

**THE NETWORKING AND GLOBAL AWARENESS OF YOUNG
TECHNOLOGY-BASED ENTREPRENEURS:
A CASE STUDY OF THE MASTER OF ENTERPRISE (MENT) PROGRAMME OF
THE MANCHESTER SCIENCE ENTERPRISE CENTRE**

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Abstract

This study addresses the networking and global awareness of young technology-based entrepreneurs (YTBE). It is based on six technical entrepreneurs who graduated from the Master of Enterprise (MEnt) programme at Manchester Science Enterprise Centre.

The main purpose of this research was to determine if YTBEs realise the importance of networks to business success and whether they act positively to build them. The second purpose was to see if they consider international opportunities and whether they build skills to sense and act upon them.

The results have policy implications for supporting the development of the high-technology SME sector and providing insights into the internationalisation of high-technology SMEs. The research found that the YTBE from this course, show highly positive perception towards networks. Policy-makers are encouraged to nurture and further develop this type of human-based incubator. The investigation of global awareness of the young entrepreneurs shows less optimistic results. This situation should give cause for concern to both educators and policy makers.

Introduction

Recent research shows that networks and global expansion or internationalisation contribute to the success of small and medium sized enterprises (SMEs), especially for technology-based enterprises (Beibst and Lautenschläger 2004; Jones and Conway 2004). It has also been shown that networks are associated with financial benefit (Baron & Markman 2003). Entrepreneurs of technology-based firms usually have a science or engineering background, and are generally believed to consider the technology paramount in business success (Cooper, 2000). Dealing with science and technology most of their time, they are regarded as poor at networking, if not reluctant to do so.

Hence young technology-based entrepreneurs might be at a disadvantage since networks are generally better developed with age. Conversely, with the growth of international travel by young people, they might be at an advantage in thinking more internationally than their elders.

The questions the research aimed to address were; Are the entrepreneurs who graduate from formal technology entrepreneurship education programmes aware of these key factors and do they try to address them to improve their chance of success?

To answer these questions the paper first addresses the definition of a technology-based entrepreneur in relation to the target group. Some analysis of the concept of networks is presented moving from the general to the specific, i.e. network, social network to social capital. A review of the debate on reasons for thinking and acting globally is given to justify the need for global awareness in YTBEs.

The definition of the technology-based entrepreneur

It is important to be clear about the meaning of the technology-based entrepreneur at the outset. As Cooper commented; “research in the field of technical entrepreneurship is still at a relatively early stage compared with its ‘big brother’ of general entrepreneurship” (2000:226). The majority of technology-based entrepreneurs have science or engineering strengths and the enterprises they start (knowledge-based or technology-based firms); ‘develop products and services arising from advanced technological research or ... base their activities on the application of advanced knowledge’ (Garavan and O’Cinneide 1994:19). As a result, the founder’s knowledge and expertise is usually the basis of his/her firm’s competitive advantages (Cooper 2000).

There is not however a widely accepted definition of the ‘technology-based entrepreneur’. Jones-Evans (1995) held the view that a technology-based entrepreneur is ‘the founder and current owner-manager of a technology-based business, i.e. primarily responsible for its planning and establishment, and currently having some management control within the organization. While Smith (1967, cited in Cooper 2000) presented his view that it was not necessary that the entrepreneur should be involved in the subsequent management after the

setting-up of the new business. This paper supports the first opinion, as the involvement of the entrepreneur in the early life of a leading-edge technology firm has a significant contribution to the firm's growth and development. The technical entrepreneur knows most about the commercialised technology and therefore is capable of providing valuable insights into the business strategies and business decisions, based on a thorough understanding of the technology. A management which excludes the technical entrepreneur runs the risk of mis-positioning the product as well as being unable to foresee trends in the technology.

The technical entrepreneur has a vital influence on the survival of the enterprise, but for most of them the road to business ownership is not 'golden' (Cooper 2000:227). He/she requires a combination of skills and expertise to overcome the challenges. Networking behavior and global awareness are useful tools for the entrepreneur.

Networking

Traditionally, the influence of networking is disregarded as being of great importance for the success of entrepreneurs as they are often portrayed as heroic individuals who value their independence and are reluctant to depend on others. This myth is deconstructed with the development of entrepreneurial theory and it is now accepted that networks and networking are 'important entrepreneurial tools that contribute to the establishment, development and growth of small firms' (Shaw and Conway 2000: 368).

Work has been carried out exploring networks of small-business such as the Silicon Valley cluster in USA (Saxenian 1990) and the Cambridge Biotechnology cluster in UK. It was found that SMEs can enhance their competitiveness via collaborative arrangements within this networking (Shaw and Conway 2000). The network of support organisations and umbrella organisations was commented on as the 'catalyst' for small-firm networking activities, helping to establish, develop and grow SMEs.

Another perspective focuses on the personal contact network of the entrepreneurs. Carson et al. (1995:200) pointed out that this network, the small firm's 'social network', is 'the relationships or alliances which individuals develop, or may seek to develop, between them and others'. The last fifteen years has seen the social network theory becoming a major research interest in the area of entrepreneurship (Hoang and Antoncic, 2003). Literature supports the claim that the social network plays a critical role in the small firms' lifecycle, both in a time- and cost-efficient manner (Johannisson 1998; Chell 2000; Neergaard 2005).

Latest studies move the focus of social network one step further to identify the entrepreneur's 'social capitals' - friends, acquaintances, colleagues and contacts through whom a social actor 'create[s] opportunities to utilise their financial and human capital' (Burt, 2000:282). Myint et al. (2005) offered an insight into the contribution of human elements in shaping the Cambridge incubator into a global high-technology cluster. They argued that it is not the buildings, physical facilities and value-added services in the offices that made the Cambridge incubators a great success but the social capitals accumulated and the networks built

Global awareness

Due to the rapid development of information and communications technologies, the traditional segmentation of large companies competing in international markets and SMEs competing in local and regional markets has been broken. The internet enables SMEs to compete with large companies on the global stage and this dramatic change calls for the global awareness of entrepreneurs in order to take advantage of this opportunity.

Global awareness, not only refers to the awareness that internationalisation is a workable option for the developing firm, but also refers to the awareness of an international focus in the business, thinking globally and acting globally (Beibst and Lautenschläger 2004). Internationalisation is crucial for the survival of high-technology SMEs and research needs to be carried out in order to grasp opportunities, or even to create opportunities that help firms to cross borders. Hence, it is necessary that YTBEs be sufficiently aware of the global opportunities in order to address the challenge and respond appropriately.

Researchers question if the different stages of internationalisation still apply to the new-technology start-ups, or so-called 'born global'-small firms 'spawned' by new technology-based development (Matlay and Mitra 2004). Rosson (2004) argues that the convention that firms expand into foreign markets after home market success does not make sense anymore, especially in such a robust age of information explosion and shrinking of the Earth to a global village.

The severe competition faced in global markets does not allow SMEs the luxury of time to grow from a strong home base (Sawhney and Mandal 2000). Technology-based SMEs are threatened by the rapid obsolescence of the products and technology on which their core competitiveness is based. In an age when the interval of knowledge renewal becomes shorter and shorter and new products emerge ever more rapidly, even a cutting-edge technology may not be able to maintain its advantage for long. As a consequence, the earning opportunities of technology-based SMEs decrease severely with time (Beibst and Lautenschläger 2004). For this reason, those adopting a first mover strategy worldwide gain the time to set up product standards within their market niche, which might create obstacles for the late comers. Research shows that the early entrant tends to enjoy the largest market share while the delay in expansion is costly (Rosson 2004).

New technology based firms tend to have a narrow product scope and a limited home demand; they should therefore position themselves on an international if not global niche from starting up (Litvak 1990). However internationalisation is a double-edge sword which raises many risks for SMEs. The heavy cost of an international operation is an additional burden to an SME's often very limited resources. Operating in an unfamiliar foreign market environment is difficult; different cultural identity may result in low market acceptance. For the majority, internationalisation accelerates and increases the competition with foreign enterprises and brings in competitive challenges and threats sooner than anticipated (Szabó

2002). For this reason, Harper and Prebits (2002) strongly asserted that being passive to change instead of adopting the change is more risky than the change itself.

The impact of networking on internationalisation

Small firms are heavily reliant on networks at the beginning of their internationalisation, especially when selecting foreign markets to target and expand into (Crick and Spence 2005). For the purpose of correctly positioning the product in less familiar overseas markets, stimulating interest, gaining insight into the markets and building good business relationships based on trust and understanding, entrepreneurs must interact with potential business partners, clients, agents, representatives and others to discover the opportunities and introduce the product (Crick and Spence 2005). An entrepreneur having a more extensive network will obtain more opportunities than the one who has a less extensive network. Networks also accelerate internationalisation by complementing resources of other ventures either large or small at different stages in the value chain (Jones 1999).

Background to the study

The above review of the importance of networking and internationalisation on the development of technology-based firms, led us to explore the attitude of the high-technology entrepreneur towards these issues. Are they aware that networks and networking are powerful instruments for growth of the firm besides the competitive advantage based on their advanced technology and do they act positively to nurture their networks? Are they conscious that internationalisation is a do-able option for even small firms and as a consequence are they thinking and acting globally?

In order to examine these issues, research was conducted in the context of Manchester Science Enterprise Centre (MSEC), which offers the postgraduate Master of Enterprise (MEnt) degree programme 'designed to train and motivate, mentor and inspire entrepreneurs' (MSEC 2005). In the first three years of the programme more than a third of the 78 students graduating had set up their own business (Smith 2004). A study of these knowledge-based entrepreneurs is considered useful, they are highly-educated with science and technology backgrounds and they have been on a programme which has developed their entrepreneurial and business skills whilst working on a project idea that has the potential for commercialisation. They are people stimulated by the standard educational route and serve as the entrepreneurial basis for economic regeneration and growth.

Methodology

The research adopted a qualitative case study approach and utilised an in-depth, semi-structured questionnaire completed in a face-to-face interview lasting about one hour. Triangulation was achieved with secondary sources and observation. The subjects were all graduates of the MSEC MEnt programme, selected by purposive sampling (Neuman, 2003). Six individuals were selected, each in a different stage of business. Among them, four have created their technology-based firms but each is at a different stage of his business. Although the other two have not set up their business at present with one pursuing a PhD degree and the other working as a key employee in a technology-based enterprise, both of them expressed their willingness to set up their own businesses in the future.

This study focuses on data collected on networking and global awareness though the questionnaire covered a number of additional aspects such as background, work experience prior to the MEnt, role models, personality, family upbringing, influences and motivation etc.

Interviews were fully transcribed and content analysis performed according to the method of Gillham (2000).

The questionnaire

The questionnaire explored the subject's perception and attitude towards networks and networking's contribution to business success, and then via small-firms network theory, this was compared to the individual's network as well as measuring it according to the morphological and interaction dimension of social networks (Shaw and Conway, 2000). Finally, the interviewer tried to verify the practical effects of networks and networking on the growth of the venture by asking if the interviewee had received any help from his/her network when faced with critical incidents.

Harper and Previts (2002) proposed that a good way to obtain an understanding of interactions between countries, both politically and economically, was exposure to mainstream newspapers and publications. The interview therefore included questions on the reading patterns of the subjects. They were asked what sources they used and what information they were seeking. Subjects were also asked about their plans for international expansion and any strategies developed for this.

Findings

Perception and attitude towards networks

Five of the interviewees agreed that there is strong connection between the network and business growth. It is interesting to note a relationship between the degree of the positive attitude towards network and the scope of networks. Those who reported their belief in the link to be 'very strong' also self-evaluated their networks scope as 'quite large'. The subject who reported his networks as 'small' believed the connection to be 'fairly strong, not very strong'. Networks appear to be valued more by people who have more networks resource.

The interviews highlight that the perceptions of the young entrepreneurs towards networks as an important tool highly influenced the degree of networking, which support the proposition of Burt et al. (1998, Cited by Neergaard 2005).

As regards the purpose of networking, four individuals ranked 'Make contacts that will help me in my career/business' as the primary function of networking, which indicates an intention to develop useful contacts through established connections. A fully-utilised network does not imply only using the existing network, but continuously investing in the network to expand new connections. In this sense, it is a process of constantly creating new networks with the entrepreneur as the hub.

When assessed in terms of time invested in developing new contacts, size of network and time for travelling to meet and develop networks, these YTBES are not the ambitious networkers expected. Only one out of the six cases spent more than five hours a week developing new contacts. Five respondents reported that more than 75% people of their primary network are reachable within one hour's drive by car. Half of these entrepreneurs developed more than 50% of their contacts on their own initiative while the other half was passive and let the other party approach them. Although the majority reported that they perceived the strong relationship between network and the development of the ventures, they did not invest much in network developing. When talking about the contact initiative, the following comment was made:

"Nobody would want to make contact with me because I am quite low down in the hierarchy at the moment I think. So who is going to make contact with me? I am going to have to go out and find them."

Research has tried to link a good performer in creating and maintaining complex networks with whether an individual is introvert or extrovert (Van de Ven et al. 1984). The data showed no clear pattern to link with their network performances.

Results show that five of the interviewees show a tendency to use their primary network actively and spend most of their networking time on this personal network. Three cases

reported they spent most of their time on personal network and the other two on complex network- a combination of both personal network and business network. It shows that personal network is still dominating, facilitated by strong ties supporting Birley et al.(1991:59) who remarked that ‘entrepreneurs, at an early age of enterprise development, rely heavily on an informal network of friends, family members and social contacts from the local neighborhood to gather relevant data. At a later stage, entrepreneurs rely increasingly on professional bankers, accounts, lawyers, suppliers, government agencies etc. to gain access to requisite business information.’

The network of the YTBEs was diverse in its range as four of them reported their networks were a mixture of well acquainted and not-well acquainted members while one stated that members were not well acquainted in her networks. This suggests that they establish separate networks to meet different needs. The more diverse the range of their entrepreneurial network, the more opportunities they have to acquire a variety of information, advice and resources from their social network (Shaw and Conway 2000).

Network in use

When the interviewees were asked to identify the most important business information sources, it was interesting to find they all ranked other business owners as one of three most important information sources. In fact, four of them ranked it as the most important one. Contrary to the study conducted by Chell (2000) on small enterprises in the UK, which revealed that overall 71% of her sample regarded customers as the most important source, only two of the YTBEs mentioned customers in the highest three rankings and neither of them ranked it as the most important one.

The data suggest that YTBEs cooperate in a mutually beneficial way and furthermore, the high ranking also suggests that the links among these YTBEs are very strong, quite distinct from the harsh and cut throat image of business competition.

“If anything comes up that I see will be potential business for somebody I know from MSEC ...use AOL Instant Messenger or MSN Messenger ... I will let them know and they will do the same for me. We do that...”

It is not competition that emerges here but the collaborative advantage of a high technology cluster. It appears that the MEnt is more than a degree. To a certain extent, it is a network with ‘extras’.

The research also suggests that the young entrepreneurs enhance their access to more information from the social capital accumulated both horizontally and vertically from their fellow entrepreneurs and supervisors. The social capital the young entrepreneurs gained from MSEC already show the possibility to be converted into important and tangible benefits with the potential to grow into business opportunity. Recent findings demonstrate that a high level

of social capital which is based on networks, status and direct personal contacts contributes to the success of entrepreneurs by gaining access to potential customers and venture capitalists and others (Baron & Markman 2000; 2003). Thus social capital pulls in the resources needed for the further development of the enterprises.

Last but not least, the results find that all had contacted two or three support organizations in the past three years. This suggests an awareness of these ‘catalyst’ organizations and the active participation in utilising formal, institutional support networks. It is interesting to see that all six case have contacted the Department of Trade and Industry (DTI) and four of them have received DTI related funding or grants. Professional or Trade association were also exploited by four individuals. It might be a trait for technology-based entrepreneurs to maintain their technology edge and update information in their business sectors.

MSEC as a networking platform

Networks are intangible and difficult to demonstrate methodologically (Chell 2000). Yet no one will deny their presence. Just as the proposition by Myint et al.(2005) that the dynamic environments built by entrepreneurs is in fact the real sense of ‘incubator’ and it is this which adds value to a ‘physical incubator’, MSEC presents a similar networking platform for its students, the YTBES.

When asked whether the University/MSEC is a good platform for networking, all interviewees replied without hesitation:

- ‘Definitely’
- ‘Very good’
- ‘Great yes’
- ‘Yes, I think so’
- ‘Yes, definitely’
- ‘Yes, definitely’

It reveals a high degree of approval of the networking function of MSEC. The nuance and context-rich accounts given by the young entrepreneurs may provide better insights:

“It is a good form of networking... in terms of business and getting funding and things like that it is good definitely. And the students, that is one of the most important things because you get all these young up and coming entrepreneurs that you are just mates with so that has got to be good...”

“I think one of the main things is the kind of network that you get from, as you say, from building relationships with people but the other network you get is from doing the course and you get to know a lot of people and there are a lot of resources and networks and that sort of thing...”

Reflection on Networking

The comments above reveal MSEC is not only about physical facilities, but is a technology start-up facilitator, an educator and an encourager of business development in terms of bringing together financial resources, human capital and an information exchange centre. Is it a coincidence that all six cases in this study had approached the DTI regarding grants and support? Or is it because of the extensive information sharing in the Centre's Business Creation Unit, full of like-minded YTBEs. MSEC might also serve as a positive driving force for young entrepreneurs to engage in necessary networking activities which are widely regarded as one of the weakest aspects of young entrepreneurs.

In an entrepreneurial age where people are more important than the business idea itself, networks are intangible assets to an entrepreneur's success. Hence, the continuous nurturing of the networks founded by MEnt students is a crucial way to maintain the success of the dynamic MSEC high-tech cluster, and more importantly, ensure the future success of these YTBEs with the exchange of resources, information and opportunities within these networks.

Global awareness

Czinkota (1991) made the point that the awareness of crucial macro and micro information from around world was essential for firms to maintain a competitive edge in the global market. An analysis of international market failures disclosed that had firms and decision-maker in the firms acquired adequate information first, most errors could have been avoided (Ricks 1999, cited in Czinkota, 2000). An exposure to mainstream newspapers and publication is a good way to obtain an understanding of interactions between countries on both the political and economic fronts.

Although these young entrepreneurs read newspapers (or online news) frequently - five read newspapers everyday - their consciousness to seeking macro and micro information both at home and abroad, is weak. When asked what kind of information they are seeking, only three mentioned that they look at political and financial news in the UK and around the world. Only two browse the Financial Times, which is widely accepted as providing important financial and business information for the success of a business. One however responded:

“(I look for) things that will affect the finances of my business, so changes in government laws or whatever or the investments.”

Keeping a close watch on the frequent changes within the political and business environment at home and abroad, is a way to monitor global trends and as a result, entrepreneurs could respond to the opportunities emerging quickly as well as avoid any risks.

Almost everyone read the Guardian and at least one professional journal or industrial publication related to their areas regularly, which shows a strong motivation to maintain their technological edge and to protect against technology obsolescence.

Global expansion and strategy

All of the five entrepreneurs whose business is currently in operation, reported to have thought of global expansion but none of them possessed strategies to take the idea further. One entrepreneur, whose business was UK-based, disclosed that the reason he had looked at global markets was that it was a part of the business plan to attract government funding. Hence,

‘it wasn’t a business decision in terms of commercial need but rather it allowed access to funding’.

However, one case shows signs of the initial stages of internationalisation:

“We look at the worldwide market as an opportunity for us to either source funding or source academic or technological advice and help or source specific parts...if you don’t know what you are trying to sell inside out then you can’t do the best job...to do that you need to spend a significant amount of time out there (Israel) working with the technology to ensure that you understand it as best as is possible (in order to link up the requirements in UK and that in Israel).”

The company has a local representative in the USA, who has expertise in the field of the company’s business. They also visit international conferences to establish contacts, illustrating how networking facilitates the small firms’ internationalisation.

Reflection on global awareness

A firm’s internationalisation does not happen overnight, it grows from global awareness. Preparations need to be carried out and both financial and human resources need to be in the right place to enable opportunities to be pursued. Therefore, a global perspective should be adopted in the early life of SMEs, especially high-tech small firms.

One might argue that it is too early for the YTBEs to consider their firm’s internationalisation as the oldest among them is no more than two years old. It is not a matter of internationalisation or not, at this stage of the firm’s life, but to try to demonstrate the importance of being aware of the global interactions on the development of technological SMEs.

In order for YTBEs to develop more global awareness they should target international customers and cultivate global networks by attendance at international conferences. They should also develop a habit of exposure to up-to-date international news in the reading sections of key newspapers. It is an efficient way to gain insight into the dynamic economic relationships between countries.

Conclusion and Recommendations

The empirical results have significant policy implications for supporting the development of the high-technology SME sector and providing insights into the internationalisation of high-technology SMEs. The research finds that the YTBES in this study show highly positive perception towards networks. They utilise the social networks established through MSEC; they show advantages of being part of a high-tech cluster and they actively engage in the networks of support organisations.

Networks is not a particularly self-reliable item, that is its development is significantly influenced by a number of factors such as the experience and career background of the entrepreneur and the education level of the entrepreneurs (Shaw and Conway 2000). An individual's 'know-who' is closely associated with who he/she is. Hence, although there is not sufficient evidence to demonstrate that the MEnt course has formed the networking perceptions and behaviours of these entrepreneurs, its influence is undoubted. MSEC is a good network platform to facilitate the development of their business. Policy-makers should be encouraged to nurture and further develop this human-based incubator model.

As for the investigation on the global awareness of the young entrepreneurs, it shows less optimistic results than that on networking. They pay some attention to foreign issues but appear indifferent to the global context. None of them have a strategy for internationalisation.

There are of course limitations in this research and some of the measurements are based on the subjective answers of the interviewees, which might undermine the quality of the evidence. However, this qualitative study has elicited some themes which deserve further investigation and explanation. A study with quantitative methods might demonstrate the extent of these tendencies. Furthermore, a horizontal study comparing this study with data on other entrepreneurship education programmes might yield valuable learning points.

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