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Ann M. Torres & Martin A. Whyte

The study explores the similarities and differences between the large and small firms that make up the Information Technology Association of Galway (ITAG) and the desired and actual benefits obtained from membership of the network. It consists of a web survey to identify the key themes that warranted further investigation through unstructured in-depth interviews. Surprisingly, the dynamic between small and large sized network participants was not strongly evident.

Although there was successful collaboration among ITAG member firms for the purpose of skill development through ITAG's Skillnet initiative, there was little evidence of strategic collaboration on issues such as research and development, marketing strategies and exporting. Indeed, it was expected that multinational companies (MNCs) would provide a gateway for small to medium-sized enterprises (SMEs) to break into new markets. However, the research did not support this proposition. Further studies should focus on the ideal conditions for learning and knowledge processes in alliances with diversely sized members as well as methods for addressing the difficulties in measuring organisational learning outcomes.

Introduction

The information communication and technologies (ICT) sector has become a dominant industrial sector in the Irish economy. Irish ICT exports recorded their highest level in 2001, valued at over €30 billion and accounting for 40 per cent of all exports (OECD, 2002). In 2003, Irish ICT exports dropped to 36.5 per cent of all exports and currently these are estimated to account for 33 per cent of all exports (Cassidy and O'Brien, 2005). Due to the small size of the domestic market, the challenge for indigenous ICT firms is to achieve scale and penetrate export markets. About 70 per cent of indigenous firms have sales under €1 million and just 55 per cent of them are profitable. Failure to engage in strategic alliances to create sales growth and consolidation has been identified as a serious challenge (HotOrigin, 2004).

Organisational networks such as the Information Technology Association of Galway (ITAG) can facilitate such requirements for scale. A decade ago, Coviello and Munro (1995, p. 49) examined entrepreneurial firms in the New Zealand software industry, commenting that 'networks have come under examination as a clearly emerging organizational design appropriate to the global high technology industry which is characterized by high growth, entrepreneurial ventures'. More recently, Schönström (2005) has observed an increased focus on interfirm networks due to faster product innovation processes, which are a result of more intense competition. Coviello (2005, p. 39) observes that 'research on networks has become a topic of interest in disciplines ranging from sociology to marketing, entrepreneurship to international business'.

According to McKeon et al. (2004), foreign MNCs can act as a catalyst to indigenous SMEs engaging in entrepreneurial learning and new business creation. They cite Needham's (1999) finding that six years after Hewlett Packard's Galway plant (formerly known as Digital and subsequently as Compaq) significantly downsized, 10 per cent of those who lost their job had started a new business in the Galway region, albeit not necessarily in the ICT sector. As a network, ITAG encompasses diversely sized organisations and provides fertile ground to explore this area. Bernal et al. (2002, p. 239) state that 'research on internationalisation through networks has tended to focus on the networking process being driven by
the influence and impetus of large manufacturing organizations [despite the importance of] small service and knowledge-based firms to the global economy. This research also addresses this gap.

The ICT Sector in Ireland

The ICT sector is one of the more important industrial sectors to the Irish economy, as 60 per cent of all software sold in Europe originates in Ireland (Enterprise Ireland, 2004). It is estimated the Irish industry encompasses 900 indigenous firms and 400 foreign direct investment firms (HotOrigin, 2004, p. 8). Although indigenous software firms have existed since the 1970s, it was not until 1989 that the Irish government recognised the Irish software industry as a separate sector, primarily due to a campaign led by the Irish Software Association (ISA) (Gallen, 2001). Since then, the Irish software industry has accelerated significantly, developing into a robust, flourishing sector. The so-called 'Celtic Tiger' of the 1990s saw Ireland emerge as 'a hotbed of software development activity and a key node in the global software industry' (Crone, 2002, p. 8). Central to the successful growth of this sector was the participation of venture capitalists and the support of established, successful entrepreneurs in start-ups. The marked downturn that followed the bursting of the 'dotcom bubble' has seen the 'mood in the eBusiness circle [swing] from extreme exuberance to one of extreme caution' (Biswa and Krishnan, 2002, p. 681). However, there are reports that ICT spending, merger and acquisition activity and venture capital activity are on the increase (HotOrigin, 2004).

Another key factor in the development of the Irish ICT sector is foreign direct investment (FDI) by high-technology multinationals. Ireland's economic turnaround is attributed to the influx of FDI in the sector, starting in the mid-1980s and continuing through the present day (Gray 1997; Kears and Ruane, 2001; Crone, 2003). Although there is no denying that the presence of multinational software firms has benefited the Irish economy, there is less evidence of interaction between multinational subsidiaries and smaller indigenous firms. Gallen (2001, p. 2) observed that 'few Irish software firms [were] started by ex-multinational employees, nor has there been [an extensive] history of [indigenous firms] subcontracting with multinationals'. Hence, the multinational and indigenous software sectors have developed in parallel with little interaction between the two sectors (Gallen, 2001). The indigenous software sector in Ireland in the 1990s was characterised by a particularly high start-up rate as well as a low closure rate among established software companies' (Crone, 2002, p. 8), which resulted in an indigenous industry characterised by either very large or very small firms with few medium-sized firms. HotOrigin (2004) found 70 per cent of indigenous firms had sales under €1 million with only 55 per cent of firms being profitable, and concluded that there is a need for consolidation in the Irish marketplace. In support of HotOrigin's (2004) findings, the ISA states that only 3 per cent of Irish software firms in Ireland have a turnover of greater than €2 million (Clark, 2003).

Information Technology Association of Galway (ITAG)

ITAG was established in 2000 and is a network of 40 start-up and multinational enterprises which provide software, telecommunications, computer, internet, online and systems integration products to a national and international client base. ITAG is a young association network, established for the purpose of regulatory lobbying, self-regulation, promoting professional education and stimulating a specialist labour supply. Given that it has diversely sized firms as members, it is an example of what Echeverri-Carroll et al. (1998) call an 'asymmetric network'. Its mission is to advance ICT networking and business opportunities in Galway by fostering strategic business partnerships.

According to Johannisson (1998), a major characteristic of entrepreneurial networks is the 'spatial dimension'. The local and regional socioeconomic context 'is both a major determinant and a major outcome of entrepreneurial activity' (Johannisson, 1998, p. 300). Although Galway, located on the western coast of Ireland, is regarded as an attractive place to start and grow a business, only 9 per cent of indigenous Irish ICT companies (that is, about 80 firms) have their head offices located in the region (HotOrigin, 2004). According to O'Donnell et al. (2001, p. 753), 'The network approach has become a popular means by which to describe the creation of small, entrepreneurial firms'. Examining a network such as ITAG affords the opportunity to continue this investigation and
consider the extent to which networks contribute to entrepreneurial activities. Among the firms in ITAG there is an opportunity to find a mix of firms with respect to size, length of establishment, intensity of technological initiatives, and degree of entrepreneurial orientation. Even though ITAG is entrepreneurial in its mission as a means to attract investment and economic development, not all of its members are entrepreneurial. Nevertheless, it may be possible to observe whether network participation influences entrepreneurial activity among ITAG members.

**Heracleous and Murray’s Taxonomy of Networks**

The management and strategy literature describes networks as a type of collaboration where organisations with a common interest work together to exchange ideas, knowledge and/or technology in some areas (Dean et al., 1997), but still maintain their autonomy in other areas (Kosa and Lewin, 2000). Resource constraints (Aldrich and Pfeffer, 1976; Pfeffer and Salancik, 1978), the desire for legitimacy (DiMaggio, 1992) and the need to overcome the liability of newness (Stinchcombe, 1965) are identified as key factors in explaining the rise of networks. Networks also have the possibility to provide access to less tangible commodities such as power, influence, credibility, favours and opportunities (Giuffre, 1999).

Heracleous and Murray (2001) propose a taxonomy of five network types (see Figure 1) based on the dimensions of interdependence and durability to classify networks and to explore the potential motivations for and consequences of network participation. The dimension of interdependence refers to the extent to which firms in the network use each other’s outputs and resources in their own operations. Durability refers to the extent to which networks persist in the longer term with broadly similar participants, structure and content. The five network forms, as outlined by Heracleous and Murray (2001) are: atomistic, edge of chaos, association, embedded and brokered.

The atomistic network has negligible interdependence other than through independent transactions and no durability of relationships beyond the individual transaction. An edge of chaos network has extensive operational and strategic interdependence but does not persist for long or
require dense ties in order to function. Research consortia best exemplify an edge of chaos network, where temporary coalitions of actors are assembled by a project manager.

The association network has a high degree of durability, but limited interdependence and is best exemplified by industry associations. Industry associations, such as ITAG, are formed for the purpose of regulatory lobbying, the institution of self-regulation, or promoting professional education and regulating a specialist labour supply. The social or interpersonal dimension can be important in association networks. Indeed, Ahlström-Söderling (2003) has observed that networks having informal processes tend to survive for a longer period of time.

An embedded network has a high degree of durability as well as an extensive level of inter-organisational dependence. Japanese Keiretsu, which reflect deeply entrenched institutional features derived from the structure of kinship and family, best exemplify embedded networks. A brokered network, located in the centre of Figure 1, has moderate levels of interdependence and durability. Brokered networks include hub-and-spoke network structures and often involve a strategic centre, which acts as a leader and co-ordinator of the network.

It is important to note that the distinctions between Heracleous and Murray's (2001) network forms may not be clear-cut in practice. In addition, the location of networks within the taxonomy is not static, as 'firms may, at the same time be involved in different types of networks, features of networks may change over time and networks can form at intermediate positions of Figure 1' (Heracleous and Murray, 2001, p. 145). The changing nature of networks is supported by Huggins (2000, p. 132), who claims that 'strong formalized and sustainable networks should initially be catalysed through informal processes'.

As discussed above, the motivations for entering into networks are numerous and include increasing innovation, gaining access to new markets, sharing resources, reducing cycle times, decreasing transaction costs, managing uncertainty or lobbying (Heracleous and Murray, 2001). Despite these potential benefits, network costs are the associated participation expenses of an economic, operational and/or contractual nature (Morrison, 1994). Drawbacks associated with networks are a reduction in organisational flexibility and independence, the considerable time and commitment required and the difficulty in managing network relationships (Drago, 1997; Kosa and Lewin, 2000; Elmuti and Kathawala, 2001). 'Networking between organizations has increased dramatically in number and diversity during the last decade, yet a very large proportion of alliances fail to meet partners' expectations and generate any real value' (Ho, 2006, p. 202). Network relationships are complex and as a result can easily fall short of their expected benefits. Findings indicate that two-thirds of all alliances experience severe problems in the first two years and between 50 per cent and 70 per cent of alliances fail or underperform (Accenture, 2001; Kosa and Lewin, 2000).

The Strategic Rationale of Network Participation for SMEs

The late 1980s saw researchers beginning to question the widely held view that entrepreneurs, as economic actors, were isolated and that the entrepreneurial process was distinct from other social phenomena. Instead, entrepreneurs were seen as intimately tied, through their social relationships, to a broader network of actors (Hoang and Antoncic, 2003, p. 167). Hill (2001, pp. 228-9) sees the use of personal contact networks in SMEs as being 'rooted in a strong sales orientation' where the role of the sales function is not merely as an 'adjunct of marketing or part of the paraphernalia of the promotions mix but the central tenet of marketing ... thus, it can be concluded that it is the sales orientation which actually determines the marketing competency spectrum and hence the marketing character of such firms'. SME managers are more likely than their large firm counterparts to rely on information obtained from customers and suppliers, which could be erroneous (Ottesen et al., 2004). As a result, Ottesen et al. (2004, p. 604) recommend that 'SMEs – as part of their network marketing activity – should actively reflect on and try to triangulate new information about issues relevant to their marketing performance'.

In the early stages of the start-up firm's development, 'entrepreneurs' contact networks [are] composed predominantly of social ties, with only limited development of more business focused
contacts' (Hill et al., 1999, p. 78). Focusing on the use of informal networks of family and friends in the start-up phase, Birley (1985) found that entrepreneurs relied extensively on the informal network of family, friends, and business people and less on the formal network of banks, accountants, and lawyers. This finding has been confirmed by Andersen and Christensen (2004) as well as Greve and Salaff (2003), who found that these types of networks can be especially important for micro enterprises (i.e. fewer than ten employees) faced with 'insufficient resources, inadequate specialised expertise and limited opportunities to make an impact on the marketplace' (Torres, 2001, p. 229).

Networks are particularly important in dynamic industries such as the ICT sector. Coviello and Munro (1995, p. 49) note that 'increasingly, networks have come under examination as a clearly emerging organizational design appropriate to the global high-technology industry which is characterized by high-growth, entrepreneurial ventures'. This perspective has been more recently confirmed by Chatterjee (2004, p. 714) who observes that 'given the rapid pace of technology obsolescence, lack of dominant standards, global price transparency and competition, and high burnout rate of firms, alliances are critical to making value chains efficient and necessary for survival'. In Ireland, networks are believed to have played an important role in bringing about the innovation needed to drive performance in the ICT sector, as innovation occurs most frequently in collaboration (Forfás, 2003).

The opportunity to engage in organisational learning (OL) is a potential benefit to network participation. Although there is no agreed definition of OL (Liu and Vince, 1999), Murray and Donegan (2003, p. 51) believe a useful starting point is that 'organisational learning is concerned with improving the behaviour and capability of individuals so that the organisation can more effectively respond to its environment'. OL has attracted greater levels of attention from marketing academics in recent years (Morgan, 2004; Lim and Chan, 2004; Holmqvist, 2003). Dawes (2003, p. 1) notes that 'scholars in the field of marketing have only recently begun to explicitly address this topic'. For firms under pressure to continually acquire and develop new knowledge and skills, such as those in the ICT sector, 'the rate at which individuals and organisations learn may become the only sustainable competitive advantage' (Shata, 1989, p. 64). The challenges and opportunities of globalisation have also placed renewed strategic emphasis on OL (Lundvall and Borras, 1997). According to O’Keefe (2002, p. 138), 'the increasing role of intellectual capital in particular and its unique capacity to create knowledge becomes the raison d’etre for organisations'.

Boussouara and Deakins (1999, p. 204) observe that a distinctive weakness of ICT entrepreneurs 'is the lack of attention paid to marketing and the development of marketing strategies'. This is a serious lacuna in their skill sets, given their urgent need 'to translate promising technologies into a stream of economic returns' (Gans and Stern, 2003, p. 333). Similarly, Irish ICT entrepreneurs have the same weakness with respect to marketing skills. According to HotOrigin (2004), 70 per cent of indigenous Irish firms had sales under €1 million and find it difficult to close sales and make exits through initial public offerings or mergers and acquisitions.

In addition to poor marketing skills, Irish SMEs also have poor networking skills. Kuznetsov et al. (2000, p. 105) compared Russian and Western European entrepreneurial behaviour and found a key difference:

Russian conditions require entrepreneurs to be able to effectively mobilise intangible assets, in particular the ability to create or join informal networks ... such networks [are] ... a great benefit that translates into reduced transaction costs, a stable customer base and preferential access to information.

Research Methodology and Objectives

All research methodologies have their advantages and limitations and no one approach is better than all the others for all research purposes (Cepeda and Martin, 2005). This study is designed to provide a preliminary insight into the dynamics between the diversely sized participants in the ITAG network. The research follows the work of Verspagen (1999, p. 230), who found that 'the impact of large corporations on local networks of innovation' is an area worthy of investigation.

Dredge (2006) notes that there is no agreed methodological approach to researching networks.
Quantitative methods enable description and analysis at one point in time, but will not highlight longitudinal changes. Consistent with scholars engaged in entrepreneurial research and who advocate empirical research of a phenomenological nature (Bygrave, 1989; Brockhaus, 1987; Churchill and Lewis, 1986), this research aimed to be sensitive to ICT firms' characteristics. Methodological approaches to the study of inter-firm networks that are purely quantitative have been criticized on the grounds that they explain little about the actual content of firm relations and connections (Huggins, 2000, p. 113). Therefore, qualitative approaches that aim to explain rather than predict phenomena are considered appropriate (Leavy, 1994; Gordon and Langmaid, 1988).

The study consists of two phases. Initially, a web survey was conducted in June 2005 to establish preliminary support for the research objectives and identify the key themes that warrant further investigation, namely the role of network marketing, relational marketing practice, export orientation, and organisational learning through the Skillnets development initiative. The second phase, conducted in July and August 2005, involved a series of unstructured, in-depth interviews. The use of in-depth interviews allows unexpected or novel issues to be explored (Evans et al., 2001). This two-stage research design facilitates triangulation, as the macro level phenomena identified in the web survey were tested in the second stage of research. Swartz and Boaden (1997, p. 61) have used the same design in a similar context and found that such a 'between-methods triangulated research design is the most suitable for researching information management in small firms'. Wincent (2005, p. 444) has also used a similar two-stage methodology specifically in the context of SME network research, where personal surveys were followed by additional interviews 'to illuminate the phenomena studied'. The methodology used in this study is consistent with Stokes and Bergin (2006, p. 34), who state that individual depth interviews are useful where there is 'a specific, well-defined issue to investigate'. It is also consistent with the approach used by McKeon et al. (2004), who combined quantitative and qualitative techniques using questionnaires and interviews in their study of entrepreneurial learning in the Irish IT sector. McKeon et al. (2004) invited executives from 20 firms to complete an online questionnaire; 18 responses were received and the data gained from the questionnaire was supplemented by five in-depth interviews.

The first stage of the research utilised what Domegan and Fleming (2003, p. 197) call a 'centralised internet survey approach', in that the survey questionnaire was placed on a web site and e-mails were sent to the sample units inviting them to take part in the survey. The decentralised approach involves sending the questionnaire as an attachment to the e-mail or in the main body of the e-mail. The decentralised approach is rarely used in contemporary internet survey practice, as it is relatively easy to create web questionnaires. Moreover, centralised web questionnaires afford the advantage of avoiding the data entry task, and offer a greater degree of user-friendliness for respondents. There is, however, a need for further research in this area. Grant et al. (2005) believe that there is a lack of research investigating technology-based survey methodologies, particularly in a B2B context.

Nevertheless, 'a web survey application can achieve a comparable response rate to a questionnaire delivered by surface mail if the web version is preceded by a surface mail notification [and] the cost advantage of a mail notification/web questionnaire delivery combination suggests that this approach may be beneficial for studying populations with full access to the Internet' (Kaplowitz et al., 2004, p. 100). Grant et al. (2005, p. 664) have also stated that 'the reachability of respondents via the internet (including e-mail) and the necessary technological expertise regarding the professional design and programming of web-based questionnaires can be seen as a 'condition sine qua non' for using this sophisticated approach.' Given the nature of the survey population in this research, the appropriateness of the web survey methodology is assured.

The e-mail invitation was distributed on-line to the CEO or a senior executive from each of ITAG's member firms. Two further e-mails were sent to these executives over a two-week period to encourage survey participation. A usable response was achieved from 16 of the possible 40 member firms, which translates into a rate of 40 per cent. The survey sample is small, which does not allow for parametric testing and limits the generalisability of
the results. Statistical analysis is limited to averages and frequencies to provide a general profile and to identify the broad trends emerging among respondents about their use and perceptions of networks.

Of the CEOs and executives who replied to the web questionnaire, nine are from indigenous start-ups, while the remaining seven are from MNC subsidiaries. Of the on-line survey respondents, nine CEOs agreed to give in-depth interviews; five were CEOs of indigenous SMEs and four were CEOs of MNCs. The sample of CEOs interviewed reflects the length of establishment and size of ITAG's member firms. Similar to many IT clusters in Ireland, ITAG comprise many young micro and small enterprises, few medium-sized firms, and a substantial number of well-established MNC subsidiaries. The industry sectors represented among respondents are predominantly software and web technology, followed by IT consulting and training, telecommunications, and medical devices. Respondents identify business to business (B2B) as the most important customer group, followed by consumers (B2C) and the government (B2G).

Respondents to the on-line questionnaire were invited to participate in a 30-minute interview; nine CEOs agreed to be interviewed. The research tested the following propositions:

**ITAG Membership and Participation**
P1: Participation in ITAG has a strong strategic motivation.
P2: ITAG membership is more important for smaller firms.
P3: ITAG membership is an important facilitator of organisational learning.

**Marketing and Export Efforts**
P4: The organisation of marketing is more informal in SMEs than in large MNCs.
P5: SMEs are more likely than MNCs to have a relational approach to their customers.
P6: SMEs use MNCs to facilitate export activity.

**Findings**

**ITAG Membership and Participation**
P1: Participation in ITAG has a strong strategic motivation
The motivations for joining ITAG vary. ITAG's Skillnet development programme arises as a strong reason for participating as it addresses some of member firms' organisational learning needs in a highly efficient way. Many MNCs state that their participation in ITAG fits with their corporate policy of networking. CEOs of MNCs find that ITAG membership is an excellent means of lobbying national government for improvements to Galway's transportation and technology infrastructure as well as fostering a cluster of technology firms to attract good employees and customers. On an individual level, CEOs of MNCs value participation in ITAG for enhancing their personal contact network.

Many SMEs join ITAG as a result of Enterprise Ireland, a government development agency, which sponsors the SMEs' membership fees. Most importantly, SMEs view participation in ITAG as a means to develop their personal contact network, identify potential opportunities for alliances, as well as participating in a technology cluster, which may attract resources. With respect to personal networking, the following quotes are representative of the benefits from ITAG membership:

There is a level of trust built over a number of years so that there is a comfortable interaction. Hence, when opportunities arise, they can be grasped quickly, as it is not necessary to go through the relationship building process.

Face-to-face time with colleagues who may have the same problems [is valuable]. Even if colleagues don't know you and your firm, there is a built-in referral system.

The main benefits MNCs seek from participation in ITAG, in order of priority, are: 1) access to management expertise, 2) access to new technologies and enhanced reputation, and 3) market intelligence and opportunities for mentoring. SMEs believe that the advantages to ITAG are: 1) access to new technologies, 2) access to market intelligence, management expertise, and enhanced reputation, and 3) opportunities to influence regulation. All firms agree that time is the main drawback to ITAG participation. The CEOs find it time-consuming to participate in ITAG, but realise a time commitment is required in order to gain benefits from their membership of the association network. All respondents believe ITAG is growing in strategic importance to their firm,
although the CEOs of SMEs found this to be the case at a significantly higher rate. The kinds of advantages firms seek from ITAG in the future, in order of priority, are: increased knowledge sharing, additional opportunities for personal contact networking, more links with academic institutions, and further opportunities for mentoring and supplementary assistance with funding opportunities.

The findings relating to the advantages and limitations of network participation are largely consistent with the literature. Firms pursued network participation pragmatically with a specific strategic intent and consequently firms sought immediate benefits from their participation. However, it is surprising that SMEs do not view participation in ITAG as a means for sourcing funding and mentors. With respect to funding, an earlier ITAG study (Torres and Whyte, 2004) found that only a few firms received venture capital investment over the past five years, which indicates that Irish venture capital firms are not actively involved in network establishment and/or maintenance.

P2: ITAG membership is more important for smaller firms

Research by Wu and Cavusgil (2006) concluded that smaller firms depend more on collaboration for resources such as financial capital or market power as compared to larger firms. An earlier study by Torres and Whyte (2004) on ITAG found a lack of embedded networks, which suggests ITAG members might miss opportunities made possible through longer-term collaborations and may fail to identify opportunities for mutually beneficial mergers or acquisitions.

In this study, it is surprising to learn that SMEs do not actively seek collaborations with their larger, well-established associates within ITAG. Nor do they see ITAG membership as a source for future funding either through venture capital investment, semi-state initiatives or joint ventures with MNCs. Perhaps this finding is partially a result of SMEs striving to survive and meet their day-to-day obligations. Moreover, many of the MNCs' headquarters are located outside of Ireland and the Irish subsidiaries may not have sufficient leverage, scope and/or interest to pursue strategic alliance with smaller partners. MNCs do identify a need for closer collaboration between ITAG members and academic institutions as a future objective.

P3: ITAG membership is an important facilitator of organisational learning (OL)

In large businesses OL is more formalised and planned whereas in small businesses, learning at this level can exist in a more informal way. Both SMEs and MNCs viewed organisational learning as highly important. However, while all large firms have an explicit training and skills development strategy, only six out of nine SMEs have one. Those that do not have a strategy are micro firms with fewer than ten employees, who believe their firm is too small for a training strategy to be viable. This finding is consistent with the Information Society Commission (2005), which found that 80 per cent of businesses with fewer than ten employees do not have a training programme. The research also finds that all the MNCs participate in ITAG's Skillnet programmes, but only four out of nine SMEs participate. ITAG's Skillnet programme is part of the nationwide government-funded Skillnet initiative established in April 1999 by employer bodies and trade unions to support enterprises to develop strategic answers to their joint skill development needs. It is a successful example of a government-sponsored initiative in the area of network development, an area that is clearly on the Irish government's agenda. The Irish Department of Enterprise, Trade, and Employment (DETE) has recently announced funding of €2.5m to foster 'industry led networks or groups of companies to undertake time limited collaborative projects that have the potential to achieve additional benefits over and above what the individual companies can achieve on their own' (DETE, 2006).

Through its network approach, Skillnet encourages industry to identify, develop and certify organisational learning and development initiatives. ITAG's Skillnet programme aims to strengthen and develop the IT sector in Galway by improving competitiveness, reducing tuition costs and promoting investment in employees through tailored skill development and educational programmes. Thus, it provides the opportunity to make leading-edge organisational learning programmes accessible to employees and build a skills base within the Galway IT sector, enabling Galway to compete in an increasingly challenging marketplace.

Not only does ITAG's Skillnet programme support the Galway IT industry by boosting the
employability of staff, it increases networking activity in tandem with skill development by providing the infrastructure and communication channels to allow regular exchange of information among members. In 2004, ITAG’s Skillnet programme provided tuition to 224 employees in over 22 programmes and saved ITAG members over 40 per cent of the cost of such tuition (ITAG, 2005). ITAG member firms believe ITAG’s Skillnet programme is facilitating Galway’s efforts to be a centre for IT development.

**Marketing and Export Efforts**

**P4: The organisation of marketing is more informal in SMEs than in large MNCs**

As expected, the marketing function in SMEs is primarily carried out by the CEO and is informally organised. In contrast, MNCs organise marketing along functional lines and rely more heavily on specialist marketers. Increasingly, both types of firms rely on more highly targeted methods of communicating with customers rather than on forms of mass communication. SMEs in particular believe that targeted methods provide greater value for their marketing communications spend. Clearly these types of communication also provide the opportunity to create and maintain a dialogue that could facilitate the need to 'build relationships with potential buyers over time and then develop the most promising potential buyers into strategic partners' (HotOrigin, 2004, p. 27). Although SMEs believe marketing’s primary purpose is to acquire new customers, they are also keenly aware of the importance of personal contact in cultivating customer relations, particularly if their target market is small. The following quotes are representative of how SMEs view marketing:

It is highly important to develop ties with customers. The predominant manner is personal visits and face-to-face discussions with customers. Although face-to-face meetings are costly in terms of time, they can provide invaluable customer feedback on the firm and competitors.

It is easy to identify customers; there are only a handful of customers, which are very large. Our firm is more a partner in our customers’ firms than just a supplier, and in this respect, we need to know customers’ industries exceedingly well. The firm becomes a trusted consultant who needs to be able to advise customers strategically and operationally.

**P5: SMEs are more likely than MNCs to have a relational approach to their customers**

Interestingly, it is MNCs, not SMEs, that demonstrate a slightly higher relational attitude towards marketing activities. MNCs view marketing as a means to develop cooperative customer relationships and to coordinate activities with partners in the wider marketing system as well as facilitating personal relationships with customers and suppliers. The following quotes from CEOs of MNCs demonstrate this increased relational perspective:

We used to build to stock, but increasingly it's build to order ... in fact, we now call it engineer to order, building once-offs for specific customers. This [increase in tailored products] is changing the nature of our customer interactions.

You have to have the relationship above the project level. It's not about technology; it's about 'people buying people' to cooperate and solve problems.

With respect to measuring customer relationships, MNCs are more disciplined in their approach with many of them availing of quarterly customer satisfaction surveys conducted by external market research consultants. Some MNCs perform one-to-one customer feedback sessions every time a new system is installed or enhanced, to obtain the 'voice of the customer'. A few SMEs are precise in measuring their communication efforts by logging every response to an advertisement, every telephone call and every e-mail so as to obtain a conversion rate of communication effort to sales. Most SMEs are informal in their approach to measuring customer relationships and rely on a 'general sense' of customers’ level of satisfaction. Other SMEs expect it will take four or five years to see a return on marketing communication efforts as their firm becomes become more established and gains a reputation.

**P6: SMEs use MNCs to facilitate export activity**

Since the extremely small domestic market means that Irish ICT firms have to export to survive, networks can be a key component of an export strategy. The relationship between networking and export performance is under-researched; Babakus et al. (2006) conclude that SMEs that develop domestic and foreign networking ties are more likely to enjoy better export performance. This view is supported by Brourothers and Nakos.
(2004), who found that SMEs' limited resources constrain foreign market search and analysis activities, with the result that SMEs often prefer non-equity modes of new market entry. Therefore, it is posited that networks are a key component of SMEs' export efforts. A statement from a small firm respondent in work carried out by Wincent (2005, p. 450) illustrates this:

We [a smaller firm] do not have the competence or the contacts to enter that foreign market without this firm [talking about a larger firm]. Therefore, we need this firm to do it. In fact, I do not see any possibility of accomplishing something like that with another firm of our size ... of course they [the other firm] may benefit more than we do ... but anything is better than nothing.

Overall, Irish SMEs take one of two approaches towards exporting. In one approach, the SMEs predominantly provide products and services for the domestic market and expect that up to 50 per cent of their turnover will be attributed to the export market in the next five years. Alternatively, the SMEs' turnover is roughly split between domestic and export markets with the expectation that the greater part of their turnover (60—90 per cent) will be attributed to the export markets in the next five years. All the MNCs in this research engage in export activity. In comparison, only half of the SMEs see their future export plans being influenced by ITAG. The finding that SME export market strategy is not heavily influenced by larger partners in ITAG differs from Coviello and Munro's (1997) proposition that the fate of many high-tech SMEs lies in network relationships.

Conclusions
Ireland's relatively small size on the global stage means that Irish ICT firms should focus on building barriers to entry by developing knowledge and expertise in technological clusters (Clark, 2003). Achieving domain clusters is a challenge considering the small size of indigenous firms trying to market to much larger firms. Hence, it is suggested that firms within the Irish ICT sector need to engage in a greater degree of strategic collaboration as a means to address the problem of scale (O'Riain, 1997).

The marketing function within SMEs is informally managed primarily by the CEO, while in the MNCs marketing is managed along functional lines by marketing specialists. Since Irish ICT firms have to export to survive, networks are postulated to be a key component of an export strategy, as knowledge gained through network participation may provide the competitive advantage the sector needs in order to survive and progress. However, the findings indicate that SME export market strategy is not heavily influenced by larger partners in ITAG, as suggested by the literature.

Both SMEs and MNCs within ITAG display a clear relational orientation. SMEs believe that marketing's primary purpose is to acquire new customers, but MNCs demonstrate a slightly higher relational attitude as they believe marketing's purpose is to develop cooperative customer relationships and to coordinate activities with partners in the wider marketing system. With respect to measuring customer relationships, MNCs are more disciplined in their approach, as many avail of quarterly customer satisfaction surveys. SMEs are informal and rely on a 'general sense' of customers' level of satisfaction.

The findings relating to the advantages and limitations of network participation are largely consistent with the literature. The advantages of network participation include reputation, credibility, organisational learning, information exchange and shared resources. The disadvantages to network participation are time and cost. It is surprising the SMEs do not view participation in ITAG as a means for sourcing funding and mentors. The findings suggest that interactions between SME and MNC firms within ITAG may be limited and the relationships formed are not highly strategic. Perhaps this lack of strategic relationships is because ITAG is a relatively young network and has not had sufficient time to foster these more embedded relationships. For example, when researching SMEs in technological networks in Italy, Denmark and the UK 12 years ago, Seremetis (1994) found there were very few examples of networking among high-technology SMEs in the UK. Longitudinal studies are needed.

All participants recognised the importance of OI for their firm. ITAG's Skillnet has been an important strategic initiative. Its significance lies not only in delivering specific skills to member firms but also in fostering increased interaction and mutual
understanding among ITAG members. SMEs and MNCs view access to management expertise and the Skillnet programmes as major benefits to ITAG membership. Despite these successes, the major strategic advantages that could stem from a truly symbiotic networking relationship remain to be realised. However, there is enough evidence in this study to endorse the findings of Echeverri-Carroll et al. (1998, p. 731) who studied high-technology firms in Texas, and conclude that 'asymmetric relationships could be an important component of local small firms' competitiveness. In particular, policymakers should encourage small firms to network with the larger firms in the locality.' Finally, according to Witt (2004, p. 407), 'The costs and benefits of network relations may largely depend on the state of development of a company. Thus, it would come as no surprise if entrepreneurs change their network utilization patterns over time.' An interesting avenue for future research would be to revisit the SMEs in this study to observe whether their networking behaviour changes over time.

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