

ENTREPRENEURSHIP AND SOCIAL NETWORK

DEVELOPMENT

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ABSTRACT

This study examined how entrepreneurs' social networks develop during the entrepreneurial process from the start-up initiative to the operations of an established business. Random samples of entrepreneurs in different stages of the entrepreneurial process were identified through the Danish GEM (Global Entrepreneurship Monitor) and their social networks were statistically analysed. It was found that entrepreneurs' social networks in the emergence stage are more convergent – small, close and dense – compared to entrepreneurs' social networks in later stages of the entrepreneurial process. Convergent networks support activities and decisions about testing and exploiting given directions, implementing strategies, creating internal consensus and maintaining relationships in established networks. As entrepreneurs move forward in the entrepreneurial process, their social networks become more divergent – they become more extensive and diverse, with many structural holes. Divergent networks support activities and decisions associated with exploring and expansion in different directions, creating ideas and strategies, and building relationships.

Keywords: *entrepreneurship, social network, Global Entrepreneurship Monitor (GEM), the entrepreneurial process*

ENTREPRENEURSHIP AND SOCIAL NETWORKS

This study investigated the progression of entrepreneurs' social networks throughout three business stages: the emergence stage, through the young business stage, and until the operating stage.

Recent entrepreneurship literature has changed from viewing entrepreneurs as autonomous and rational decision makers toward viewing entrepreneurs as embedded in social contexts. Theoretically, this study assumed that entrepreneurs are embedded in social networks, which means that entrepreneurs' social networks enhance as well as restrict the acts and decisions they undertake. This theoretical perspective emerged in the mid 80s as a reaction to the former atomistic and undersocialized view of entrepreneurs (Araujo & Easton, 1996).

Previous research states that different activities and decisions faced by entrepreneurs call for various network relationships and network compositions (Larson and Starr, 1993; Lin, 2001; Davidsson and Honig, 2003; Evald et al., 2006). Some activities and decisions are about exploring and expansion in different directions, creating ideas and strategies, and building relationships, which implicitly calls for extensive and diverse networks including many structural holes (termed *divergent networks*) (Granovetter, 1973; Burt, 1992, Van de Ven et al., 1999; Burt 2000, Evald et al., 2006). These activities and decisions increase the number of dimensions and complexity of a system and tend to follow a random or chaotic process. In relation to entrepreneurship they could be: 1) finding new customers or suppliers, 2) developing new as well as existing business ideas, or 3) collecting data about new market segments.

Other activities and decisions are related to integration. They affect testing and exploiting a given direction, implementing strategies, creating internal consensus and maintaining relationships in established networks. These activities and decisions implicitly call for small, close and dense networks (termed *convergent networks*) (Coleman, 1988; Coleman, 1990; Krackhardt, 1992; Van de Ven et al., 1999; Evald et al., 2006). The dimensions and complexity of a system are reduced, and move it toward a linear periodic pattern of quasi equilibrium. In relation to entrepreneurship they might concern: 1) making the final decision to start a business, 2) evaluating and finding the right balance between workload and spare time or 3) create energy for keeping the business alive.

Although many studies have analysed social network as a static phenomenon, many studies have also emphasised its dynamic nature (Larson and Starr, 1993; Johannisson, 1996; Davidsson and Honig, 2003; Evald et al., 2006). For instance, Johannisson (1996) argues that general networks stay stable over time, whereas networks activated during venture start-up can change dependent on which resources entrepreneurs need in different stages of the entrepreneurial process. In this study three stages were applied: 1) the emergence stage, 2) the young business stage, and 3) the operating stage. The emergence stage involves entrepreneurs who actively try to start a business. The young business stage involves entrepreneurs running

a newly established business older than 3 months, but younger than 42 months, and the operating stage involves those entrepreneurs running a business older than 42 months.

The fundamental notion is that entrepreneurs' social networks become more and more divergent as they move from the emergence stage, through the young business stage and into the operating phase. This progression will be further explained later on in the article and will be empirically tested. Basically, this is done by relating specific characteristics to each of the two different types of networks - convergent and divergent networks. Afterwards, hypotheses are empirically tested to see whether the network characteristics develop as expected. Accordingly, on the basis of these empirical tests, conclusions can be reached regarding whether entrepreneurs' social networks become more divergent as they progress through the three stages. In the next section hypotheses are developed, followed by a methodology section, before the empirical results are displayed. Afterwards, a section discusses and interprets these results before the article ends with a conclusion.

HYPOTHESIS DEVELOPMENT

As earlier indicated, this study relies on previous research arguing that different stages of the entrepreneurial process contain different kinds of activities and decision and that each stage therefore calls for different compositions of social networks. In some stages convergent networks are most suitable, whereas divergent networks are most suitable in others .

The Entrepreneurial Process: Three stages and Their Characteristics

In the emergence stage, entrepreneurs need to take the final decision about whether to start a business. This decision involves many considerations, including how an entrepreneurial career fits with wider career ambitions, as well as the predicted affect on family life. In relation to the business, entrepreneurs need to consider how they intend to finance the start-up and who potentially could provide external funding. These activities and decisions are very much about integrating and exploiting existing directions. Therefore, entrepreneurs need convergent networks in the emergence stage.

In the young business stage, entrepreneurs need to develop a sustainable financial, market, and organizational foundation. Regardless of growth and expansion ambition, entrepreneurs need to establish their business in the market and need to establish relationships with new business partners, customers and suppliers. Entrepreneurs operating in this stage, therefore, need more divergent networks, compared to entrepreneurs in the emergence stage, in order to obtain market information and in order to establish legitimacy in their relationships to potential business partners.

The third stage in the entrepreneurial process is the operating stage. Here, entrepreneurs simultaneously need to maintain existing business operations and develop new ones in order to survive. However, tendencies of shorter product life cycles and increased globalization often force entrepreneurs in this stage to expand to new markets and new market segments. Within the business, organizational and administrative procedures are well established, and it is therefore about pursuing these basic procedures to attract new customers. Therefore, it may be argued that entrepreneurs in this stage need even more divergent networks than entrepreneurs in the young business stage.

Accordingly, based on the different activities and decisions associated with the different stages of the entrepreneurial process, the proposal that social networks develop from convergent to more divergent networks is justified. Previous studies have also proven this progression. For instance, Larson and Starr (1993) argued that nature of relationships changes through the entrepreneurial process. In the beginning, relationships are simple, one-dimensional and social in character, but change during the entrepreneurial process towards becoming more stable, multi-dimensional interorganizational relationships. Others have achieved similar results (Davidsson and Honig, 2003; Evald et al., 2006).

Convergent and Divergent Networks and Their Characteristics

As earlier mentioned, specific characteristics are associated with both convergent and divergent networks. See Table 1.

Table 1: Convergent and divergent networks

	Convergent networks	Divergent networks
Description	Small, close and dense networks	Extensive and diverse networks including many structural holes
Network characteristics	Dense Many family relations Encouraging relations	Large Many business relations

Dense networks are networks where a high proportion of people in the network know each other mutually. These networks tend to form a coalition that enhances the collective drive (Aldrich and Zimmer, 1986). Collective drive might be important when completing activities and decisions characterized by integrating and exploiting existing directions (Aldrich and Zimmer, 1986; Van de Ven et al., 1999). A high proportion of family relations and a high proportion of encouraging relations also enforce collective drive. Dense networks are well suited for completing activities and decisions associated with integration and exploitation of existing directions (Klyver 2004; Evald et al., 2006).

In regards to divergent networks, it is argued that large networks and networks with a high proportion of business relationships support activities and decisions associated with exploring and expansion in different directions (Aldrich and Zimmer, 1986; Larson and Starr, 1993, Evald et al., 2006; Klyver 2006).

Previous literature documenting the nature of dialogue between entrepreneurs and members of their dense networks is incomplete. Focus has often been on whether entrepreneurs receive advice or not, rather than the specific subject or content of advice. Development of hypotheses on the content of subject matter is, therefore, more based on traditional social network theory and entrepreneurship theory than previous empirical results. It is expected that discussions on business opportunity are most frequent in the start-up stage and afterwards decrease as entrepreneurs move on through the entrepreneurial process. Further, it is expected that discussions on financial issues increase through the entrepreneurial process. Finally, discussions on organising the business is expected to change during the entrepreneurial process; however, no directions are put forward. Table 2 below shows the eight hypotheses along with the literature that justify them.

Table 2: Eight hypotheses

Hypothesis	Description	Direction	Literature
1 Network size	... increases during the entrepreneurial process	+	Aldrich & Zimmer 1986; Woodward 1988; Foss 1994; Greve 1995; Hansen 1995; Singh 2000; Jenssen 2001; O'Donnell et al. 2001; Liao & Welsch 2001; Jensen & Greve 2002; Puhakka 2002
2 Network density	... decreases during the entrepreneurial process	-	Aldrich & Zimmer 1986; Dubini & Aldrich 1991; Greve 1995; Liao & Welsch 2001; Hoang & Antoncic 2003; Ardichvili et al. 2003; Evald et al., 2006
3 Share of business relations	... increases during the entrepreneurial process	+	Larson & Starr 1993; Hite & Hesterly 2001; Davidsson & Honig 2003; Klyver, 2004;
4 Share of family relations	... decreases during the entrepreneurial process	-	Klyver, 2006; Evald et al. 2006
5 Share of encouraging relations	... decreases during the entrepreneurial process	-	Foss 1994; Brüderl & Preisendörfer 1998; Jenssen 1999; Davidsson & Honig 2003
6 Share of relations discussing opportunity	... decreases during the entrepreneurial process	-	
7 Share of relations discussing financial issues	... increases during the entrepreneurial process	+	Larson 1991; Foss 1994; Jenssen 2001; Torres & Murray 2002; Hoang & Antoncic 2003
8 Share of relations discussing organizing	... changes during the entrepreneurial process	+/-	

METHODOLOGY

Sample

Every year 2000 Danish adults are telephone-interviewed about their engagement in entrepreneurial activities as part of the Danish participation in the Global Entrepreneurship Monitor project (GEM). From the telephone interviews completed in 2003, a random sample of adults in the process of starting a business (firm emergence stage), a random sample of adult running a newly established business younger than 42 months (young business stage), and a random sample of adults running a established business older than 42 months (operating stage), were identified.

Identification of Social Networks – a Name-Generator Approach

In a follow-up survey, people who were identified as engaged in one of the three stages under investigation in this study were contacted once again and their *social networks* were identified

using the name-generator approach (Lin, 2001; Flap et al., 2003). The name-generator approach is a solid approach that has been used extensively in the social network literature (Marsden 1987). Following this approach, entrepreneurs in all three stages were asked the following question: “Identify five persons with whom you have discussed your (start-up intentions; business), and if you have discussed your (start-up intentions; business) with more than five persons, then the five persons who have influenced you the most.”

Variable Description

For each member of the entrepreneur’s social network, specific items were measured: the role they play (role-relation) to the entrepreneur (family, friend, colleague, consultants, etc.), the subject under discussion between the entrepreneur and the relations (business idea, organizing, or financing), and the emotional content in the interaction (mostly critical or mostly encouraging). Furthermore, each respondent was asked to provide information on the relationship between each member of the network. The basic premise was to identify which members of a social network knew each other. This was used in the calculation of a density measure (see bullet two below).

Based on these questions, it was possible to construct the following variables, which were used to test each of the 8 hypotheses:

- *Size* (from 1 to 5 relations)
- *Density* (amount of relations who know each other divided by network size)
- *Share of business relations* (amount of business relations divided by network size)
- *Share of family relations* (amount of family relations divided by network size)
- *Share of encouraging relations* (amount of encouraging relations divided by network size)
- *Share of relations discussing the opportunity* (amount of relations discussing the opportunity divided by network size). *Share of relations discussing financial issues or organizing* of the business were calculated in similar ways.

For each of the eight tests, the stage in which the entrepreneur was operating was the key independent variable (emergence stage coded 2, young business stage coded 3 and operating stage coded 4), but in order to control for correlations between different network variables each test considers the interrelationship between all network variables. From earlier literature it is known that demographic variables affect the entrepreneurial process as well (e.g. Greve, 1995; Greve and Salaff, 2003; Davidsson and Honig, 2003; Jenssen, 1999). Trying to eliminate these effects, the tests controlled for: gender (1 male; 2 female), age (the exact age) and education level (0 no vocational or higher education; 1 vocational education, 2 higher education less than 3 years; 3 higher education between 3-4 years; 4 higher education more than 4 years).

In all statistical tests, the dependent variables are scale variables, and the independent variables are dichotomous or scale variables. Therefore, in addition to descriptive statistics investigating means the most appropriate analytical technique is linear regression (Knoke et al., 2002).

Validity in Research Design

Arising from the Danish GEM adult population survey, 181 entrepreneurs were identified throughout the three stages of the entrepreneurial process. The response rates ranged from 71 per cent to 75 per cent depending on which different test being considered. The average response rate for the eight tests was 73 per cent. Missing respondents included those: who did not want to participate, who were not possible to contact, who did not answer all questions and those who were discovered to have been misclassified entrepreneurs in the GEM population survey. Thus, all in all, the response rate is high compared to what generally is achieved in social science - e.g. Yo and Cooper (1983) found an average response rate on 49 % in their study of response rates within social science. Within entrepreneurship research, Bartholomew and Smith (2006) found an average response rate of 27 % - a review that includes leading journals (Entrepreneurship Theory and Practice and Journal of Small Business Management) from 1998-2004.

It also needs to be mentioned that in contrast to many other studies within entrepreneurship and especially within studies of entrepreneurial networks, research design in this study, uses representative samples of entrepreneurs. The sampling methodology was simple random sampling from a sampling frame comprised of nearly the complete telephone directory of Denmark. The research population was Danish adults between the ages of 18 and 64. Further, the telephone interviews took place while respondents were actively engaged in one of the three stages of entrepreneurship. They were not conducted post-fact like many other studies. As such, biases associated with hindsight, memory decay and rationalization are avoided. Thus, the research design enables a generalisation of the results, at a minimum, to the population of Danish entrepreneurs.

FINDINGS

Table 3 shows the means for the dependents variables for each of the three stages. It shows that network size, share of family relations, and relations with whom entrepreneurs discuss opportunity decrease during the entrepreneurial process. Further, it shows that density, share of business relations, share of relations with whom entrepreneurs discuss financial issues and relations with whom entrepreneurs discuss organising issues increase during the entrepreneurial process. However, share of business relations, share of family relations, share of relations discussing financing and share of relations discussing opportunity are the only variables that differ significantly ($p < 0.05$) in means across the three stages.

Table 3: Means

Network characteristic	Firm emergence		Young business		Established business		Anova
	Mean	N	Mean	N	Mean	N	
Size	4.55	49	4.41	29	4.05	66	0.069
Density	0.69	48	0.72	28	0.75	59	0.488
Share of business relations	0.30	48	0.45	28	0.47	63	0.018
Share of family relations	0.40	49	0.27	29	0.27	64	0.033
Share of encouraging relations	0.81	47	0.84	29	0.71	61	0.073
Share of relations discussing financing	0.17	51	0.18	29	0.34	81	0.002
Share of relations discussing organization	0.14	46	0.20	25	0.23	62	0.144
Share of relations discussing business idea	0.65	51	0.54	29	0.33	81	0.000

Source: Follow-up survey 2003

In order to eliminate correlations between the variables and to control for characteristics of the entrepreneurs, eight linear regressions are completed in Table 4. A linear regression estimates the joint relationship between the dependent variable and two or more independent variables, minimizing the error sum squares (Knoke et al., 2002).

Table 4: Linear regressions

	Model 1 size	Model 2 Dens	Model 3 buss	Model 4 Fam	Model 5 enc	Model 6 oppor	Model 7 fin	Model 8 org
Stage of the entrepreneurial process		0.06*	0.07*	-0.07***	-0.05*	-0.13***	0.07***	0.05*
Size (size)							-0.07***	0.04*
Density (dens)				0.28***		0.16*		
Share of business relations (buss)								
Share of family relations (fam)		0.32***				-0.34***	0.16*	
Share of encouraging relations (enc)						0.20*	-0.14	
Share of relations with whom entrepreneurs opportunity (oppor)	-0.44							
Share of relations with whom entrepreneurs financial issues (fin)	-1.58***							
Share of relations with whom entrepreneurs organizing (org)								
Age			0.08***					
Education				-0.03*				
Constant	4.95***	0.45***	-0.15	0.40***	0.93***	0.77***	0.40**	-0.13
N respondents	132	134	136	132	136	129	128	132
R ²	0.10	0.11	0.13	0.17	0.03	0.20	0.19	0.06

Source: Follow-up survey 2003

Notes:

* P<0.05 (one tailed)

** P<0.01 (one tailed)

*** P<0.005 (one tailed)

Model 8 is a two tailed test

Model 1 tests hypothesis 1 and no significant relations between stage of the entrepreneurial process and size can be identified. Hypothesis 1 can therefore be rejected.

Model 2, on the other hand, shows a significant positive correlation between stage of the

entrepreneurial process and network density. However, hypothesis 2 can still be rejected as the correlation is positive in contrast to the expected negative correlation. As expected, model 3 shows a positive correlation between the stage of the entrepreneurial process and the share of business relations ($p < 0.05$). As hypothesis 3 receives support, the notion that business relations increase as entrepreneurs progress through the entrepreneurial process, cannot be rejected. Hypothesis 4 also receives support from the empirical data. Model 4 reveals that share of family relations decreases as entrepreneurs progress through the entrepreneurial process ($p < 0.005$). The same applies to hypothesis 5, as model 5 demonstrates a significant negative correlation between stage of the entrepreneurial process and share of encouraging relations ($p < 0.05$). As entrepreneurs move forward in the entrepreneurial process a higher proportion of their relations become critical in contrast to encouraging. Also the three hypotheses (hypotheses 6, 7 and 8) receive support from the empirical data. Model 6 shows significant negative correlation between stage of the entrepreneurial process and discussion of entrepreneurial opportunity. This supports that hypothesis that opportunity is discussed less frequently as entrepreneurs progress through the entrepreneurial process (hypothesis 6). As expected, a negative correlation is found between stage of the entrepreneurial process and discussions on financial issues ($p < 0.005$) supporting hypothesis 7. Contrary to opportunity, financial issues become a more frequently discussed issue throughout the entrepreneurial process. There is a significant positive correlation between stage of the entrepreneurial process and discussions regarding organising ($p < 0.05$). This supports hypothesis 8, indicating that organizing becomes a more frequently discussed issue as entrepreneurs move forward. All in all, the linear regressions provide support for hypotheses 3, 4, 5, 6, 7 and 8. They can not be rejected. On the other hand the linear regressions give reasons to reject hypotheses 1 and 2.

INTERPRETATION AND DISCUSSIONS

Eight hypotheses have been tested. It was found that share of business relations increases when entrepreneurs progress through the entrepreneurial process, whereas share of family

relations decreases. Apart from that it was found that discussions on the opportunity are most frequent in early stages of the entrepreneurial process, whereas discussions on financial issues and organizing are most frequent in later stages.

Accordingly, the empirical results strongly support the idea that entrepreneurs' social networks are dynamic and develop in regards to the activities and decisions that entrepreneurs experience. Even though general networks stay the same over time, this study indicates that different parts of these general networks are activated in line with the activities and decisions that entrepreneurs face during the entrepreneurial process. The study supports the general idea that networks are more convergent in the start-up stage and become more divergent as entrepreneurs move forward in the entrepreneurial process. Although most network characteristics were identified as significant in the expected direction, there were some not significant, or significant in the alternate direction.

Network size was one of the network characteristics that did not turn out as expected. However, this may be due to the chosen research design. In the applied name-generator approach, networks could maximally consist of five persons. Meanwhile, other studies suggest that entrepreneurs' social networks on average are larger than five people. For instance, Greve (1995) found that the average size of networks in the emergence stage was 14.7 persons and 12 persons in the young business phase. The upper limit of five people might have influenced the test of hypothesis 1. Further, it might have influenced hypothesis 2 concerning the network density as a smaller network has a higher tendency to be dense as well.

The chosen research design, therefore, to some extent explain the unexpected outcomes regarding network size and network density. Consequently, the notion suggesting that entrepreneurial networks change as entrepreneurs progress through different stages should not be rejected conceptually. In fact, the idea that entrepreneurial networks progress from small, dense and close networks in the emergence stage, to more extensive and diverse networks in the established phase is held true. The empirical results have not only supported the idea; where support was not received it could be explained by the applied research design.

For that reason the analysis suggests that entrepreneurs in the emergence stage need convergent networks that provide support through consolidation and enforcement. And as entrepreneurs move forward they need more divergent networks that provide support for new challenges they face that are characterized by business exploration and expansion.

Apart from proving social networks progress from convergent in emergence stage to more divergent in later stages, the analysis has shown that the two types of network consist simultaneously. It is not a battle between convergent and divergent networks. Rather, entrepreneurs must balance between both. It is a continuum, where entrepreneurs during the entrepreneurial process activate different combinations of convergent and divergent networks.

The analysis of social networks in this paper is general to the entrepreneurs in Denmark. It provides an overall picture of many different types of entrepreneurs operating in different industries. However, it may be expected that entrepreneurs' social networks differ dependent on the context in which entrepreneurs operate. It may depend upon what kind of entrepreneurs they are – are they for instances service entrepreneurs, product entrepreneurs or social entrepreneurs. And it may as well depend upon whether entrepreneurs are novice, serial or parallel entrepreneurs (Alsos and Kolvereid, 1998). Whether entrepreneurs start an innovative and growth oriented business or a more traditional business may also influence what resources that are needed and how social networking is practiced. Lastly, it may be noticed that previous research has indicated that culture influences how social networking is practiced. Entrepreneurs in different countries and cultures practice social networking differently (Dodd and Patra, 2002).

CONCLUSION

This study has investigated how entrepreneurs' social networks develop during the entrepreneurial process from when they are trying to start a business until they are running an established business. It was found that entrepreneurs' social networks in the emergence stage are convergent – small, close and dense – compared to entrepreneurs' social networks in later stages of the entrepreneurial process. These convergent networks support activities and

decisions about testing and exploiting given directions, implementing strategies, creating internal consensus and maintaining relationships in established networks. As entrepreneurs move forward in the entrepreneurial process, their social networks change toward becoming more divergent – extensive and diverse networks including many structural holes. These networks support activities and decision associated with exploring and expansion in different directions, creating ideas and strategies, and building relationships.

To entrepreneurs, this study provides some important lessons. First, entrepreneurs need to accept that starting and running a business is not an individual process, but rather a collectivistic process. In fact, many important resources including market information, advice and financial capital are obtained from social networks around the entrepreneurs. Success depends not only on entrepreneurs' business abilities, but also on the social networks surrounding them and their ability to make use from those network relationships. Second, entrepreneurs must understand that no social network fits everything. Social networks serve different purposes in different stages of the entrepreneurial process. It is therefore essential that entrepreneurs actively create and form their networks according to the activities and decisions they are facing.

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