

The Role Of Social Networks At Different Stages Of Business Formation

Kim Klyver * Kevin Hindle**

* Department of Entrepreneurship and Relationship Management, University of Southern Denmark

** Australian Graduate School of Entrepreneurship, Swinburne University of Technology

Abstract

This study empirically tests the fundamental assumption that social networks are important to entrepreneurs. This assumption underpins most social network research conducted in the field of entrepreneurship and is seldom questioned. Empirical data were drawn from Australia's participation in the Global Entrepreneurship Monitor project (GEM) from 2000-2005 – an aggregate sample of 14,205 randomly selected Australians. The study demonstrated: (1) statistically significant differences in social networks when entrepreneurs and non-entrepreneurs are compared and (2) that the structural diversity of social networks changes during the entrepreneurial process. It was found that structural diversity was most important to entrepreneurs in the discovery stage, least important to entrepreneurs in the start-up stage and of medium importance to entrepreneurs in the young business stage.

Introduction: The Importance of Social Networks

Every research domain can benefit from occasional reflection upon fundamental assumptions. This study was designed to test the virtually unquestioned fundamental assumption that social networks are important to entrepreneurs. Most studies do not deal with the question of *whether* social networks influence entrepreneurship; they jump directly to the question of *how* social networks influence entrepreneurship.

Recent entrepreneurship literature has changed from viewing entrepreneurs as autonomous and rational decision makers toward viewing entrepreneurs as embedded in social networks (Aldrich and Zimmer 1986; Hoang and Antoncic 2003; O'Donnell, Gilmore, Cummins and Carson 2001). As a reaction to the former atomistic and under-socialized view of the entrepreneur often taken in the psychological perspective (e.g. Brockhaus 1980; Brockhaus 1982; Brockhaus and Horwitz 1986), an increased recognition of the importance of social networks has developed since the mid eighties. The entrepreneurial network approach assumes that people with whom entrepreneurs interact affect entrepreneurs' endeavours - basically through the various resources that different relationships provide. This latter approach embeds entrepreneurship in a social and institutional context and tries to provide entrepreneurship research with a way to encompass the range of important factors spanning the autonomous, independent entrepreneur to the social embedded entrepreneur (see Araujo and Easton (1996), O'Donnell et al. (2001) or Hoang and Antoncic (2003) for comprehensive reviews).

Social networks, in diverse ways, provide entrepreneurs with a wide range of valuable resources not already in their possession and help them achieve their goals (e.g. Hansen 1995; Jenssen 2001; Jensen and Greve 2002; Jenssen and Koenig 2002; Singh 2000). The range of resources that entrepreneurs obtain from networks is very broad (e.g. Foss 1994; Jenssen

1999; Jenssen 2001; Jenssen and Koenig 2002; Ripolles and Blesa 2005). Among the most important resources that networks can provide are:

- information (sensible as well as non-sensible, diverse as well as non-diverse);
- access to finance;
- access to skills, knowledge and advice (all aids to competency);
- social legitimacy.

Although difficulties exist in terms of how to measure social capital, it is more and more often argued that social capital is the value generated by social networks (Burt 1997). Burt argues that capital can be divided into three categories. Human capital is the knowledge and capacity resident within human beings; financial capital is the money in people's pockets; and social capital is the value of resources generated by people's social networks (Burt 1992).

Many previous empirical studies have investigated the impact of social networks in different contexts. Some have investigated specific industries (e.g. Elfring and Hulsink 2001; Perren 2002; Neergaard and Madsen 2004; Neergaard 2005) and some have investigated specific regional areas (e.g. Aldrich, Reese and Dubini 1989; Johannisson and Mønsted 1997; Manev, Gyoshev and Manolova 2005). Accordingly, it could be argued that the field, in general, is biased toward studying social networks in specific contexts, rather than focussing on the attempt to draw general conclusions. Often contextually constrained studies are completed due to lack of research resources. Sometimes, context limitation is a conscious choice due to epistemological interest and focus.

Unfortunately, many studies that seek to transcend narrow contextual constraints in favour of explaining the generic and universal impacts of social networks on entrepreneurship often employ samples that are inadequate for the grand purpose. Randomly selected or representative samples have not always been applied (e.g. Woodward 1988; Foss 1994; Jenssen 1999; Dodd and Patra 2002). For instance, Dodd and Patra (2002) used students from their entrepreneurship classes to identify and recruit entrepreneurs for their survey. Similarly, Foss (1994), although her interest was in the generic nature of entrepreneurship, identified her sample from the cod farming industry in Norway.

Another critique that could be applied to most previous studies in this field is that they investigate *how* social networks influence entrepreneurship. Making a too-bold assumption, they tend to ignore the more fundamental question of *whether* social networks have any influence at all. The authors of this paper began this study with the assumption that social networks impact entrepreneurship. However, we also began with the belief that assumptions need to be empirically tested. There are very few studies using appropriate representative samples and suitable control groups that could be said to have investigated whether social networks impact entrepreneurship (Samuelsson 2001; Davidsson and Honig 2003; Liao and Welsch 2005).

This paper investigates the potential impact of social networks on entrepreneurship through an examination of a very substantial representative sample of Australian adults, including both entrepreneurs and a control group of non-entrepreneurs. The impact is investigated for three different stages of the entrepreneurial process. In the next section of the paper, hypotheses are developed followed by a description of the methodology applied. In subsequent sections, findings are tabled before conclusions and a discussion are presented.

Hypotheses Development

From a Plethora of Choice to a Single Measure

The concept of ‘social networks’ is a complex, multi-faceted phenomenon. It has been described and operationalized in many different ways. A useful approach is to view social networks as consisting of three key dimensions: structural, relational (Granovetter 1992) and cognitive (Nahapiet and Ghoshal 1998). Each dimension is itself a composite of many variables. The structural dimension focuses on the overall pattern of connections between actors, e.g. the presence or absence of a tie, network configuration, and morphology (e.g. size, density, connectivity or hierarchy). The relational dimension focuses on the kinds of relationships people have developed with each other through a history of interaction. The cognitive dimension focuses on shared representations, interpretations and a system of meaning among actors within the network.

The depth and diversity of variables contained within the three-dimensions approach to social networks means that social networks can be described and examined in a wide variety of ways depending upon the emphasis given to different dimensions and variables comprising the phenomenon. Any particular investigation in the complex area of social networks, therefore, needs to articulate with great clarity the particular choice of dimension(s) and variable(s) that the study addresses. The study reported in this paper focused on the structural dimension and was limited to measuring a single variable representing the construct of ‘structural diversity’ (a construct which could, of course, be measured in a variety of ways differing from the way it was treated in this study). Structural diversity concerns the range of people contained in a network and the degree to which their characteristics are heterogeneous (Cummings 2004). Widely differing characteristics in a structurally diverse network may include gender, age, knowledge, etc. There is no right or wrong mix of network diversity in any general sense. A well-diversified network depends on the specific situation. With regard to entrepreneurship, effective structural diversity provides entrepreneurs access to: non-redundant business information; business advice; access to finance; emotional support; knowledge about start-up processes, etc. The main idea behind the concept of structural diversity is that people with a high degree of structural diversity in their networks have a greater likelihood of obtaining non-redundant information necessary for success. It is essential for entrepreneurs to have industry and business relations and especially to have industry and business relations circulating in different social networks. This will increase access to non-redundant resources. Some of the resources which are especially important to entrepreneurs are knowledge about the start-up and business development processes. This kind of knowledge might be effectively obtained from other entrepreneurs. It can, therefore, be strongly argued that having other entrepreneurs in one’s social network is a measure of structural diversity.

In the study reported in this paper the exact question that produced our measure of structural diversity (a variable we called ‘networking’ for convenience) is: ‘Do you know someone personally who started a business in the past two years?’ However, we recognise at the outset that it is a major limitation of this study that the data set only contains one question bearing partially on the issue of structural diversity. Despite this limitation, the study is potentially valuable for its power of falsification. If it turns out that there is no difference between entrepreneurs and non-entrepreneurs as to whether their network includes an entrepreneur or not, one would be very hard-pressed to remain comfortable with the assumption that networks matter at all to the process of entrepreneurship. In short, we suggest that, while

limited, the construct used in this study poses a viable challenge to a hitherto unchallenged assumption.

Development of Hypotheses

Some people have entrepreneurs in their social networks and some do not. Personal knowledge of an entrepreneur has been shown to be associated with a statistically significant increase in the likelihood that a person will undertake entrepreneurship him or herself (Morales-Gualdron and Roig 2005; Arenius and Kovalainen 2006; De Clercq and Arenius 2006). It may be assumed that people who have entrepreneurs in their social networks have access to valuable resources. These resources vary and include: knowledge on the start-up process; access to business contacts; and emotional support from people with similar career interests. These resources are less obtainable by people without entrepreneurs in their social networks.

Hypothesis 1: Belonging to a social network that includes one or more entrepreneur increases an individual's likelihood of being an entrepreneur.

Entrepreneurs face a lot of challenges that have to be managed throughout the entrepreneurial process. For measurement purposes it is usual to distinguish different broad-level stages in the continuous process of entrepreneurship as though they were synonymous with precise stages of a business life cycle. However, challenges exist in determining where in the entrepreneurial process (i.e. at what stage of a venture's life-cycle) the entrepreneur currently operates (Davidsson and Honig 2003; Greve and Salaff 2003; Ewald, Klyver and Svendsen 2006). It is a well-demonstrated fact that social networks are dynamic (Johannisson 1996; Greve and Salaff 2003; Batjargal 2006; Ewald et al. 2006; Klyver 2006b), and it is possible, therefore, that entrepreneurs rely on different compositions of social networks in different stages of the entrepreneurial process. However, the manner in which any given social network actually develops through the entrepreneurial process – the key issue of *how?* – has never been satisfactorily investigated. Nevertheless, emerging results indicate that entrepreneurs searching for business opportunities rely heavily on *diverse* social networks consisting of many 'structural holes' and weak ties (e.g. Ardichvili and Cardozo 2000; Singh 2000; Puhakka 2002; Davidsson and Honig 2003; Klyver 2004b; Klyver 2006a). Later, at the stage when they are about to finally decide whether to start a new venture or are searching for external finance, entrepreneurs rely more heavily on *dense* networks, often including a high proportion of family members. *Close* ties, such as those often involved in family membership, provide emotional support surrounding the stressful decision about whether to start a new venture (Larson and Starr 1993; Brüderl and Preisendörfer 1998; Greve and Salaff 2003; Klyver 2004c; Klyver and Schøtt 2004; Anderson, Jack and Dodd 2005; Neergaard, Shaw and Carter 2005). Furthermore, family members are the most frequent informal investors in new ventures (Bygrave, Hay and Reynolds 2003). There is a third stage (the final stage considered in this study). It occurs after a business has been started at the time when the entrepreneur needs to create the conditions for sustainability in the market place. At this stage, the prevailing argument in the extant literature is that they return to reliance upon *diverse* (rather than *dense*) social networks that again include structural holes and many weak ties (Larson and Starr 1993; Greve 1995; Havnes and Senneseth 2001; Hite and Hesterly 2001). However, social networks at this stage are more embedded into a business context than before (Larson and Starr 1993; Ewald et al. 2006). In summary, previous research strongly indicates that the importance of diversity in social networks changes dynamically during the entrepreneurial process and can be seen to follow a 'U-shape curve'. Accordingly,

existing studies support the proposition that the effect of having entrepreneurs in the social network will change during the entrepreneurial process and will follow a ‘U-shape curve’. Figure 1 illustrates the expected ‘U-shape curve’.

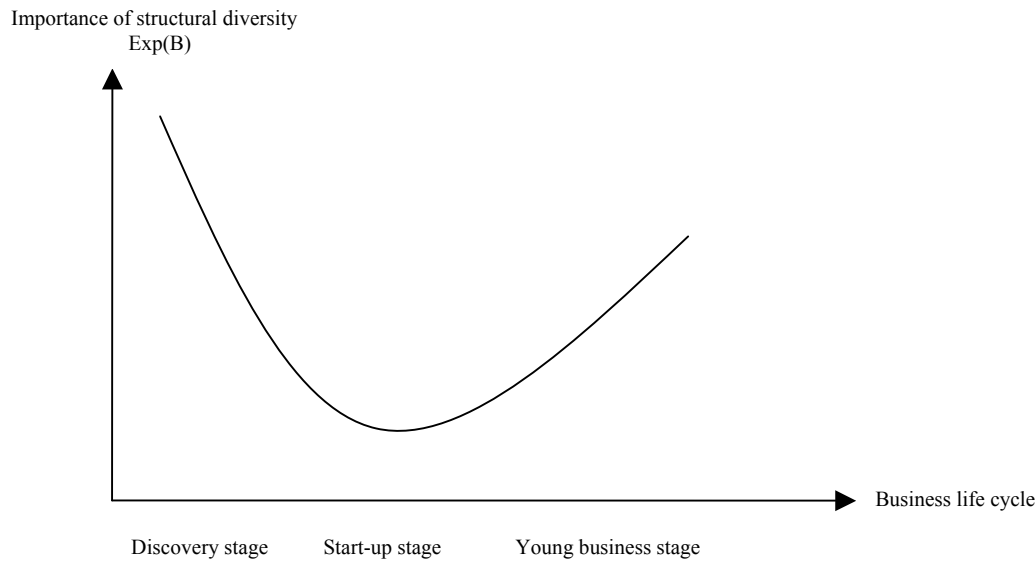


Figure 1: The changing importance of structural diversity

Hypothesis 2: Structural diversity is more important in the discovery and young business stages than in the start-up stage.

Methodology

Data set

The Australian GEM database, embracing pooled data from the years 2000-2005, was used to test the two hypotheses developed above.

The Global Entrepreneurship Monitor (e.g. Reynolds, Bygrave and Autio 2004; Minniti, Bygrave and Autio 2006) is an international project trying to detect: whether, and to what extent, entrepreneurial activity varies across countries; what makes a country entrepreneurial; and how entrepreneurial activity affects a country's rate of economic growth and prosperity. Australia has participated in this global research project since 2000 (e.g. Hindle and O'Connor 2005; Hindle and Klyver 2007). This participation has generated an extensive database on a wide range of issues and factors germane to Australian entrepreneurship. Every calendar year, each participating nation completes a GEM National Population Survey embracing a minimum of 2000 *randomly selected* adult respondents who are asked a variety of questions regarding their engagement in and attitude towards, entrepreneurship. The cumulative number of GEM Australia respondents for the six years (2000-2005) is 14,205 people. Some of these can be classified as entrepreneurs while others can not.

There is an active discussion taking place in entrepreneurship research concerning the definition and operationalisation of entrepreneurship. Broadly, this discussion can be divided

into two perspectives. The first perspective (the opportunity perspective) argues that entrepreneurship is about discovery, evaluation, and exploitation of opportunities (Venkataraman 1997; Shane and Venkataraman 2000, Eckhardt and Shane 2003). It emphasises on entrepreneurship as a disequilibrium activity. The second perspective (the emergence view) regards entrepreneurship as ‘firm emergence’ or ‘firm creation’ (Gartner 1993). It emphasises evolutionary and dynamic aspects of entrepreneurship and focuses on organizing activities as sensemaking processes (Weick 1995; Davidsson 2004). For analytical purposes, the study reported in this paper took a very broad emergence perspective and focused on participation in ownership of new ventures. In this paper entrepreneurship is regarded as the behaviour associated with creating new organisations regardless of the degree of the five other factors which GEM measures: motivation, innovation, growth orientation, financial sophistication and the entrepreneurial capacity of founders (Hindle 2006).

In the following section describing the variables employed in the analysis, the precise questions used to classify entrepreneurs are presented. This classification divides entrepreneurs into three categories: those who operate in the early *discovery stage* (trying to recognize a business opportunity to pursue); those operating in the *start-up stage* (actively trying to start a business); and those running a young business operating in the *young business stage*.

Description of Variables

Dependent variables

Three dependent variables were used in this study. All three variables have to do with engagement in entrepreneurship at different stages of the entrepreneurial process: discovery stage, start-up stage and young business stage. The classification to the various stages is adapted from GEM (Reynolds, Bosma, Autio, Hunt, Bono, Servais, Lopez-Garcia and Chin 2005) and has been used in previous GEM based studies (e.g. Arenius and Minniti 2005; Hindle and Klyver 2007).

Discovery stage: People who within the next three years alone or with others expect to start a new business, including any type of self-employment.

Start-up stage: People who alone or together with others are trying to start an independent new business or a new venture together with their employer. This must be a business or venture they have been actively trying to start, will own all or part of, and from which they have not received salary for more than three months.

Young business stage: People who alone or together with others currently are owner(s) of a business they help to manage, are self-employed, or are selling goods or services to others. In order to qualify for the young business stage the owners may not have received salary for more than 42 months.

Independent variables

The GEM Australia data set used for this study contained questions capable of producing measures of the 5 independent variables classified below.

Networking: People who personally know someone who has started a business in the past two years. This is the variable that is at the heart of our investigation. The point of the statistical testing conducted in this study was to try to determine the effects of networking (isolated from the compounding influence of other factors) upon the three dependent variables. The remaining independent variables function as control variables.

Gender: Peoples' gender was coded 1 for male and 2 for female. The entrepreneurial network literature indicates that gender influences entrepreneurial networking. Although results from prior studies are somewhat inconsistent, the predominant emerging results indicate that female entrepreneurs have different social networks than male entrepreneurs (e.g. Aldrich et al. 1989; Cromie and Birley 1992; Aldrich, Elam and Reese 1997; Renzulli, Aldrich and Moody 2000; Weiler and Bernasek 2001; Carter, Brush, Greene, Gatewood and Hart 2003; Greve and Salaff 2003; Neergaard et al. 2005).

Age: A respondent's exact age was recoded into two dummies – one for the age group between 30 and 49 years old and another for the age group 50 years and older. Younger than 30 years old is the dummy reference. Previous literature shows that age affects how entrepreneurs use and activate their social networks (e.g. Renzulli et al. 2000; Greve and Salaff 2003). Entrepreneurs' age influences the resources already in their possession, and thus, the resources entrepreneurs need to obtain from their social networks. Entrepreneurs' age may also influence the generation of the general network from which resource-providing persons can be activated.

Competence: This variable measures whether or not people have the knowledge, skill and experience required to start a new business. If people have the required knowledge, skill and experience to start a new business, this variable is coded 1; if not 0. The entrepreneurship literature argues that competence (otherwise called 'human capital') impacts entrepreneurship (Evans and Leighton 1989; Bellu, Davidsson and Goldfarb 1990; Honig 1996; Gimeno, Folta, Cooper and Woo 1997; Reynolds 1997; Bosma, van Praag and de Wit 2000; Davidsson and Honig 2003). The purpose of social networking is to gain access to resources not already held by the entrepreneurs. Thus, competence impacts which resources are needed and, thus, how social networking is practiced.

Alertness: This variable measures whether or not people think that, in the next six months, there will be good opportunities for starting a business in the area where they live. If people think there will be good opportunities for starting a business in the area where they live it is coded 1; if not 0. Discoveries of new opportunities are crucial to the entrepreneurial process (e.g. Stevenson and Jarillo 1990; Venkataraman 1997; Shane and Venkataraman 2000; Eckhardt and Shane 2003; Davidsson 2004). Being alert to opportunities seems to have a positive impact on entrepreneurship (e.g. Kirzner 1997; Ardichvili and Cardozo 2000). Entrepreneurial networking is a way of stimulating alertness. Research has shown that social networks are important, influential factors in opportunity recognition (Hills, Lumpkin and Singh 1997; Ardichvili and Cardozo 2000; de Konig 2000; Singh 2000; Puhakke 2002).

Findings

Bi-variate statistical results

Table 1 shows the impact of having an entrepreneur as a member of a person's social network. Statistical chi-square tests (Knoke, Bohrnstedt and Mee 2002) can be used to reveal

an odds ratio. The following table shows information for the three different stages of the entrepreneurial process in our study. In the discovery stage, people with entrepreneurs in their social network have 3.6 times higher odds of being an entrepreneur than people without entrepreneurs in their social networks. In the start-up stage, people with entrepreneurs in their social network have 3.0 times higher odds of being an entrepreneur. In the young business stage, people with entrepreneurs in their social network have 2.7 times higher odds of being an entrepreneur.

Table 1: Importance of networking in different stages of the entrepreneurial process.

Stages in the entrepreneurial process	Networking³	Not networking³	Odds ratio
Discovery¹	22.9 %	7.6 %	3.6
Start-up²	10.6 %	3.8 %	3.0
Young business²	8.2 %	3.2 %	2.7

Source: GEM population survey of adults in Australia 2000-2005.

Notes:

1. Only data from the years 2002-2005 were available (N=7,650)
2. N=14,205
3. Chi² tests reveal that differences between networking and non-networking adults are significant at the 0.01 level for all three stages of the entrepreneurial process.

For all three stages of the entrepreneurial process, the chi-square analyses were highly significant. The discovery stage result was based on 7,650 respondents from the GEM Australia Adult Population Survey for the years 2002-2005. Prior to 2002, the discovery stage variable was not collected. The start-up stage and the young business stage results were based on 14,205 respondents from the GEM Australia Adult Population Survey for the years 2000-2005.

The empirical results contained in table 1 confirm that individuals with social networks that include entrepreneurs are significantly more likely to be an entrepreneur. Accordingly, the results in table 1 support hypothesis 1. They also provide some support for hypothesis 2 because they indicate that the importance of having entrepreneurs in a social network varies at different stages of the entrepreneurial process.

Multivariate statistical results

However, before any conclusions can be drawn, it is essential to test whether the correlations remain significant when appropriate control variables are put into the equation. In the methodology section it was argued that a range of additional variables might be expected to influence participation in entrepreneurship at different stages of the entrepreneurial process. Logistic regressions (Hosmer and Lemeshow 2000), in table 2, test the relationship between networking and participation in entrepreneurship, controlling for other relevant variables.

Table 2: Logistic regression: Important of networking

	Discovery		Start-up		Young	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Networking	0.81 **	2.25	0.61 **	1.85	0.68 **	1.98
Gender	-0.47 **	0.63	-0.14	0.87	-0.28 *	0.76
Age (reference is young)						
Mid (30-49 years old)	-0.62 **	0.54	-0.11	0.90	0.25	1.28
Old (50- years old)	-1.40 **	0.25	-0.74 **	0.48	-0.49 **	0.61
Competence	0.82 **	2.28	1.47 **	4.33	1.25 **	3.49
Alertness	0.77 **	2.15	0.64 **	1.90	0.40 **	1.50
Constant	-1.67 **	0.19	-3.88 **	0.02	-3.82 **	0.02
	N = 6,315		N = 6,593		N = 6,593	
	R ² = 0.20		R ² = 0.13		R ² = 0.11	

Source: GEM population survey of adults in Australia 2000-2005.

Note:

- * p < 0.05
- ** p < 0.01

Table 2 shows that, of all the variables controlled for in the model, the strongest predictor of entrepreneurship (as defined in this study) is a person’s competence: i.e. the person’s possession of the knowledge, skills and experience required to start a business. Competence is the strongest predictor regardless of stage of the entrepreneurial process. People who think they have the knowledge, skill and experience required to start a business have 2.28 times better odds of being an entrepreneur in the discovery stage ($p < 0.01$), 4.33 better odds in the start-up stage ($p < 0.01$), and 3.49 better odds in the young business stage ($p < 0.01$), compared to people who do not think they have the relevant competence. Being a female reduces the odds of being an entrepreneur in the discovery stage ($p < 0.01$) and in the young business stage ($p < 0.05$). Age seems to have a significant negative impact on entrepreneurship, although the relationship is not linear. And finally, alertness also seems to be a strong predictor of entrepreneurship in all three stages ($p < 0.01$ for all three stages).

Table 2, using a multi-variate perspective, confirms the bi-variate results of table 1. All results from table 2 support the principle contention of the study: networking is a strong predictor of whether people engage in entrepreneurship.

The coefficient B for networking is positive, which shows that having entrepreneurs in the social network increases the probability or the odds of being an entrepreneur. The exponential of the coefficient for networking in the discovery stage is 2.25 ($p < 0.01$). This means that people who have entrepreneurs in their network have 2.25 times better odds of being an entrepreneur in the discovery stage compared to people whose networks do not include entrepreneurs. In the start-up stage, the odds of being an entrepreneur are 1.85 times higher for people who have entrepreneurs in their network compared with people whose networks do not include entrepreneurs ($p < 0.01$). In the young business stage, the odds are 1.98 times higher ($p < 0.01$). These results provide strong support for hypothesis 1.

The multi-variate empirical results also support hypothesis 2. They show that the impact of having entrepreneurs in social networks varies at different stages of the entrepreneurial

process. In the start-up stage, networking with other entrepreneurs increases the odds of being an entrepreneur by 125%, in the start-up stage by 85 %, and in the young business stage by 98 %. Thus, having entrepreneurs in their social network is most important to entrepreneurs in the discovery stage and least important in the start-up stage.

Discussion and Conclusion

The intention of this study was to test empirically the assumption that underpins most research into entrepreneurial networks. The field of entrepreneurial networks, despite rapid growth in importance and legitimacy (Borgatti and Foster 2003), has hitherto neglected formally test the twin assumptions that social networks between entrepreneurs and non-entrepreneurs differ, and that social networks among entrepreneurs differ at different stages of the entrepreneurial process.

The results provided in this study are based on solid empirical data drawn from a representative sample of Australians, where some are classified as entrepreneurs and some as non-entrepreneurs. The people who were non-entrepreneurs constituted a control group. The study showed, with statistical significance, that structural diversity (in social networks) differs among entrepreneurs and non-entrepreneurs and that it changes during the entrepreneurial process.

To entrepreneurs in different stages of the entrepreneurial process, structural diversity is valuable as it provides resources vital to the entrepreneurial process (e.g. Woodward 1988; Renzulli et al. 2000; Singh 2000). The empirical results achieved in this study support existing knowledge and arguments about the manner in which structural diversity evolves during the entrepreneurial process (e.g. Woodward 1988; Klyver 2004a; Greve 1995). Structural diversity – measured in this study as knowing people who have started a business within the last two years – is very important to people searching for opportunities in the discovery stage (Ardichvili and Cardozo 2000; Singh 2000; Puhakka 2002; Davidsson and Honig 2003; Klyver 2004b; Klyver 2006a; Evald et al. 2006). It is less important in the start-up stage where entrepreneurs prefer to rely on denser networks, including a higher proportion of family and social ties (Larson and Starr 1993; Brüderl and Preisendörfer 1998; Greve and Salaff 2003; Klyver 2004c; Klyver and Schøtt 2004; Anderson et al. 2005; Neergaard et al. 2005; Evald et al. 2006). However, as entrepreneurs move into the young business stage, structural diversity again increases in importance (e.g. Larson and Starr 1993; Greve 1995; Havnes and Senneseth 2001; Hite and Hesterly 2001; Klyver 2004a). Thus, this study takes its importance from its strong confirmatory support for the two fundamental assumptions upon which entrepreneurial network research is based.

However, for the purpose of establishing a generic and universal foundation for entrepreneurial network research, the study suffers from two principal limitations. First, the relational dimension and cognitive dimension of social networks are not elaborated in this study. Only one variable attached to the structural dimension was investigated. Social networks involve much more than just the structural dimension and much more than just about knowing people who have started a business within the last two years. Second, it could be argued that the study possesses a cultural bias (Johannisson and Mønsted 1997; Dodd and Patra 2002; Dodd et al. 2002; Greve and Salaff 2003) because it only analysed *Australian* data.

Thus, the effort to support the foundational assumptions of the research field focused on entrepreneurial networks is not complete. As well as continuing to study the structural dimension in greater depth, future research must look to challenging the foundational assumptions of the other dimensions of social networks: the relational and the cognitive. Finally, future research also needs to address the key issue of the proportional importance of culture as a driving factor. Are entrepreneurial networks totally culturally determined or are there some transcendent, universal drivers of entrepreneurial networking that work – perhaps in different proportions – in all cultures, nations and circumstances?

References

- Aldrich, H. E., Elam A. B. and Reese P. R., (1997), “Strong ties, weak ties, and strangers - Do women owners differ from men in their use of networking to obtain assistance?” In Birley, S. and MacMillan, I. C. (eds). *Entrepreneurship in a global context*. Routledge: London, pp 1-25.
- Aldrich, H., Reese, P. R. and Dubini P., (1989), “Women on the verge of a breakthrough: Networking between entrepreneurs in the United States and Italy”, *Entrepreneurship and Regional Development*, 1, pp. 339-356.
- Aldrich, H. E. and Zimmer C., (1986), “Entrepreneurship through social networks” In Sexton, D. L. and Smilor, R. W (ed). *The art and science of entrepreneurship*. Ballinger: New York, pp 3-23.
- Anderson, A. R., Jack S. L. and Dodd S. D., (2005), “The role of family members in entrepreneurial networks: Beyond the boundaries of the family firm”, *Family Business Review*, 18(2), pp 135- 154.
- Araujo, L. and Easton G., (1996), “Networks in socioeconomics systems” In Iacobucci, D. (eds). *Networks in Marketing*. SAGE Publications, pp 63-107.
- Ardichvili, A. and Cardozo R., (2000), “A model of the entrepreneurial opportunity recognition process”, *Journal of Enterprising Culture*, 8(2), pp 103-109.
- Arenius, P. and Kovalainen A., (2006), “Similarities and differences across the factors associated with women’s self-employment preference in the Nordic countries”, *International Small Business Journal*, 24(1), pp 31-59.
- Arenius, P. and Minniti, M., (2005), “Perceptual variables and nascent entrepreneurship”, *Small Business Economics*, 24(3), pp 233-247
- Batjargal, B., (2006), “The dynamics of entrepreneurs’ networks in a transitioning economy: the case of Russia”, *Entrepreneurship and Regional Development*, 18(4), pp 305-320.
- Bellu, R., Davidsson, P. and Goldfarb, C., (1990), “Toward a theory of entrepreneurial behavior: empirical evidence from Israel, Italy, and Sweden”, *Entrepreneurship and Regional Development*, 2(2), pp 195-209
- Borgatti, S. P. and Foster P. C., (2003), “The network paradigm in organizational research: A review and typology”, *Journal of Management*, 29(6), pp 991-1013.

- Bosma, N., M. van Praag M. and de Wit G., (2000), "Determinants of successful entrepreneurship", *Scientific Analysis of Entrepreneurship and SMEs*.
- Brockhaus, R. H., (1980), "Risk taking propensity of entrepreneurs", *Academy of Management Journal*, 23(3), pp 509-520.
- Brockhaus, R. H., (1982), "The psychology of the entrepreneur" In C. A. Kent, Sexton D. L. and Vesper K. H. (ed). *Encyclopedia of entrepreneurship*. Prentice Hall: New Jersey, pp 39-57.
- Brockhaus, R. H. and Horwitz, P. S., (1986), "The psychology of the entrepreneur". In Sexton, D. L. and Smilor, R. W. (eds). *The art and science of entrepreneurship*. Ballinger: Cambridge, pp 25-48
- Brüderl, J. and Preisendörfer, P., (1998), "Network support and the success of newly founded businesses", *Small Business Economics*, 10(3), pp 213-225.
- Burt, R. S. (1992), *Structural holes - The social structure of competition*, Harvard University Press: London
- Burt, R. S., (1997), "The contingent value of social capital", *Administrative Science Quarterly*, 42(2), pp 339-365.
- Bygrave, W. D., Hay M. and Reynolds P. D., (2003), "Executive forum: a study of informal investing in 29 nations composing the Global Entrepreneurship Monitor", *Venture Capital*, 5(2), pp 101-116.
- Carter, N., Brush C. G., Greene P. G., Gatewood E. and Hart M. H., (2003), "Women entrepreneurs who break through to equity financing: the influence of human, social and financial capital", *Venture Capital*, 5(1), pp 1-28.
- Cromie, S. and Birley S., (1992), "Networking by female business owners in Northern Ireland", *Journal of Business Venturing*, 7(3), pp 237-251.
- Cummings, J. H., (2004), "Work groups, structural diversity, and knowledge sharing in a global organization", *Management Science*, 50(3), pp 352-364.
- Davidsson, P. (2004), *Researching Entrepreneurship*. Springer: New York.
- Davidsson, P. and Honig B., (2003), "The role of social and human capital among nascent entrepreneurs", *Journal of Business Venturing*, 18(3), pp 301-331.
- De Clercq, D. and Arenius P., (2006), "The role of knowledge in business start-up activities", *International Small Business Journal*, 24(4), pp 339-358.
- de Konig, A., (2000), "Opportunity formation from a socio-cognitive perspective". In Hills, G. E. and Singh R. P. (ed). *Research at the marketing/entrepreneurship interface*. University of Illinois at Chicago: Chicago, pp 17-33.

Dodd, S. D. and Patra E., (2002), "National differences in entrepreneurial networking", *Entrepreneurship and Regional Development*, 14(2), pp 117-134.

Dodd, S. D., Jack S. and Anderson A. R., (2002), "Scottish entrepreneurial networks in the international context", *International Small Business Journal*, 20(2), pp 213-219.

Eckhardt, J. T. and Shane S., (2003), "Opportunities and entrepreneurship", *Journal of Management*, 29(3), pp 333-349.

Elfring, T. and Hulsink W., (2001), "Networks in entrepreneurship: The case of high-technology firms", *Small Business Economics*, 21(4), pp 409-422.

Evald, M.R., Klyver, K. and Svendsen S. G., (2006), "The changing importance of the strength of ties throughout the entrepreneurial process", *Journal of Enterprising Culture* 14(1), pp 1-26.

Evans, D. and Leighton L., (1989), "Some empirical aspects of entrepreneurship", *American Economic Review*, 79, pp 519-535.

Foss, L. (1994), *Entrepreneurship: The impact of human capital, a social network and business resources on start-up*. Doctoral thesis. The Norwegian School of Economics and Business Administration: Bergen.

Gartner, W. B., (1993), "Words lead to deeds: Towards an organizational emergence vocabulary", *Journal of Business Venturing*, 8, pp 231-239.

Granovetter, M. S., (1992), "Problems of explanation in economic sociology" In Nohria, N. and Eccles, R. G. (ed). *Networks and organizations: Structure, form and action*. Harvard Business School Press: Boston, pp 25-56.

Greve, A., (1995), "Networks and entrepreneurship - An analysis of social relations, occupational background, and use of contacts during the establishment process", *Scandinavian Journal of Management*, 11(1), pp 1-24.

Greve, A. and Salaff J. W., (2003), "Social networks and entrepreneurship", *Entrepreneurship Theory and Practice*, 28(4), pp 1-22.

Gimeno, J., Folta T. B., Cooper A. C. and Woo C. Y., (1997), "Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms", *Administrative Science Quarterly*, 42(4), pp 750-783.

Havnes, P. A. and Senneseth, K., (2001), "A panel study of firm growth among SMEs in networks", *Small Business Economics*, 16, pp 293-302.

Hansen, E. L., (1995), "Entrepreneurial networks and new organizational growth", *Entrepreneurship Theory and Practice*, 19(4), pp 7-19.

Hills, G. E., Lumpkin G. T. and Singh R. P., (1997), "Opportunity recognition: Perceptions and behaviors of entrepreneurs", Entrepreneurship Research Conference, Babson College.

- Hindle, K., (2006), "A measurement framework for international entrepreneurship policy research: from impossible index to malleable matrix", *International Journal of Entrepreneurship and Small Business*, 3(2), pp139-182
- Hindle, K. and O'Connor A., (2005), "Westpac GEM Australia – A study of Australian entrepreneurship in 2004", Australian Graduate School of Entrepreneurship Report Series, vol 2, no. 1, Swinburne University of Technology, Melbourne
- Hindle, K. and Klyver, K., (2007), "Exploring the relationship between media coverage and participation in entrepreneurship: initial global evidence and research implications", *International Entrepreneurship and Management Journal*, 3(2), pp 217-242.
- Hite, J. M. and Hesterly W. S., (2001), "The evolution of firm networks: From emergence to early growth of the firm", *Strategic Management Journal*, 22(3), pp 275-286.
- Hoang, H. and Antoncic B., (2003), "Network-based research in entrepreneurship - A critical review", *Journal of Business Venturing*, 18(2), pp 165-187.
- Honig, B., (1996), "Education and self employment in Jamaica", *Comparative Education Review*, 40(2), pp 177-193
- Hosmer, D. W. and Lemeshow, S. (2000), *Applied logistic regression*, Wiley: New York
- Jenssen, J. I. (1999), *Entrepreneurial networks - A study of the impact of social networks and resource access on start-up on new organizations*, Norwegian School of Economics and Business: Kristiansand.
- Jenssen, J. I., (2001), "Social networks, resources and entrepreneurship", *International Journal of Entrepreneurship and Innovation*, 2(2), pp 103-109.
- Jenssen, J. I. and Greve A., (2002), "Does the degree of redundancy in social networks influence the success of business start-ups?", *International Journal of Entrepreneurial Behavior and Research*, 8(5), pp 254-267.
- Jenssen, J. I. and Koenig H. F., (2002), "The effect of social networks on resource access and business start-ups", *European Planning Studies*, 10(8), pp 1039-1046.
- Johannisson, B. (1996). The dynamics of entrepreneurship networks. In P. D. Reynold et al. (Eds.), *Frontiers of Entrepreneurship Research*: Center for Entrepreneurial Studies, Babson College.
- Johannisson, B. and Mønsted M., (1997), "Contextualizing entrepreneurial networking - The case of Scandinavia", *International Studies of Management and Organization*, 27(3), pp 109-136.
- Kirzner, I. M., (1997), "Entrepreneurial discovery and the competitive market process: An Austrian approach", *Journal of Economic Literature*, 35(1), pp 60-85.

Klyver, K., (2004a), "Udvikling i iværksætteres personlige netværk" (Development in entrepreneurs' personal networks), *Ledelse and Erhvervsøkonomi (Management and Business Economics)*, 68(4), pp 255-264.

Klyver, K., (2004b), "Firm emergence and social network development", paper presented at RENT XVIII, Copenhagen, 24th-26th November.

Klyver, K., (2004c), "Med hjælp fra familien – familiens rolle for iværksætterskab" (With help from the family – the role of family in entrepreneurship), In Bager, T., Svendsen, S. G., Tøltild, L. (eds) "*CESFOs Yearbook 2003/2004 – growth theme*", pp 59-64.

Klyver, K., (2006a), "Action Focus: Using social networks – a guide for entrepreneurs." Australian Graduate School Of Entrepreneurship Research Report Series, vol. 3, no. 7. Swinburne University of Technology: Melbourne.

Klyver, K., (2006b), "Entrepreneurship and social network development", paper presented at Australian and New Zealand Academy of Management 2006 Conference, Rockhampton, Australia.

Klyver, K. and Schøtt, T., (2004), "Entrepreneurs' social networks – encouragement or criticism?", paper presented at 24th Babson Kaufman Entrepreneurship Research Conference, Glasgow, 2-5 June 2004.

Knoke, D., Bohrnstedt, G. W. and Mee, A. P. (2002), *Statistics for social data analysis*, F. E. Peacock Publishers: Itasca, Illinois.

Liao, J. and Welsch H., (2005), "Roles of social capital in venture creation: Key dimensions and research implications", *Journal of Small Business Management*, 43(4), pp 345-362

Larson, A. and Starr J. A., (1993), "A network model of organization formation", *Entrepreneurship Theory and Practice*, 17(2), pp 5-15.

Manev, I. M., Gyoshev B. S. and Manolova T. S., (2005), "The role of human and social capital and entrepreneurial orientation for small business performance in a transitional economy", *International Journal of Entrepreneurship and Innovation Management*, 5(3/4), pp 298-318.

Minniti, M., Bygrave W. D. and Autio E. (2006), *Global Entrepreneurship Monitor: 2005 Executive report*, Babson College and London Business School.

Morales-Gualdrón, S. T. and Roig S., (2005), "The new venture decision: An analysis based on the GEM project database", *International Entrepreneurship and Management Journal*, 1, pp 479-499.

Nahapiet, J. and Ghoshal S., (1998), "Social capital, intellectual capital, and the organizational advantage", *Academy of Management Review*, 23(2), pp 242-266.

Neergaard, H., (2005), "Networking activities in technology-based entrepreneurial teams", *International Small Business Journal*, 23(3), pp 257-278.

Neergaard, H. and Madsen H., (2004), "Knowledge intensive entrepreneurship in a social capital perspective", *Journal of Enterprising Culture*, 12(2), pp 105-125.

Neergaard, H., Shaw E. and Carter S., (2005), "The impact of gender, social capital and networks on business ownership - a research agenda", *International Journal of Entrepreneurial Behaviour and Research*, 11(5), pp 338-357.

O'Donnell, A., Gilmore A., Cummins D. and Carson D., (2001), "The network construct in entrepreneurship research: A review and critique", *Management Decision*, 39(9), pp 749-760.

Perren, L., (2002), "The entrepreneurial process of network development in small biotechnology firms: the case of Destiny Pharma Ltd", *International Journal of Entrepreneurship and Innovation Management*, 2(4/5), pp 390-405.

Puhakka, V. (2002), *Entrepreneurial business opportunity recognition - Relationships between intellectual and social capital, environmental dynamism, opportunity recognition behaviour, and performance*, Acta Wasaensia: Vaasa

Renzulli, L. A., Aldrich H. E. and Moody J., (2000), "Family matters: Gender, networks, and entrepreneurial outcomes", *Social Forces*, 79(2), pp 523-546.

Reynolds, P. (1997), "Who starts firms? Preliminary explorations of firms in gestation", *Small Business Economics*, 9(5), pp 449-462.

Reynolds, P. D., Bosma, N., Autio, E., Hunt, S., Bono, N. D., Servais, I., Lopez-Garcia, P. and Chin, N. (2005) 'Global Entrepreneurship Monitor: Data collection design and implementation 1998-2003', *Small Business Economics*, Vol. 24, No. 3, pp 205-231.

Reynolds, P. D., Bygrave W. D. and Autio E. (2004), *GEM 2003 Global Report*, Ewing Marion Kauffman Foundation: Kansas City, Missouri.

Ripolles, M. and Blesa A., (2005), "Personal networks as fosterers of entrepreneurial orientation in new ventures", *International Journal of Entrepreneurship and Innovation*, 6(4), pp 239-248.

Samuelsson, M., (2001), "Modelling the nascent venture opportunity exploitation process across time", Entrepreneurial Research Conference, Jönköping, Arthur M. Black Center for Entrepreneurship.

Shane, S. and Venkataraman S., (2000), "The promise of entrepreneurship as a field of research", *Academy of Management Review*, 25(1), pp 217-226.

Singh, R. P. (2000), *Entrepreneurial opportunity recognition through social networks*, Garland Publishing, Inc: London.

Stevenson, H. H. and Jarillo J. C., (1990), "A paradigm of entrepreneurship: Entrepreneurial management", *Strategic Management Journal*, 11(5), pp 17-27.

Venkataraman, S., (1997), "The distinctive domain of entrepreneurship research: An editor's perspective" In Katz, J. A. and Brockhaus, R. H. (ed). *Advances in entrepreneurship, firm emergence, and growth*. JAI Press: Greenwich, CT, pp 119-138.

Weick, K. (1995), *Sensemaking in organizations*, SAGE: Thousand Oaks.

Weiler, S. and Bernasek A., (2001), "Dodging the glass ceiling? Networks and the new wave of women entrepreneurs", the *Social Science Journal*, 38(1), pp 85-103.

Woodward, W. J. (1988), *A social network theory of entrepreneurship: An empirical study*, UMI Dissertation Services: Ann Arbor, Michigan.

Copyright of Small Enterprise Research is the property of Small Enterprise Association of Australia & New Zealand and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.