ENTREPRENEURIAL EMBEDDEDNESS AND INNOVATIVENESS IN THE START-UP PROCESS

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ABSTRACT
Using data collected in 45 countries over three years (2002-2004), this study investigates the influence of entrepreneurial embeddedness on innovativeness as nascent entrepreneurs (N=7,067) are in the process of starting new businesses. Previous studies have investigated the effect of entrepreneurial embeddedness on the likelihood that individuals choose to start a business rather than pursue other vocational opportunities. The current study expands this focus, from looking at the vocational decision, to how entrepreneurial embeddedness influences the level of innovativeness once individuals have decided to start a business. In so doing, this study makes an original contribution. The results indicate that knowing someone who has started a business within the last two years (entrepreneurial embeddedness), across nations worldwide, has a significant impact on level of innovativeness in the start-up process. Specifically, it was found that entrepreneurial embeddedness has a positive impact on newness to customers, newness of technology, level of export, and growth. Thus, if nascent entrepreneurs are embedded in an entrepreneurial network (know other entrepreneurs who recently started a business) it increases the likelihood that they expect to launch a product that is new to customers, that they expect to use new technology, that they expect to export, and that they expect growth.

INTRODUCTION
It comes as no surprise that individuals who find themselves embedded in entrepreneurial networks are more likely to become entrepreneurs (Davidsson & Honig 2003). While this exposure may influence the vocational decision to become an entrepreneur, research has yet to establish whether being embedded in entrepreneurial networks also leads to an increase in entrepreneurs’ level of innovativeness. Establishing whether such a link exists is important because past research has shown that entrepreneurs’ or firms’ innovativeness positively influence performance.

Accordingly, we expand upon the focus of inquiry in past studies, i.e. the effect of entrepreneurial embeddedness on the likelihood that individuals choose to start a business by investigating how entrepreneurial embeddedness influences the level of innovativeness once individuals have decided to start a business.

We submit having access to an entrepreneurial network will, along with making individuals more prone to engage in entrepreneurship, provide them with access to “non-redundant” information and resources that will better enable them to innovate through improved process development, research, product design and promotion. Thus, drawing on the resource perspective developed by Wernerfelt (1984), we argue that entrepreneurs are more prone to act innovative if they have access to non-redundant information through contacts with other entrepreneurs. In addition, findings from psychology, sociology and economics provide evidence that being embedded in entrepreneurial networks enhances entrepreneurial confidence and reduces ambiguity (Arenius & Minniti 2004). Arguably, reducing ambiguity and boosting the confidence of entrepreneurs should limit “inaction” and free up human capital resources which can instead be directed towards developing the business and innovation.
In support of this claim previous research gives some clues about the types of "non-redundant" information and access one can expect from a network of entrepreneurs. In the interface between marketing and entrepreneurship, research has established that networking increases entrepreneurs’ marketing effectiveness (Shaw 1999; Shaw 1998; Hill & McGowan 1997). Conclusions drawn from the Swedish Uppsala School and the Born Global School identify networks and networking as essential to entrepreneurs’ and firms’ internationalization (Johanson & Vahlne 1990; Coiello & Munro 1995; Oviatt & McDougall 1994; Gilmore et al. 2001). Findings from studies on entrepreneurial networks reveal that networks and networking facilitate firm growth (Chaston 2000; Hansen 1995; Lee and Tsang 2001). Finally and perhaps most importantly, access to a network of entrepreneurs positively influences ones ability to recognize opportunities and develop an entrepreneurial orientation (Singh 2000; Hmieleski & Corbett 2006; Ripolles & Blesa 2005).

With improved marketing effectiveness entrepreneurs are in a position to develop products that are customer oriented rather than product oriented and better gauge the market need for their innovation (Hisrich, 1989). Internationalization offers entrepreneurs the ability to arbitrage ideas from foreign markets and grow/expand domestically. An entrepreneurial orientation is often linked with improved firm performance and entails a philosophy that includes being innovative, risk taking, and proactive (Rauch, Wiklund, Lumpkin & Frese 2004). Thus, we submit that entrepreneurs who are embedded in entrepreneurial networks will make use of non-redundant information and influences. As a result, their nascent businesses should be more innovative than those started by entrepreneurs who are less embedded in entrepreneurial networks.

ENTREPRENEURIAL EMBEDDEDNESS AND THE VOCATIONAL DECISION

Both sociologists and entrepreneurship scholars are interested in the effects of social networks on individuals. One area that has occupied sociologist interest for decades is the status gained through membership in a social network (e.g., Granovetter, 1973; Bourdieu, 1983). During this time, three important insights have been gleaned: (a) social networks affect the outcome of instrumental actions, (b) the nature of resources obtained from social networks is affected by the person’s original position, and (c) the nature of resources obtained from social networks is affected by the strength of ties (Lin, 1999). Entrepreneurship scholars for their part have shown that the intention and decision to become an entrepreneur along with opportunity recognition, entrepreneurial orientation and propensity towards growth are all affected by social networks (Klyver et al., 2007).

However, not all social networks are created equally. Entrepreneurial networks seem to have a greater impact on individual entrepreneurial inclinations. For example, if you have close family members in business (Matthews & Moser, 1995; Sanders & Nee, 1996; Davidsson & Honig, 2003; Menzies, Doichon, Gasse & Elgie, 2006) or happen to know personally someone who has started a business (Davidsson & Honig, 2003; Morales-Gualdrón & Roig, 2005; Arenius & Kovalainen, 2006; De Clercq & Arenius, 2006; Menzies et al., 2006; Klyver & Hindle, forthcoming 2007) you are more likely to become an entrepreneur.

In Sweden, people whose parents or close friends and neighbours are in business are more likely to become entrepreneurs (Davidsson and Honig, 2003). In Belgium and Finland, personally knowing someone who has started a business is highly correlated with you also starting a business (De Clercq and Arenius, 2006). In a study using the 2001 GEM database, and a sample drawn from 29 countries, Morales-Gualdrón and Roig (2005) also concluded that personal familiarity with an entrepreneur has a positive impact on the decision to become an entrepreneur. Using a similar sample of women in the Nordic countries, Arenius and Kovalainen (2006) found the same relationship. These findings strongly support the claim that a) businesses are started more often by people who have a personal relationship to entrepreneurs than those who do not, and b) this basic relationship seems to transcend issues related to different cultures and diverse social structures.

Indeed the impact social structure and embeddedness have on participation in entrepreneurship is an important moderator. Despite this, to the best of our knowledge, this relationship has only been investigated in the Klyver et al. (2007) study where Hofstede’s four cultural dimensions and entrepreneurial embeddedness were used to investigate the likelihood of becoming an entrepreneur. In this study it was found that masculine societies and their accompanying entrepreneurial networks were
better at fostering entrepreneurial intent and action in individuals who were part of these networks than in societies with less masculinity. Furthermore, individuals who lived in societies with low power distances were more dependent on personal connections with entrepreneurs when becoming entrepreneurs than their counterparts in high power distance societies. At the very least, these findings highlight the importance of social structures and understanding potential moderating factors.

INNOVATIVENESS AND FIRM PERFORMANCE
For both existing firms and start-up ventures, entrepreneurship carried on in the pursuit of business opportunities spurs business expansion, technological progress, and wealth creation (Lumpkin and Dess 1996). Entrepreneurial activity represents one of the major engines of economic growth, and writers in both the scholarly literature and popular press have argued that entrepreneurship is an essential feature of high-performing firms (Lumpkin and Dess 1996).

The concept of innovativeness
Miller’s (1983) summary of the characteristics of an entrepreneurial firm has commonly been cited in the literature: “An entrepreneurial firm is one that engages in product market innovation, undertakes somewhat risky ventures, and is first to come up with ‘proactive’ innovations, beating competitors to the punch” (p. 771).

Lumpkin & Dess (1996) argued that entrepreneurial orientation (often termed EO) consists of five main factors: autonomy, innovativeness, risk taking, proactiveness and competitive aggressiveness. However, later, based on Miller’s (1983) characteristic of entrepreneurial firms, several researchers have argued that entrepreneurial orientation is a combination of three main factors: innovativeness, proactiveness and risk taking (Wiklund and Shepherd 2005). Conceptually it appears that these three dimensions are closely related. For instance, a new company that comes up with a radically new product based on a technological innovation typically takes a risk, as the demand for the new product is unknown. Given that other firms do not introduce the same new product at the same time, it is also proactive in relation to competitors.

Given the apparent close relationships between these factors, innovativeness has been measured in various ways. This paper aims to demonstrate one way of measuring entrepreneurial innovativeness, and suggests a positive relationship with entrepreneurial embeddedness. As mentioned, previous research has concluded that being embedded in entrepreneurial networks positively influence individuals decisions to become entrepreneurs (Klyver 2007). Likewise, researchers have shown that innovativeness positively influences firm performance (Utsch and Rauch 2000). However, the relationship between being embedded in entrepreneurial networks – and in particular knowing other entrepreneurs – and innovativeness is still under-investigated.

Types of innovations
In Miller’s (1983) characterization of an entrepreneurial firm, product-market innovation seems to take precedence over technological innovation and is in many ways different conceptually. Lumpkin & Dess (1996) argue that even if there are numerous methods by which to classify innovations, the most useful distinction is perhaps between product-market innovation and technological innovation. Technological innovativeness concerns product and process development, engineering, research, and an emphasis on technical expertise and industry knowledge (Lumpkin and Dess 1996). Whereas product-market innovativeness places the emphasis on product design, market research, and advertising and promotion (Miller and Friesen 1978).

Even this broad categorisation may be hard to distinguish because of frequent conceptual overlap and blending between technological innovation and product-market innovation- such as when technologically sophisticated new products are designed to meet specific market demand (Lumpkin and Dess 1996). Thus, a measure of entrepreneurial innovativeness would have to include aspects of both.
In addition to the marketing (product-market) and technological perspective a macro-level and micro-level perspective is useful for identifying innovations (Garcia and Calantone 2002). In an extensive review of technological innovation typology and innovativeness terminology Garcia and Calatone (2002) identified 15 different constructs from previous studies to model product innovation/innovativeness. These 15 constructs were; product innovativeness, radicalness (discontinuous), newness to firm, technical content, newness to market, newness of technology, newness to customer, product uniqueness, product (superiority), synergy (fit), product/market fit, marketing task similarity, product complexity, development complexity and product type. Although these 15 constructs allow us to distinguish between different types of innovativeness we believe any combination is a suitable indication of innovativeness as many of these constructs often correlate.

Measuring entrepreneurial innovativeness

According to Lumpkin & Dess (1996), innovativeness reflects a firm’s tendency to engage and take part in new ideas, novelty, experimentation, and creative processes. These activities may result in the introduction of new products, services or technological processes. However, such outputs are not necessary for the activity or behaviour to be labelled innovative. Innovativeness is normally a term used to describe a degree of innovation and therefore represent a “… basic willingness to depart from existing technologies or practices and venture beyond the current state of art (Lumpkin and Dess 1996: 142). More recently Dess, Lumpkin and McFarlin (2005), defined innovativeness as: ‘A willingness to introduce newness and novelty through experimentation and creative processes aimed at developing new products and services, as well as new processes. Dess, Lumpkin and McFarlin 2005: 148)”

Thus when measuring entrepreneurial innovativeness scales need to include variables that capture the entrepreneur’s introduction of various forms of newness. Garcia and Calatone (2002) also assert that innovativeness is most frequently used as a measure of the ‘degree of newness’ of an innovation. In the following section, variables included in this scale to measure entrepreneurial innovativeness are further discussed in relation to entrepreneurial embeddedness.

ENTREPRENEURIAL EMBEDDEDNESS AND ENTREPRENEURS’ INNOVATIVENESS

The advice and information available through a network of friends, family and acquaintances are some of the most impactful when developing effective entrepreneurial marketing (Shaw 1999). These personal networks have also been credited with contributing to the innovation process in entrepreneurial firms (Shaw 1999). For example, personal networks provide entrepreneurial firms with reliable information about customers and competitors as well as advice about pricing strategies, recruitment, location and distribution (O’Donnell and Cummins 1999; Shaw 1998).

Based on our preceding discussion we believe that variables such as the level of current competition for a new product or how unfamiliar a product appears to customers and whether a product introduces new technology can be used to measure innovativeness. In addition, introducing a product to a new market (i.e. exporting) could be regarded as innovative behaviour. Finally, growth expectations are also included since innovativeness appears to positively influence firm performance and growth. These five variables together cover both the product-market dimension as well as the technological dimension of innovativeness. Furthermore, consistent with Miller’s (1983) and Lumpkin and Dess’ (1996) emphasis on product-market innovation, product-market innovation takes precedence over technological innovation in the information obtained from the five variables.

Level of competition

Miller (1983) wrote “beating the competitors to the punch” is an important characteristic of an entrepreneurial firm. A lack of competitors offering similar products is related to entrepreneurial innovativeness; it is an indication of how new a product appears to be to the market. Arguably, if a product appears new to the market then there should be few if any closely competing products. If networks provide the entrepreneur with information about competitors as suggested by Shaw (1998), it
follows that these networks will also assist the entrepreneur in “beating the competitors to the punch” to use Miller's popular words. Thus, the following hypothesis can be suggested:

**H1:** *Entrepreneurs who are entrepreneurial embedded are more likely to experience low level of competition.*

**Newness to customer**

Embeddedness in an entrepreneurial network means having people around you that have introduced new economic activities; by way of new offers, geographical market expansion, or even by driving the market process through new competition. Importantly, new offers are not limited to products and services; rather, new offers can include new types of bundles or price value relationships. (Davidsson 2004). By having access to entrepreneurs who have already introduced newness to customers, we argue that nascent entrepreneurs can leverage the knowledge they gain from them to introduce not only products that are new to the market, but also products which offer customers new price value relationships and combinations.

Shaw (1999) suggested that personal networks assist firms by providing reliable and valuable customer information. A firm that obtains such reliable information is in a better position to understand the needs of customers. For any information to be valuable it must also be specific. Specific information about customer needs should in turn help nascent entrepreneurs deliver new and perhaps more satisfying product/service offerings that match the wants of customers.

As a result of reliable and valuable customer information we argue that embedded nascent entrepreneurs are in a better position to provide newness to customers than those who are not embedded in entrepreneurial networks. Thus, the following hypothesis can be suggested:

**H2:** *Entrepreneurs who are entrepreneurial embedded are more likely to provide newness to customer.*

**Newness of technology**

When discussing technological innovation, it seems appropriate to draw parallels with high-technology small firms (HTSFs), since developing new technology is their raison d'être. Much of the policy assistance for HTSFs over recent years has been directed at encouraging their research and development (R&D) collaboration through local networking and technology transfer (Oakey 2007).

However, Oakey (2007) indicated in a recent study that much HTSF R&D is highly confidential and that this significantly minimises the likelihood that local management collaboration between co-located firms will improve the performance of R&D projects. In other words, high-technology small firms that do not collaborate through local networks in research and development, might directly jeopardize their own progress.

This suggests that networking (assuming similarities between entrepreneurs and HTSF’s) influences an entrepreneur’s likelihood of making use of new technology. Existing studies also suggest that, because knowledge is becoming more widely distributed, innovation increasingly needs to occur 'at the interstices' of collaborating groups and organisations (Swan and Scarbrough 2005). Thus, the following hypothesis can be suggested:

**H3:** *Entrepreneurs who are entrepreneurial embedded are more likely to make use of new technology.*

**Level of export**

Literature on SMEs’ internationalization is often divided into the ‘Uppsala School’ and the ‘Born Global School’. The Uppsala School operates with a gradual process of commitment in which experienced-based learning is growing out of actions and relations developed in domestic and foreign markets (Johnson & Wikersheim-Paul 1975). On the contrary, the key point in the Born Global School is that firms do not rest on, or learn from, their home market (McDougall, Shane and Oviatt 1994). Instead, a growing number of entrepreneurs are internationally committed from their inception or the very first years of existence.
Although the two schools disagree upon how international commitment emerges, they agree upon the importance of networks. Through networks entrepreneurs gain access to valuable market information outside their home markets — especially weak ties are argued to play an essential role in accessing such information (Sharma & Blomstermo 2003). Thus, relation to other entrepreneurs might increase accessibility to market information concerning foreign markets. This information is not necessarily obtained directly from the entrepreneurs’ own contact to other entrepreneurs, but through the extended networks of these entrepreneurs reaching outside the home market. Thus, the following hypothesis can be suggested:

**H4:** Entrepreneurs who are entrepreneurial embedded are more likely to export a proportion of their sale.

**Growth**

Several studies support the proposition that personal networks enhance newly established firms’ growth prospects (e.g. Hansen 1995; Chaston 2000; Lee & Tsang 2001). In these networks entrepreneurs obtain resources that might be used to solve direct operational problems or they might increase the firm’s legitimacy in the market-place (Ostgaard & Birley 1996). Thus, having access to resources such as advice on operational problems and increased legitimacy in the market-place releases time for other activities, such as compiling growth strategies.

Contact to people who recently started their own business is likely to increase the chance that entrepreneurs have access to both solutions for operational problems or that they could experience higher credibility in the market-place.

While these last two arguments offer explanations for how growth can be more effectively managed and partly financed, we would like to point out here that we expect growth to occur for the same reasons that were mentioned earlier. That is, being embedded in a network helps nascent entrepreneurs develop products that are new to customers, in markets where less competition is present while at the same time being more inclined to export. This last point suggests that growth is perhaps mediated by factors such as newness, competition and export; however only the direct effects of embeddedness on growth are measured here. Thus, the following hypothesis can be suggested:

**H5:** Entrepreneurs who are entrepreneurial embedded are more likely to expect growth.

**METHODOLOGY**

**Data**

The Global Entrepreneurship Monitor (Minniti, Bygrave & Errko, 2006) is an international project that tries to establish the extent to which entrepreneurial activity varies across countries; what makes a country entrepreneurial; and how entrepreneurial activity affects a country’s rate of economic growth and prosperity. The project was launched in 1999 with 10 countries and since then new countries have joined the project each year. The project has generated an extensive database on a wide range of issues and factors germane to entrepreneurship worldwide. Every 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 and attitude towards entrepreneurship.

The cumulative number of GEM respondents in the 45 participating countries for the three years (2002-2004) is 364,843 people of which 13,778 (3.8 %) were classified as entrepreneurs. Of those 13,778 entrepreneurs 7,067 (51.3 %) have answered all questions used in the study in an applicable way. These 7,067 respondents comprise the sample. Some countries participated in each of the three years whereas others only took part for some of the years. A contentious discussion takes 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 (Shane & Venkataraman, 2000). It puts emphasis 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 in a Weickian sense (Davidsson, 2004). For analytical purposes, the study reported in this paper took an emergence perspective, defining entrepreneurs as individuals who are actually involved in starting a business – a business they expect to own at least a part of.

**Variables**

**Dependent variables**

All dependent variables are measures of entrepreneurs’ intentions and expectations. They are not measures of realized innovativeness, but instead measures that indicate entrepreneurs’ expected innovativeness. We deal only with expectations because the entrepreneurs are still in the start-up process and have not realized any activities yet.

*Expected newness to customer:* This scale variable was measure based on the answer to the following question: “Will all, some, or none of your potential customers consider this product or service new and unfamiliar” The answers were coded 1 for “none”, 2 for “some, and 3 for “all”.

*Expected level of competition:* This scale variable was measure based on the answer to the following question: “Right now, are there many, few or no other businesses offering the same product or service to your potential customers” The answers were coded 1 for “many”, 2 for “few, and 3 for “none”.

*Expected use of new technology:* This binary variable was measured based on the answer to the following question: “Have the technologies and procedures required for this product or service been available for less than a year” The answers were coded 1 for “Yes” and 2 for “No”.

*Expected level of export:* This scale variable was measure based on the answer to the following question: “What proportion of your customers will normally live outside your country?” The answers were coded 0 for “none”, 1 for “1-25 %”, 2 for “26-50 %”, 3 for “51-75 %”, 4 for “76-90 %”, and 5 for “91-100 %”.

*Expected growth:* This scale variable was measured based on the answer to the following question: “How many people will be working for this business, not counting the owners but including all exclusive subcontractors, when it is five years old? By exclusive subcontractors, we mean only people for this business, and not working for others as well.” The answers were coded 0 for “none”, 1 for “1-5 employee”, 2 for “6-19 employee” and 3 for “20 employee and above”.

**Independent variables**

*Entrepreneurial embeddedness:* This binary variable is based on the ‘Yes’ (coded 1) or ‘No’ (coded 0) answer to the following question: “Do you personally know someone who started a business in the past two years”.

*Gender:* Gender was coded 1 for males and 2 for females.

*Age:* A respondent’s age was recoded using two indicator variables – one for the age group between 30 and 49 years old and another for the age group at least 50 years old, with a reference group of younger than 30 years old.

*Education:* A respondent’s completion of a higher education was coded 0 for ‘None’, 1 for ‘some secondary’, 2 for ‘secondary degree’, 3 for ‘post secondary’, and 4 for ‘graduate experience’.

*Household income:* A respondent’s household income was coded 1 for ‘lowest 33 % in the country’, 2 for ‘between 34 and 66 % in the country’, and 3 for ‘highest 33 %’.

*Competence:* This binary variable is based on the ‘Yes’ (coded 1) or ‘No’ (coded 0) answer to the following question: ‘Do you have the knowledge, skill and experience required to start a new business’.
Alertness: This binary variable is based on the ‘Yes’ (coded 1) or ‘No’ (coded 0) answer to the following question: ‘Do you think in the next six months there will be good opportunities for starting a business in the area where you live?’.

Statistical techniques
Descriptive statistics were used to summarize the data. In order to test hypotheses 1, 2, 4 and 5 linear regressions were used as the principal technique as the dependent variables were scale variables. In order to test hypothesis 3 logistic regression was used as the dependent variable here was a binary variable.

FINDINGS

Descriptive statistics
Table 1 shows the descriptive statistics. It reveals that the average age in the sample is 37 and that it contains 67 % males. Less than 1 % of the sample of entrepreneurs had no higher education; whereas 54 % have some or a secondary degree, 30 % have post secondary and 15 % have graduate experience. 71 % of the entrepreneurs personally know someone who recently started a business.

Table 1: Descriptive statistics

<table>
<thead>
<tr>
<th></th>
<th>Sample of entrepreneurs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 7,067)</td>
</tr>
<tr>
<td>Mean age</td>
<td>37</td>
</tr>
<tr>
<td>Gender</td>
<td>Male 4,711 (66.7 %)</td>
</tr>
<tr>
<td></td>
<td>Female 2,356 (33.3 %)</td>
</tr>
<tr>
<td>Education</td>
<td>None 14 (0.2 %)</td>
</tr>
<tr>
<td></td>
<td>Some secondary 1,735 (24.6 %)</td>
</tr>
<tr>
<td></td>
<td>Secondary 2,090 (29.6 %)</td>
</tr>
<tr>
<td></td>
<td>Post secondary 2,146 (30.4 %)</td>
</tr>
<tr>
<td></td>
<td>Graduate experience 1,082 (15.3 %)</td>
</tr>
<tr>
<td>Entrepreneurial embeddedness</td>
<td>Yes 5,001 (70.8 %)</td>
</tr>
<tr>
<td></td>
<td>No 2,066 (29.2 %)</td>
</tr>
</tbody>
</table>

Table 2 below shows correlations among the dependent and independent variables. It reveals that all dependent variables are significantly correlated (p<0.01).

Table 2: Correlations

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Expected newness to customers</td>
<td>0.28**</td>
<td>0.14**</td>
<td>0.12**</td>
<td>0.12**</td>
<td>0.04**</td>
<td>-0.01</td>
<td>-0.01</td>
<td></td>
</tr>
<tr>
<td>2. Expected level of competition</td>
<td>0.18**</td>
<td>0.10**</td>
<td>0.09**</td>
<td>-0.01</td>
<td>0.00</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Expected use of new technology</td>
<td>0.09**</td>
<td>0.08**</td>
<td>0.02**</td>
<td>0.00</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Expected level of export</td>
<td>0.18**</td>
<td>0.05**</td>
<td>-0.06**</td>
<td>-0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Expected growth</td>
<td>0.10**</td>
<td>-0.14**</td>
<td>-0.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Entrepreneurial embeddedness</td>
<td></td>
<td>-0.08**</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Gender (female)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.03*</td>
</tr>
</tbody>
</table>
It also reveals that entrepreneurial embeddedness, as expected, is significantly correlated with expected
newness to customers, expected use of new technology, expected level of export and expected level of
growth, whereas no significant correlation was found between entrepreneurial embeddedness and
expected level of competition. All independent variables have correlations among them, which is less
than 0.8, indicating that there is no multicollinearity.

Multivariate analysis
The linear regressions results reported in Table 3, tested hypotheses 1, 2, 4 and 5 after controlling for
gender, age, education, household income, perceived competence and alertness, whereas the logistic
regression results in Table 4 tested hypothesis 3.

Table 3: Linear regressions

<table>
<thead>
<tr>
<th></th>
<th>Model 1 Expected newness to customer</th>
<th>Model 2 Expected level of competition</th>
<th>Model 3 Expected level of export</th>
<th>Model 4 Expected level of growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td></td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Entrepreneurial embeddedness</td>
<td>0.05 **</td>
<td>-0.04</td>
<td>0.15 **</td>
<td>0.14 **</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.17 **</td>
<td>-0.24 **</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid</td>
<td>-0.04 *</td>
<td>0.03</td>
<td>-0.04</td>
<td>-0.09 **</td>
</tr>
<tr>
<td>Old</td>
<td>-0.09 **</td>
<td>0.04</td>
<td>0.04</td>
<td>-0.13 **</td>
</tr>
<tr>
<td>Education</td>
<td>0.03 **</td>
<td>0.06 **</td>
<td>0.06 **</td>
<td>0.02</td>
</tr>
<tr>
<td>Household income</td>
<td>-0.03 **</td>
<td>-0.01</td>
<td>0.04</td>
<td>0.13 **</td>
</tr>
<tr>
<td>Perceived competence</td>
<td>0.05 **</td>
<td>0.07 **</td>
<td>-0.04</td>
<td>0.05</td>
</tr>
<tr>
<td>Alertness</td>
<td>0.05 *</td>
<td>0.06 **</td>
<td>-0.09 **</td>
<td>0.05</td>
</tr>
<tr>
<td>Constant</td>
<td>1.60 **</td>
<td>1.47 **</td>
<td>0.83 **</td>
<td>1.34 **</td>
</tr>
<tr>
<td>N respondents</td>
<td>7,067</td>
<td>7,067</td>
<td>7,067</td>
<td>7,067</td>
</tr>
<tr>
<td>Adjusted R square</td>
<td>0.005</td>
<td>0.009</td>
<td>0.010</td>
<td>0.044</td>
</tr>
</tbody>
</table>

Table 3 indicates that female entrepreneurs within certain dimensions of innovativeness are less likely
to be innovative. Being a female has a significant negative influence on the expected level of export
(p<0.01) and the expected level of growth (p<0.01). However, no significant influence was found
between being a female and expected level of newness to customer and expected level of competition.
Entrepreneurs’ age also seems to influence certain dimensions of their innovativeness. Being older
than 30 has a significant negative influence on both expected level of newness to customer (p<0.05 for
those between 30-49 years old and p<0.01 for those older than 50 years old) and expected level of growth (p<0.01). Education, on the other hand, has a significant positive impact on expected level of newness to customer (p<0.01), expected level of competition (p<0.01) and expected level of export (p<0.01). An entrepreneur’s perception of their own skill and knowledge about the start-up process has, however, only significant positive impact on expected level of competition, whereas the influence on other dimensions of innovativeness were insignificant. Finally, Table 3 shows that alertness has a significant influence on the four tested dimensions in Table 3. It has a positive impact on expected level of newness to customer, expected level of competition and expected level of growth, whereas it has a significant negative influence on expected level of export.

Above the control variables have been discussed. However, our hypotheses concerned whether entrepreneurial embeddedness influences innovativeness. Table 3 reveals that entrepreneurial embeddedness or knowing other entrepreneurs has a significant positive impact on entrepreneurs’ likelihood of providing something new to customers (p<0.01), on their expectations upon having customers outside their home market (p<0.01) and on their expectations of growth (p<0.01). However, Table 3 shows no significant influence from entrepreneurial embeddedness on the level of expected competition. Thus, Table 3 supports hypothesis 1, hypothesis 4 and hypothesis 5, whereas it rejects hypothesis 2.

Table 4: Logistic regression

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Expected use of new technology</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Exp(B)</td>
</tr>
<tr>
<td>Entrepreneurial embeddedness</td>
<td>0.16</td>
<td>1.17</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>0.01</td>
<td>10.2</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid</td>
<td>0.06</td>
<td>1.06</td>
</tr>
<tr>
<td>Old</td>
<td>0.02</td>
<td>1.02</td>
</tr>
<tr>
<td>Education</td>
<td>0.06</td>
<td>1.07</td>
</tr>
<tr>
<td>Household income</td>
<td>0.06</td>
<td>0.94</td>
</tr>
<tr>
<td>Perceived competence</td>
<td>-0.14</td>
<td>0.87</td>
</tr>
<tr>
<td>Alertness</td>
<td>0.07</td>
<td>1.08</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.91</td>
<td>** 0.15</td>
</tr>
<tr>
<td>N respondents</td>
<td>7,067</td>
<td></td>
</tr>
<tr>
<td>Nagelkerke R square</td>
<td>0.003</td>
<td></td>
</tr>
</tbody>
</table>

The logistic regression presented in Table 4 tests hypothesis 3. None of the control variables had a significant impact on the expected use of new technology. Entrepreneurial embeddedness was the only independent variable that significantly impacts the expected use of new technology (p<0.05). Being embedded in a social network that includes people who started a business in the past two years increases the odds of using new technology by 17%. Therefore, hypothesis 3 receives support.

All together, the multivariate analysis of the data results in support of four out of five hypotheses. The analysis shows that individuals embedded in social networks containing other entrepreneurs are more likely to develop expectations about providing customers with something new, they are more likely to expect a higher proportion of their customers outside their home market, they are more likely to expect growth, and they are more likely to use newly introduced technology. Thus, the main argument that entrepreneurial embeddedness has a positive impact on innovativeness seems to hold true.
DISCUSSION AND CONCLUSION

Wrapping up
Entrepreneurship research shows that social networks affect opportunity recognition, entrepreneurial intention, entrepreneurial orientation, the decision to become entrepreneur, and growth. Entrepreneurial network literature argues that entrepreneurs obtain non-redundant resources from their social networks which help them achieve their goals. In this study, we have investigated whether or not entrepreneurs embedded in entrepreneurial networks are more likely to be innovative. Specifically, we investigated whether knowing someone who has recently started a business influenced entrepreneurs’ innovativeness. We investigated five different dimensions of innovativeness that together cover what normally is termed product-market innovation and technological innovation.

Overall, the study supports the argument that entrepreneurs who personally know someone who recently started a business are more likely to be innovative. Entrepreneurs embedded in entrepreneurial networks are more like to develop expectations about providing customers with something new, they are more likely to expect a high proportion of their customer outside their home market, they are more likely to expect growth, and they are more likely to use newly introduced technology. However, they are not more likely to expect low levels of competition.

Practical implications
Thus, in line with previous studies we found that social networks are an important source for resources. Entrepreneurs with efficient social networks have access to valuable resources that might help them to become more innovative during their start-up process. Most likely this will be the case when their networks consist of other innovative entrepreneurs. However, even if the entrepreneurs they know are not innovative, they may obtain essential information on the start-up process in general, and by being informed about the more traditional activities and challenges regarding the start-up process, free resources are released that could be used to develop the business idea and think more innovatively. Thus, the practical advice from this study to entrepreneurs is to be conscious about creating, maintaining and developing social networks. Especially contacts and with people who face similar problems seems to be an efficient way of obtaining valuable resources. These people may be perceived as especially important in order to access information on the start-up process as well as obtaining emotional support. Some obvious places to start include joining the local Rotary Club and perhaps turning to business incubators and universities which offer seminars by entrepreneurs, etc.

To policy makers knowledge about the importance of networking and interaction among entrepreneurs also has meaningful implications, both on the federal level and on the more local agency level. Although network contacts often are more valuable if they are developed without a specific purpose and rely on mutual obligations, it is possible for public agencies to create interactions among entrepreneurs and even initiate events with a pure networking purpose. For example in the city of Jonkoping, Sweden, national, regional and local funding helps their “Science Park” act as a business incubator and meeting place for entrepreneurs. In total, there are over 40 such science parks in Sweden whose main goal is to foster entrepreneurship and job creation through networking entrepreneurs.

Limitations and implications for future research
Strengths of the current study include the use of representative sampling and the inclusion of entrepreneurs from 45 different countries covering both undeveloped and developed countries. Another primary strength of this study was the use of five associated variables of innovativeness covering both what is normally termed product-market innovations and technological innovations.

However, the study is characterized by two major limitations, which are described in detail below. The first limitation is that the study only included one single item measure of social network: entrepreneurial embeddedness (operationalised as ‘personally knowing an entrepreneur’). The extent and nature of the relation between the respondent and the entrepreneur was not assessed (e.g., was the tie weak or strong and what was exchanged between the two?). In addition, there are several other aspects of social network structure which may influence innovativeness, including size, density, and structural holes. In regards to entrepreneurial embeddedness, it may be further useful to examine
whether personally knowing a ‘successful’ entrepreneur versus personally knowing an ‘unsuccessful’ entrepreneur has the same impact on entrepreneurs’ innovativeness.

A second limitation is that (in the absence of a longitudinal design) it is impossible to rule out a reversed causation explanation for some of our findings. For instance, we found that people who reported personally knowing an entrepreneur were more likely to be innovative, with the inference being that entrepreneurial networking increased innovativeness. However, it may be the case that being an innovative entrepreneur simply increased the odds of knowing fellow entrepreneurs. Thus, a clear antecedent variable cannot be identified.

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