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### *Introduction*

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# *Special Issue: Networks, learning and entrepreneurship*

## Introduction

### **Nerys Fuller-Love and Bill O’Gorman**

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One of the most important functions of the entrepreneur is to bring together the resources that are needed to start and grow a business. Another key function is to innovate and bring new or different products and services to the market. Both of these activities require resources in terms of time and money, which are often in short supply in a new business. Family and friends can help up to a point, but the entrepreneur will soon need to expand his or her contacts to include other entrepreneurs in a similar situation. Welter and Kautonen (2005) found that, although social networks could assist during the start-up period, they might limit the growth of the firm if there were an over-reliance on family and friends. Networking with other entrepreneurs enables the development of new ideas, the sharing of problems and mutual learning through sharing experiences.

A network can describe a variety of different relationships, on both personal and business levels. These relationships can be formal or informal, and can range from joint ventures and alliances to looser, more flexible arrangements with a large number of firms. All small firms develop networks with advisers such as solicitors, accountants, suppliers and customers, as well as the community in which they operate. The term ‘networking’ is usually used to describe personal contacts between individuals. This can take many different forms, from online social networking to formal meetings with an organizational structure. The strength of the network depends on the relationships between the members and the extent of their dependence on each other. Networks can be described as a collaborative relationship that firms enter into for strategic reasons (de Wit and Meyer, 1998), and one of the key factors of networking is that it is a flexible form of organization

(Hagedoorn and Schakenraad, 1994). Gulati (1998) defined networks as voluntary arrangements with a number of firms involving exchange, sharing or co-development of products, technologies or services. Jarillo (1988) described networks as a form of organization that helps businesses to benefit from the same comparable advantages as their competitors in the same market.

The theoretical aspects of networking have focused on transaction costs (Williamson, 1975), the power of weak ties (Granovetter, 1973) and the interaction of actors within networks. Gulati (1998) explored the theory that networks are governed by social context and the interaction of the actor in the networks rather than by economic considerations. Johnsen and Johnsen (1999) found that there were three elements to networking: the people (actors), the resources and the activities. The people in the networks will form their own relationships based on various factors, including shared interests, friendship and/or geography. They can also share resources, such as assets and staff, to develop new ideas and market their products and services.

Networks can provide support for new firms and have been shown to help small firms grow (Hite and Hesterley, 2001). Slotte-Kock and Coviello (2010) looked at the changing requirements from networks over time as the business grows from one stage to the next. In the first stage, inception, entrepreneurs will form new ties and relationships. In the second stage, establishment and early growth, ties will be selected for their usefulness. In the third stage, growth and stability, ties will be retained and exploited. It is clear, therefore, that entrepreneurs may require different types of network support as the business grows.

Cooperation can also play an important role in the survival and growth of small firms. If a small firm is facing difficulties, then support and encouragement from other entrepreneurs who have faced similar problems can be invaluable. The benefits of cooperation and networks can bring competitive advantages to small firms by providing access to resources they would not otherwise be able to afford. Networking can also help a small firm to become more efficient and profitable by exchanging ideas and problem solving – this can be an important aspect of networking. However, companies may have different reasons for cooperation that result in different degrees of interdependency. Cooperative behaviour can improve profitability by reducing costs and enabling more efficient management by providing better information. Lorenzoni and Baden-Fuller (1995) found that sharing information was one of the main benefits of a network. Information can be shared in various ways in a network through individual discussions, seminars and joint training sessions, as well as online. Cooperation can also enable firms to enter into strategic behaviour – for example, making it more difficult for new firms to enter their particular market sector (Fuller-Love, 2009).

The perspectives presented in this special issue of the *International Journal of Entrepreneurship and Innovation* illustrate important aspects of entrepreneurial networks. First, the role of networks in supporting entrepreneurs in the innovative and creative process is examined. Second, how networks can develop over time as a group of entrepreneurs support each other in starting a business is considered. Technological changes, virtual networks and network maps of nanotechnology entrepreneurship are also included. Entrepreneurial learning is discussed in relation to developing leadership and management skills. The Case Study paper looks at how innovation can help a family business add value and includes a consideration of the importance of informal networks.

Key themes addressed by the contributors include:

- the role of an open innovation network in fostering innovation and creativity;
- how female entrepreneurs can use virtual networks such as *Facebook* to promote their businesses and network with other entrepreneurs;
- how entrepreneurial networks can change over time and provide support for each other;
- the role of external networks in fostering innovation;
- a comparison of male and female perceptions of business networks;
- action learning to develop leadership skills in entrepreneurs;

- network maps of nanotechnology entrepreneurship; and
- the innovation process in a family business.

## Background

The impetus for this special issue was a conference held on 15 and 16 September 2010 on the theme of Networks, Learning and Entrepreneurship at Aberystwyth University. The aim of the conference was to disseminate knowledge from the Sustainable Learning Networks in Ireland and Wales (SLNIW)<sup>1</sup> project and to invite other international researchers to contribute. The primary objective of the SLNIW project is to help participant entrepreneurs to develop and improve their networking skills, so that they learn from their peers in order to enhance the creative and innovative capacities and capabilities of their businesses.

The conference was attended by academics from all over the world, including Europe, the USA, India and Australia. Some of the papers presented were subsequently selected for publication in this special issue. Although entrepreneurs join networks for a variety of reasons, they may not always appreciate the learning opportunities that networks provide. Entrepreneurs can learn from each other by sharing experiences or asking for help to solve problems or to create new opportunities. The papers in this special issue illustrate different aspects of networks. It is clear that learning from other entrepreneurs and gaining information and knowledge are among the main benefits for network participants. All the papers were subject to peer review by anonymous referees, and we thank those who contributed to the review process and whose comments and suggestions to the authors have significantly added to the content and quality of this issue of *IJEI*.

## Topics covered

Developing innovation and creativity is an important aspect of networking. Munoz and Lu (2011) look at the role of networks in an open innovation centre in Spain and find that trust is essential for the development of new ideas. However, providing support and encouragement is also important. Arenius and Laitinen (2011), in a study in Finland, find that people within a team of entrepreneurs are less likely to network because they already have access to support and encouragement within their team. Jordan and O'Leary (2011) look at the role of networks in fostering product and process innovation in high-technology firms in Ireland. They find that external interaction provides businesses with opportunities to learn about new ideas, but that this effect is not consistent across all external interaction agents.

Technological changes and the increased use of the Internet have led to a huge growth in virtual networks. Some online networks such as *LinkedIn* are specifically targeted at businesses, while others, such as *Facebook*, started as social networking sites. The popularity of *Facebook* has meant that it is increasingly used for business purposes. Constantinidis (2011) examines how female entrepreneurs can use *Facebook* to create networks and attract new customers. The growing participation of women in networks is also discussed in this special issue, reflecting the increasing number of studies in this area. The main benefits of networking for female entrepreneurs are emotional support and improving their management skills, according to Dawson *et al* (2011). Noyes (2011) considers how nanotechnology entrepreneurs may look at different industries in their quest for new markets. Henley and Norbury (2011) look at developing leadership and management skills in entrepreneurial networks. The Case Study contribution, on the growth of the firm Halen Môn, examines how the development of the innovation process, including the use of informal networks, has helped a small family business in North Wales to become a leading worldwide exporter of premium-brand sea salt.

### Role of an open innovation network

Munoz and Lu (2011) look at the formation, structure and internal dynamics of networks in an innovation centre in Spain. Because of shortening product life-cycles and increasing costs of technology development, the role of innovation networks has become increasingly important for the creation of new products and services. Munoz and Lu look at how an open innovation centre can create an environment to facilitate innovation networks, and find that eight dimensions are useful in analysing the effect of networking – embeddedness, social capital, structural holes, diversity, relational capital, politics, trust and proximity.

The Creapolis open innovation centre in Barcelona is based on cross-sectoral participation, with a focus on idea generation and accelerating the innovation process through networking. This centre is seen as an intermediary between an incubator and a science park and as a new way of creating and transferring knowledge (Teirlinck and Spithoven, 2008). The diversity of economic sectors in open innovation centres can lead to more successful knowledge transfer, enhanced innovation and innovation networks (Beaudry and Schiffauerova, 2009).

Creapolis is managed by the Esade Business School. The aim of the open innovation environment is to generate collaborative new ideas that are available for the network participants to exploit. Several firms raised

concerns that the high inflows and outflows of people made it difficult to develop trust, and about the impact of potential opportunistic behaviour regarding intellectual property rights. These problems led to the identification of six paradoxes faced by innovation networks in an open environment. The conclusion is that there may be an overemphasis on the transaction cost approach in analysing the externality of networks, with too little consideration of social context and trust. This paper makes an important contribution to our understanding of the role of an open innovation centre and innovation networks in generating new ideas.

### Network development

In the second paper, Arenius and Laitinen (2011) consider how networks change and develop in their first three years by following a single case firm. The business was established by 10 female entrepreneurs and includes a variety of services, including language and travel consultancy, event management and exhibitions. The business was run as a cooperative, and all the founders were still involved three years later. The 10 entrepreneurs in this study had already formed a network while studying at the same university, and their main motivation for starting a business was the difficulty in finding employment after graduation. The authors collected data on the case study business over two years and used a name and response-generator approach to identify networks. The entrepreneurs were then asked to identify each tie, the topic of discussion, the frequency of interaction and the resources accessed in order to determine the strength and purpose of each.

This business is based on a relatively loose cooperative structure, in that the entrepreneurs work at home or at customers' premises and have a formal meeting once a week. Although the business has grown in terms of sales, the entrepreneurs do not generate sufficient income for all the founders to be employed full-time, and the survival of the firm is uncertain. One of the entrepreneurs, who reported the greatest number of network contacts, was also the prime motivator for the start-up. Two others took paid employment outside the firm to supplement their income and subsequently became less involved in the networks. Over time, the entrepreneurs reported more weak ties, which was to be expected because of the advantages offered by weak ties for meeting resource challenges (Hite and Hesterly, 2001). Strong ties such as family and friends can provide constant support, whereas weak ties such as business contacts can provide new ideas and information (Elfring and Hulsink, 2003).

Arenius and Laitinen found that, in the formation stage, the entrepreneurs did not appreciate that their

networks could be used for the benefit of the other members and that these benefits relied on their willingness to share contacts and information. The study also found that team-based ventures develop smaller networks than individual entrepreneurs because the entrepreneurs in the team provide support for each other, and therefore have less time for external networks. In the early stages, the entrepreneurs used networks to find customers and to access information and advice. However, once the firm was established, these networks became smaller and the focus was on finding new customers. A further finding was that the entrepreneur who was appointed managing director was the most active networker. This paper makes an important contribution to our understanding of how network structure and content change over time and how entrepreneurs use networks to establish and grow a business. It examines, in particular, a team-based approach to entrepreneurial networking and the results show that entrepreneurs will select which ties to retain and which ones to drop over time.

### **Role of external networks in fostering innovation**

Jordan and O'Leary (2011) look at the role of external networks in fostering innovation in high-technology businesses. Following the end of the 'Celtic Tiger' period in the Irish economy, there was an increasing emphasis on innovation as a key source of future competitiveness. The Irish government committed almost €2 billion to research and development, over 80% of which was targeted at higher education institutions. There is strong evidence (Love and Roper, 2001; Freel, 2003; Tödtling, Lehner and Kaufman, 2008) to suggest that external networks play an important part in providing knowledge for innovation. Moulart and Sekia (2003) conducted a review of frameworks of networks for innovation and found that tacit knowledge shared through networks was important for innovation. This paper looks at the role of external contacts such as customers, suppliers and competitors, plus other organizations such as higher education institutions, in fostering the innovation process.

An innovation production function (Acs and Audretsch, 1988) was applied to a sample of 184 Irish high-technology firms. The businesses engaging in product or process innovation had regular contact with external groups such as suppliers and customers. There was infrequent contact with competitors, higher education institutions and innovation support agencies. According to Jordan and O'Leary (2011), the frequency of interaction with suppliers, customers and support agencies had a positive effect on innovation. However,

the surprising result was that interacting with higher education institutions actually reduced the probability of innovation. In addition, Jordan and O'Leary find that both R&D and external networks are important for both product and process innovation in high-technology businesses.

### **Virtual networks**

Constantinidis (2011) addresses the use of an online social network tool, *Facebook*. For the purposes of this paper, 'gender' is seen as 'different from biological sex' and is defined as 'socially constructed sex'. The aim is to investigate the impact of gender on how *Facebook* enables women entrepreneurs to overcome the difficulties they experience in 'real-life' networking. However, the focus is on electronic networking rather than gender.

The results of Constantinidis's study show that women do find it difficult to network with men and to be a woman in a male-dominated group. However, difficulties with networking depend on the 'self-positioning of women in terms of gender'. Some women may adopt masculine characteristics (Lewis, 2006) in order to 'fit in' with male cultures. Constantinidis also finds that women who see themselves as part of a female entrepreneurial group may increase the perceived gender-related difficulties, whereas differentiating themselves from other female entrepreneurs decreases these difficulties. Furthermore, women who perceived themselves as belonging to groups of female entrepreneurs saw *Facebook* as a way of combining networking with family life. Online social networking sites such as *Facebook* can therefore help female entrepreneurs to overcome some of their gender-related difficulties. This paper contributes greatly to the growing literature on social media and in particular the use of social media to develop network links for entrepreneurs.

### **Perceptions of business networks**

As the numbers of female entrepreneurs grow, they are increasingly looking to business networks for external resources to help them grow and develop their businesses. Dawson *et al* (2011) examine entrepreneurs' perceptions of networks and ask whether there are any differences in attitudes between men and women. The benefits of networks include personal support, problem solving and learning from each other (Fuller-Love and Thomas, 2004), and both male and female entrepreneurs join networks for a variety of reasons including access to external resources.

Davis and Aldrich (2000) found that women in particular joined business networks in order to gain access to expert advice and that female networks had

been established in order to provide support and training opportunities and to help women overcome the difficulties they faced in male-dominated networks. Dawson *et al* conducted a questionnaire survey of entrepreneurs in south-east Ireland and west Wales as part of the SLNIW project in order to examine male and female perceptions of business networks. The most popular descriptions of a network were an 'environment where people can learn from each other' and an 'environment that enhances innovation and creativity'. These responses indicate that transferring knowledge and learning from other entrepreneurs' experiences and searching for new ideas are important motivations for joining a network for both men and women.

This study also reports a higher percentage of women than men joining business networks (63.6% and 36.4% respectively). The reasons for the increasing participation of women in networks may be the emotional support they provide to each other (Smeltzer and Fann, 1989). There was no difference between men and women in their perceptions of networks. However, entrepreneurs with an annual turnover of less than £255,000 were more likely to join networks, indicating that those running smaller businesses were more likely to look for external resources to support business development. Women generally perceive the benefits of networks to be higher than their male counterparts. The benefits they rated highest were learning opportunities, support for entrepreneurs, growing their businesses and management skills. Dawson *et al* illustrate the growing recognition of the importance of networks for female entrepreneurs, who tend to view networks and the benefits of networking in more positive terms than male entrepreneurs. This study confirms earlier research (DeWine and Casbolt, 1983), which found that male networks tended to be more informal, while women identified more formal networks as important. This paper makes a significant contribution to our understanding of the increasing importance of networks to female entrepreneurs in particular.

### **Developing leadership and management skills in entrepreneurs**

Henley and Norbury (2011) look at the development of management leadership skills in SMEs. One problem is that the provision is often designed for larger organizations and may not be relevant to the smaller firm. Although there is some debate about the effectiveness of management development for SMEs, there is a general consensus that there is a need to develop leadership and management skills in entrepreneurs (Fuller-Love, 2006). The aim of the LEAD programme is to improve SME

performance by addressing the leadership behaviour of entrepreneurs. Formal learning methods may not be successful for entrepreneurs, and Henley and Norbury focus on action learning supported by peer-to-peer networking. An 'action learning' approach was adopted for self-development and this was found to be effective for SME owner-managers (Stewart, 2009; Leitch *et al*, 2009). The pilot programme revealed significant improvements in business performance in terms of increased turnover, employee productivity and added value (Wren and Jones, 2006).

Most of the participants were from small and micro-enterprises. The selection criteria were that they had been trading for at least two years, had more than four members of staff and were located in the West Wales and the Valleys Convergence Fund area. There was also a requirement for the entrepreneurs to have a positive attitude towards growth and innovation. The results show that the participating SMEs reported an annual increase in turnover of 25%. Henley and Norbury found that the action learning approach was very effective and delivered benefits to the participants.

This paper highlights the importance of induction for participants, as an action learning approach requires a degree of trust. The results of the study are that the action learning approach is effective and can deliver significant benefits for SME owner-managers. In particular, this approach was successful in closing the gap between perceived and actual self-confidence. However, Henley and Norbury point out that this is a relatively expensive approach and there may be a need to identify entrepreneurs with high growth potential in order to spearhead leadership development in SMEs in a peripheral economic region.

### **Network maps of nanotechnology entrepreneurship**

The paper by Noyes (2011) is a thought-provoking study that takes a different approach to nanotechnology entrepreneurship. It is based on the use of network maps of nanotechnology ventures to show the strategic positions they occupy. Previous theory on new industry formation has looked at a single industry (Garud and Van der Ven, 1987). This study examines nanotechnology entrepreneurs and the commercialization of nanotechnology products in different industries, and Noyes suggests that entrepreneurs will explore different industries for new opportunities.

Noyes (2011) examined over 1,000 products launched by more than 500 companies through the use of 'affiliation networks'. This enabled the mapping of company footprints across different industries in order to show patterns of cooperation in two or more industries. The

pattern of network ties is then illustrated in a map of the nanotech ventures and industry participation.

The network participants are divided into 'focused' players serving a single market and 'nexus' players serving multiple industries. The network maps demonstrate that a single-industry approach may not always show the multi-industry strategy adopted by many nanotechnology ventures. According to Noyes, the single-industry approach to analysing networks does not convey the actuality and complexity of how entrepreneurial networks are developed and structured and how they perform. Therefore, a more comprehensive view of industry networks is best achieved through the multi-industry approach. This paper provides an important contribution to the debate on how nanotechnology entrepreneurs develop and grow their businesses.

### Case Study: Halen Môn

The Halen Môn Case Study (Carr and Fuller-Love, 2011) looks at two entrepreneurs, David and Alison Lea-Wilson, and how they developed their company's innovation process, including their involvement with informal networks. Facing bankruptcy in their previous tourism business because of the UK's foot-and-mouth crisis in 2001, they knew they had to be innovative, and so they developed a new product, Anglesey Sea Salt (*Halen Môn* in Welsh). These entrepreneurs are active in developing informal networks with similar businesses in the niche food production industry sector and have developed an international customer base of high-quality businesses. An important aspect of the business is exporting the salt to a number of different countries, and networking enables them to develop overseas markets that they would otherwise find it difficult to access. This Case Study provides an example of an innovative approach to developing and marketing an innovative product and the role that informal networks play in the process.

### Conclusion

The papers in this special issue highlight the importance of networking for entrepreneurial ventures. Entrepreneurs join networks for a variety of reasons and make an investment of their time in the expectation of benefiting from external interaction. Learning from other entrepreneurs, sharing knowledge and exchanging ideas are seen as key benefits of being an active member of a network. Cooperative activities with other entrepreneurs can lead to greater achievements than would be possible for an individual working on his or her own. This process has gone on for centuries, but it is only relatively recently that research has been carried out to see how it works in

practice. The papers in this special issue of *IJEI* focus on networks, learning and entrepreneurship. They contribute to knowledge by providing finer-grained analyses of the broad networking construct in a variety of contemporary areas that offer important insights for academics, entrepreneurs, policy makers and enterprise support agencies engaged in the small business network arena.

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### Note

<sup>1</sup> The Sustainable Learning Networks Ireland Wales (SLNIW) project is part-funded by the European Regional Development Fund (ERDF) through the INTERREG 4A Ireland Wales Programme 2007–2013. The project supports over 100 businesses in Ireland and Wales to learn, share knowledge and develop and grow their businesses through networking.

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