard to technical skills. However, there was a general lack of experience and education within the area of sales and marketing, which may have severe repercussions unless qualified individuals are hired, who possess such competences.

Social capital seems to play an important role in the entrepreneurial process in the knowledge-intensive sector. First of all when it comes to the establishment of a new venture as three fourth of them were founded by entrepreneurial teams. But searching for starting capital and later on new capital and recruitment of employees relies very much on personal relationships as well.

An aspect, which should not be overlooked, concerns the differences identified between the ICT and the BIOMED sectors as well as between ventures inside or outside TBIs. This could point to an important political implication as the support needed in different segments may differ. Initiative to stimulate entrepreneurial activities are generally broadly aimed and supposed to work across many – if not all – kind of activities. It may be likened to be a shotgun approach, spreading over a wide area hence being very imprecise. However, the question is if future initiatives concerning initiation of and support to entrepreneurial activities in the knowledge-intensive sector should be tailored to specific needs.

Acknowledgement

The research reported in this paper was carried out in relation to a project entitled the SNE-project (Social Network and Entrepreneurship). The project was sponsored by The Danish Social Science Research Council within the framework of the national LOK research centre. Further information about the LOK research centre can be found at www.lok.cbs.dk and updated information on the SNE-project at www.org.hha.dk/org/lok.

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