Local Network Relationships and
The Internationalisation of Small
Knowledge-Intensive Firms

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January 2004
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∗ The author thanks Professors Stephen Young and Shaker Zahra for helpful comments on a previous draft of this paper. Earlier versions of this paper were presented at the 6th McGill International Entrepreneurship Conference in Londonderry, UK on September 19-22, 2003; the 30th Academy of International Business (UK Chapter) Annual Conference in Leicester, UK on April 11-12, 2003; and the 28th European International Business Academy Annual Conference in Athens, Greece on December 8-10, 2002
LOCAL NETWORK RELATIONSHIPS AND THE INTERNATIONALISATION OF SMALL KNOWLEDGE-INTENSIVE FIRMS

1. Introduction

Asian firms are renowned for their networking (Chen 2003; Redding 1995). In the context of small firm internationalisation, a case of special interest to scholars has been the small knowledge-intensive firm\(^1\) (SKIF), which is similarly noted for its leveraging of network relationships, which often leads to accelerated internationalisation (Coviello and Munro 1997; Prashantham and Berry 2004). Combining these two observations, it would seem likely that Asian SKIFs constitute a fascinating subject for the study of networking dynamics, especially in the context of internationalisation. That network relationships constitute a key driver of the internationalisation of SKIFs seems consistent with the nature of such firms; their propensity for innovation and their resource-poverty lead to active leverage of network relationships. These relationships may be based locally (Porter 1998) or overseas (Johanson and Mattsson 1988). Surprisingly little is known specifically about the former, in the context of internationalisation; the focus of most network-based studies is on the latter. Recent work however suggests that local, spatially concentrated network relationships, such as those within a regional cluster, lead to positive externalities that facilitate SKIFs’ internationalisation (Brown and Bell 2001; Brown and McNaughton 2003) to a greater extent than in less geographically concentrated industries (Fernhaber, Gilbert and McDougall 2003). These studies, like much of the literature on SKIF internationalisation, are however based on developed economy contexts; little is known in this regard with respect to developing countries. Yet improving extant understanding of the latter context does seem a worthwhile endeavour given that many developing countries are seeking to develop globally competitive firms, especially in Asia (Zeng and Williamson 2003); in such a setting, cultural and economic factors make external relationships a significant source of new information and know-

\(^1\) This study adopts Prashantham and Berry’s (2004) definition of a small knowledge-intensive firm: a firm ‘that has fewer than 100 employees, the majority of whom comprise a highly qualified workforce which is its most important resource and is engaged in knowledge work – meaning that knowledge is inherent in the firm's main activities – as its central preoccupation’.
how for local firms, and therefore a resource for enhancing international competitiveness (Zhou and Xin 2003). This paper offers a preliminary step toward exploring a developing economy context in Asia, by shedding light on how small Indian software firms benefit from their local network relationships, as they pursue international business.

Thus the research question that this paper addresses is: how do local network relationships influence the internationalisation of SKIFs in a developing economy context? One difficulty dealing with this topic stems from the relative dearth of dynamic, knowledge-intensive clusters in developing countries. Research was therefore undertaken in the Bangalore software industry, a noted exception (Dunning 2000). Four case-firms were studied and this exercise was supplemented by expert interviews with local academics who specialise in the Bangalore software industry and available secondary data. It appears from the four case studies that, as suggested by received wisdom, positive externalities can and do accrue to internationalising SKIFs even in a developing economy context such as the Bangalore software industry; consistent with the literature, the case-firms enjoy reputation-related, quality-related and networking-related benefits as a consequence of local network relationships. However it also emerged from the expert interviews that such firms may be enjoying passive benefits, rather than proactively leveraging local network relationships, which constitute a valuable resource (Westlund and Bolton 2003). This is cause for concern and has significant implications for managerial practice and policy-making.

The paper is structured as follows: Section Two examines some of the literature on clusters, a concept closely related to local network relationships and resources; Section Three briefly discusses the Bangalore software industry; Section Four discusses the views of entrepreneurs and experts in Bangalore about the impact of location on SKIFs’ internationalisation; and Section Five concludes with implications for academics, practitioners and policy-makers.

2. Local, Spatially Concentrated Network Relationships
2.1 Development of Local, Spatially Concentrated Network Relationships

A relevant strand of the literature in the context of local, geographically concentrated relationships is one that deals with clusters. One of the better-known definitions is that of Porter (1998: 199): 'A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities'. Enright (2000) has distinguished between two models of cluster-based development—one where clusters provide the opportunity for firms to develop locally and then compete internationally (see, for example Porter 1990) and the other where peripheral regions seek to foster clusters and thereby develop the local economy (as discussed in, for example, Peters and Hood 2000). The cluster phenomenon has been generally ascribed to developed economy contexts; there appear to be few healthy clusters in developing economies (Porter 1998). Geographic proximity among firms can reinforce trust, enhance inter-firm cooperation and facilitate the transfer of tacit knowledge (Malmberg, Sölvell, and Zander 1996). Clusters therefore yield potential local, spatially concentrated network relationships to firms located within them, in the form of suppliers, customers, government agencies, MNC subsidiaries and even competitors (Birkinshaw and Hood 1998; Porter 1990). Related concepts in the literature include that of 'industrial district' and 'national innovative capacity'. A definition of the former is 'local clusters of numerous, mostly small enterprises which alternately compete and cooperate with one another and specialize in particular aspects and phases of production' (Staber 1998: 701); by virtue of this definition the discussion in this paper pertains both to clusters and industrial districts interchangeably. National innovative capacity is clearly a different concept however, and encompasses a strong common innovation infrastructure, innovative industrial clusters, and strong linkages between these two elements (Furman, Porter and Stern 2002). Spatial concentration of firms does not automatically guarantee a strong innovative capacity.

Clusters arise as a consequence of various factors; these clusters contain local network relationships. Clusters emerge for a variety of reasons that span a continuum with serendipity at one end and purely deliberate public and private sector action at the other. In other words, often it is a combination of serendipitous and deliberate actions and events that lead to the existence of clusters. Determinants of
clusters include economies of scale, transport costs, search and transaction costs, innovation, cooperation, knowledge spill-overs and uncertainty (Hoen 2001). Enright (1998) identifies the presence of unique natural resources, economies of scale, specialised labour, local suppliers and infrastructure as economic rationales for clusters. In this context, Balasubramanyam and Balasubramanyam (2000) emphasise educational institutions that produce trained technical labour, state support through tax incentives and subsidies, favourable living conditions, venture capital availability and linkages, both forward and backward. Based on the Porterian notion of clusters (Porter 1990, 1998), the following factors are seen to foster the development of clusters: inherited factors, geography, climate, entrepreneurship, research and educational institutions, regional economy composition, public sector actions and private sector actions. This framework will underpin the discussion of the Bangalore software industry in Section Four.

2.2 The Role of Local Network Relationships in Internationalisation

Extant literature on the role of clusters in firms’ internationalisation is at a nascent stage. A notable exception is a study by Brown and Bell (2001) which indicates that clusters may influence the internationalisation of small knowledge-intensive firms (SKIFs) through marketing externalities such as, for example, intra-cluster referrals, credibility and reputation, informational spill-overs, and active joint marketing. Brown and McNaughton (2003) suggest that while the original location of a cluster may have been accidental rather than rational, younger firms often locate in such clusters to benefit from the ensuing externalities. Also, Fernhaber et al. (2003) have recently demonstrated that SKIFs based within clusters internationalize to a greater extent than their counterparts that are not based in geographically concentrated industries. Clusters can be especially useful by providing external, regional relationships (Almedia 1999; Saxenien 1990) that can compensate for resources it lacks in (McNamee, Greenan and McFerran 2000), as well as facilitate knowledge-building and therefore, innovation (Almeida 1999; Audretsch and Feldman 1996; Shaver and Flyer 2000).

In fact, it is suggested that the very nature of innovation (Malmberg, Sorvell and Zander 1996), which is facilitated by information flow (Enright 1998), causes technological activity to be locally confined.
As a consequence, over time, sources of competitive advantage emerge that are highly localised in nature (Berry and Taggart 1994; Enright 1999; Porter 1990, 1998). Reiterating this, Cantwell and Iammarino (2001: 1007) state that 'innovative activity turns out to be spatially concentrated, and this can mainly be attributed to the benefits that stem from a specific case of agglomeration economies, i.e. knowledge externalities or spillovers'. Berry and Taggart (1994: 351) point out that 'technology development remains confined to local clusters of innovation in a variety of global locations'. Consequently, international networks often tap into the local milieu of clusters (Todtling 1994).

Building upon the foregoing discussion, three potential benefits of spatially concentrated network relationships, within a cluster, for the internationalisation of small knowledge-intensive firms are identified. First, a key benefit of location within a milieu of innovation is reputation. Reputation enhances the prospect of a firm within that region being perceived as being competent, and this resource resides outside a firm’s boundaries within the collective network resources. When this reputation becomes international, it enhances the possibility of (a) unsolicited orders coming the way of firms within the cluster and (b) a positive disposition towards a firm from the cluster that proactively seeks business from a prospective foreign customer (Karagozoglou and Lindell 1998). Second, another key benefit pertains to an actual enhancement of quality; this is distinguished from the perception of quality that comes from reputation, discussed in the previous point, above. An important determinant of quality is the access to specialised resources including manpower (Saxenien 1990), suppliers and support services (Lorenzoni and Ornati 1988; Poudre and St John 1996; Shaver and Flyer 2000) that a cluster typically affords its constituent firms. Third, small knowledge-intensive firms enjoy access to foreign network relationships. Access to multinational subsidiaries that locate within a cluster (Birkinshaw and Hood 2000), for instance, provide an opportunity to SKIFs for collaboration (Enright, 2000), which could potentially lead to international business opportunities.

3. Methodology
Two broad issues are addressed in this paper. First, how are systems of local network relationships built; this is done by highlighting the development of the Bangalore software cluster, largely based on
seven in-depth interviews (discussed presently) and available secondary data. The findings are presented in Section 4.1. Second, how do these local network relationships influence SKIFs’ internationalisation; this is done by synthesising the views expressed by the CEOs of four case-firms, supplemented by the views of the three academic experts. The findings are presented in Section 4.2. This section provides further information on the selection of the four case-firms and research methodology employed.

In March 2002, four case-studies of small software firms (Eisenhardt, 1989; Yin, 1994) were undertaken in Bangalore using in-depth interviewing techniques. The in-depth interview was deemed as an appropriate technique to elicit the insight that was sought (Easterby-Smith, Thorpe and Lowe 1991). In-depth interviews, ranging in duration from 60 to 120 minutes, were conducted with the four software entrepreneurs. An interview guide was followed to ensure consistency in the issues raised with each of the entrepreneurs; the main issues were: the development and nature of local networks within the Bangalore software industry; the process of internationalisation of SKIFs in Bangalore; and perceptions of the role played by location in Bangalore to local SKIFs’ internationalisation. While selecting the four entrepreneurs, effort was made to identify entrepreneurs who differed on two variables: age of their firm and current extent of their firm’s internationalisation. Firms that were founded six or more years before the interview were deemed to be old (Zahra, Ireland and Hitt 2000) and firms with greater than 50% of their revenues accruing from overseas were deemed as highly international. Each of the entrepreneurs interviewed fall under different categories in relation to the two variables of firm age and internationalisation; in other words, interviews were conducted with each of the following:

- An entrepreneur of an old, highly internationalized firm
- An entrepreneur of an old, less internationalized firm
- An entrepreneur of a young, highly internationalized firm
- An entrepreneur of a young, less internationalized firm
The four case-studies were then supplemented, in August 2002, by depth interviews with three academics in Bangalore (one at the Indian Institute of Management and two at the Indian Institute of Informational Technology) who closely follow the progress of the local software industry. A similar approach (interview guide; approximately 90 minutes duration) as in the case of the CEOs was adopted. The purpose of these interviews was to elicit the experts’ views on the development and trends in the Bangalore software industry. Additionally, they were invited to reflect upon the findings from the four case-studies, which were shared with them. The next section presents the findings of the study.

Insert Table 1

4. Discussion – The Bangalore Software Industry

4.1 Development of Local Network Relationships in Bangalore

As noted, the literature is dominated with examples of dynamic clusters from developed–rather than developing–economy contexts. A significant exception is the Bangalore software industry (Nadvi 1995; Balasubramanyam and Balasubramanyam 2000; Dunning 2000), which could act as an exemplar for developing economies wishing to facilitate the emergence of competitive knowledge-intensive industries and firms. The Bangalore software industry is discussed below based on the interviews conducted and available secondary data.

Inherited factors: One view that was expressed more than once by respondents is that Bangalore’s software industry emerged quite by accident, facilitated by historical factors. At the time of national independence (August 1947) a strategic decision was taken to locate certain key entities away from the nation’s capital of New Delhi owing to its proximity to two potentially hostile neighbours—China and Pakistan. Thus Bangalore, a city located centrally within the South Indian peninsula and with an established military presence from the days of British rule, was chosen as the location of such vital public sector undertakings as Hindustan Aeronautical Limited (HAL) and National Aeronautical
Limited (NAL). Additionally, the Indian Institute of Science was established in Bangalore and these corporations and educational institutions attracted technical talent from across the country. This pool of talent was arguably the forerunner to the relatively abundant (yet not necessarily sufficient; see Merchant 2001) supply of software professionals now available in Bangalore, which was tapped into by global players such as Texas Instruments and Motorola when they set up offices in Bangalore during the early 1990s.

**Geography:** As discussed above, the militarily 'safe' location of Bangalore induced the location of certain strategic defence-related organisations there.

**Climate:** Bangalore does have a mild climate compared to other major cities in Southern India which is, at best, a mild incentive for software professionals to settle there as well as for international executives to base themselves there when required; climate, in general however, has little bearing on the software industry.

**Entrepreneurship:** This, arguably, is of vital importance in relation to Bangalore. The greatest impact of the Indian software industry on the rest of the nation is arguably as an exemplar in terms of how entrepreneurship–and business management in general–can be a success. In a largely risk-averse part of the country, software entrepreneurs have demonstrated great enterprise and won the respect of fellow practitioners, the media, the government and public at large. Doyens of the Indian software-industry–who are mostly Bangalore-based–such as Mr N R Narayana Murthy of Infosys and Mr Azim Premji of Wipro are popular speakers at top industry forums and business school convocations. Their esteem has indeed been hard-earned, through innovatively attracting talent (such as through equity-sharing schemes, a novelty for India) and building processes of the highest quality (over half of the world’s most stringently followed software quality management systems can be found in India-based companies, the majority of which are Bangalore-based). These success stories have been an inspiration for others to follow suit and has helped somewhat in stemming the perennial problem of 'brain drain', with the best talent flocking to foreign shores–chiefly American.
**Research and educational institutions:** As discussed, the early establishment of the prestigious and highly capable Indian Institute of Science gave an impetus to technical development in Bangalore. While several hundreds of engineering colleges have also emerged, of vital significance are a couple of other centres of excellence which, though not purely technical, have fostered the availability of local talent. These are the Indian Institute of Management and the more recently established Indian Institute of Information Technology.

**Regional economy composition:** In terms of regional economy, there has really not been much else preceding the 'software boom' apart from the—almost accidental—location of aeronautical and related organisations in the region, as discussed. As such, the regional economy cannot be said to have greatly influenced the development of the software industry.

**Public sector actions:** There are some who would argue that the Indian government’s greatest contribution to the software industry lies in its benign neglect of it for many years! This apparently uncharitable view suggests that in India, governmental intervention has not been always perceived to be conducive to private enterprise. Further, infrastructure shortcomings act as impediments for the software and other industries, and the benefits of technology have not percolated down to the masses of private citizens (Donald 2001 a, b). It may be noted however that indirect effects of public policy—including an unmistakable element of protectionism and emphasis on self-reliance—have resulted in the development of indigenous software firms. More recently however the government has sought to play a key role by transforming the Department of Electronics (DoE) into the Ministry of Information Technology (MIT) under an able member of the Cabinet. However this is recent and as such it is private—rather than public—sector initiatives that account for the growth of the software industry in Bangalore.

**Private sector actions:** Some of the most vital private sector actions that facilitated the growth of Bangalore came from foreign players. Texas Instruments and Motorola are often cited as pioneers in
this area. Initially seeking low-end coding work to be handled out of their low-cost Indian bases, more and more multinational companies have set up development centres with an ever-growing mandate in terms of the quality of work required. One company from Austin, Texas is rumoured to be paying their Indian professionals in Bangalore the same salary as their professionals in the US. Such examples however are few and far between, and at this stage cost advantage continues to be an attraction. In addition to the multinationals, Indian firms have also made a significant contribution to developing the software industry. As mentioned already, the most successful firms and their business leaders have emerged as national heroes. Many of them have gained from international networks—primarily involving Indian software professionals and entrepreneurs based in Silicon Valley (Luce 2001). In fact, it is said that one in every three Silicon Valley start-up was founded or co-founded by an Indian (Murdoch 2000). A vital aspect of Indian private sector initiative is the National Association for Software Service Companies (Nasscom), the key industry body that has played a strong role to play both in terms of lobbying with the government and representing the Indian software industry abroad in forums such as trade fairs.

The preceding discussion has sought to identify various factors that have led to the emergence of a system of local network relationships, i.e., a dynamic cluster, in Bangalore. As seen, these factors are a combination of serendipity and deliberate public or private sector action. The discussion now turns to the role of local network relationships in the internationalisation, through a discussion of perceived benefits by the four case-firms that were studied in the Bangalore software industry.

4.2 Role of Bangalore’s Local Network Relationships in SKIF Internationalisation

The findings from the four case-studies conducted in Bangalore suggest a perception of certain benefits accruing from being Bangalore-based, which in turn facilitates internationalisation, views that are clearly not inconsistent with the received literature. The specific situations of the four firms varied greatly in terms of their origin, domain of expertise and endowment of local network relationships. The following is a brief account of the four firms with respect to their local network relationships:
• *Ekomate* is a firm started in 1996 by a software engineer returning to India following postgraduate study at the University of Texas. His father is also an entrepreneur, albeit in a traditional industry sector, but this has meant strong local business networks. A noticeable effect of this has been the appointment in 2002 of a senior executive at a large software firm as the company’s Chief Mentor; this was a direct consequence of the entrepreneur’s (and his father’s) local social networks. This Chief Mentor has been influential in strongly encouraging internationalisation efforts and has provided useful foreign contacts of his own. Additionally, Ekomate has benefited from unsolicited business from the UK, which the entrepreneur perceives to be partially a consequence of Bangalore’s reputation effects with respect to software development.

• *Mitoken* is a unique company in that it was spun-off from the Bangalore subsidiary of Motorola, to commercialise technology developed by the CEO and his team of three other Directors while they were engineers at Motorola. Thus, in a sense, Mitoken was incubated by a multinational subsidiary. As all four managers have qualifications from prestigious Indian and American engineering and business schools, there are widespread networks both locally and overseas. Further, as a corporate sponsor, Motorola provides strong network ties in India and potentially, abroad. Such a wealth of relationships has meant that Mitoken has adopted a global mindset from inception although at the time of the interview all business was domestic. This was however a deliberate strategy to first perfect the technology with initial customers at home before venturing abroad. Thus local network relationships with customers were clearly being utilised, albeit indirectly, in the context of internationalisation.

• *New Creation*, like Ekomate, was started by an Indian software engineer trained in the US. However this individual had gone on to spend nearly a decade as a software professional as a consequence of which, when he returned he found himself being far better endowed with foreign than local network relationships! As a consequence he has sought to focus primarily on international markets, specifically the US.
• Vikas presents the mirror image of New Creation in the sense that its entrepreneur was locally trained and as such has strong local network relationships, but lacked—at least to start with—foreign ties. Thus, this entrepreneur has always focused strongly on the domestic market; international business has come serendipitously and appears to be of relatively less importance in comparison with Ekomate or Mitoken. However when he had the opportunity to serve foreign markets, he found that he was well placed to do so because of what he perceives as strong infrastructure in Bangalore, relative to other cities of India. Further, he opines that the likelihood of receiving unsolicited international business is higher in Bangalore than other Indian cities.

The above-mentioned entrepreneurs clearly have different levels of network relationships and utilisation of the same. Endowment of these network relationships seems to be largely entrepreneur-driven; further, the entrepreneur’s education and prior work experience appear to determine their access to such ties. In terms of utilisation or leverage, it appears to be the firms with a clear global mindset who leverage local network relationships, directly or indirectly, with a view to enhancing international competitiveness, thereby facilitating internationalisation. Collectively, the four entrepreneurs’ views regarding the benefits derived from local network relationships resonate with the literature as briefly discussed below.

First, with respect to reputation, the equity of the 'Bangalore' brand was a recurring theme in the interviews. Especially with international customers, having Bangalore on their address 'makes the job of marketing much easier', in the words of one software entrepreneur. This was particularly the case when certain software ‘booms’ existed, such as the demand for software to help clients overseas deal with the Y2K problem—apparently Bangalore was the first stop for many international customers. This is interesting, because Bangalore does not boast of a significantly larger number of firms than some other regions; in fact, some statistics (Arora, Arunachalam, Asundi and Fernandes 2001) suggest that Bangalore had fewer software firms than the National Capital Region (Delhi and surrounding suburbs)! Thus, clearly Bangalore has achieved an enviable reputation for its software industry vis-à-
vis other Indian cities, and this—as has been discussed in the previous section—has emerged over time as the consequence of a combination of serendipity, entrepreneurial successes and policy efforts. One respondent’s first international business contract was the result of a British businessman watching a television programme in the UK on the Bangalore software industry, which led to his efforts to find a Bangalore-based software firm through the Internet. Reputation led to unsolicited orders for another SKIF as well, from Australia. The business from Australia was particularly significant for this firm as it did not otherwise have ready access to foreign network relationships as the entrepreneur had neither worked nor studied overseas. These findings support Brown and Bell’s (2001) thesis that clusters lead to externalities such as credibility and reputation.

Second, in relation to quality, a perceived effect of the Bangalore software industry on SKIFs’ international competitiveness pertains to support services and infrastructure, which enabled firms to maintain a high level of quality in their offerings. The high standards of quality maintained by Bangalore-based software firms is evident from the fact approximately half of the world’s software companies with the highest international quality ratings\(^2\) are based in Bangalore (Arora et al. 2001). One entrepreneur commented on the ease with which instructions can be given to architects, office equipment suppliers and plumbers who know well what a typical software office requires. This level of support service cannot be easily found in other upcoming software centres in India, according to him. Related to this is the access to computing and communication facilities. The resultant remote electronic access to distant clients is critical to SKIFs’ international business activities, especially when they provide real-time service to a customer in, for instance, North America or Europe. In terms of infrastructure, Bangalore city has made noticeable efforts in terms of drainage, cleanliness and garbage disposal, and improvement of roads; further, a new international airport is being built so that foreign travellers can fly into Bangalore. Specifically in relation to internationalisation, the presence of suitable infrastructure enhances the confidence of prospective international clients and also attracts

\(^2\) Bangalore is home to 19 of the world’s 40 companies with the highest international quality ratings based on the system developed by Carnegie Mellon University’s Software Engineering Institute (i.e., Capability Maturity Model or SEI CMM level 5 companies).
foreign players to set up a presence in Bangalore, which could bring with it additional internationalisation opportunities for local firms with whom network relationships are formed. For one of the respondents, he was able to gain access in Bangalore to a new type of entity in the Indian software industry, viz., the business development contractor—who would canvass for international business for a set of non-competing clients. Once again, this finding is consistent with the literature (e.g., Saxenien 1990).

Third, with regard to cultivating foreign network relationships, it was mentioned that networking—albeit primarily informal networking—within the software industry was a useful consequence of being located in Bangalore, which reiterates the literature (e.g., Almeida 1999). The opportunities of meeting other entrepreneurs, with similar situations, are considerable in Bangalore. A few entrepreneurs mentioned benefits from such networking include effective recruitment, lead generation and general sharing of insights. Two forums where software entrepreneurs meet were mentioned: one was The Indus Entrepreneurs (TiE) forum, spearheaded by Silicon Valley-based Indian entrepreneurs and the other was the Confederation of Indian Industry (CII) Information Technology panel. Caution must be applied here however as such networking can be as much of a problem for entrepreneurs as an opportunity when, for instance, rivals 'poach' good employees from them. Also, cooperation and sharing of insights could often be superficial and rather basic, given the obsession for confidentiality and secrecy among Bangalore-based software firms. In general, however, respondents conveyed the impression that the business atmosphere of Bangalore’s software industry kept them focussed and aware of the competitive pressures they faced. Specifically in relation to internationalisation, three of the four respondents highlighted the usefulness of local contacts with ties to the US software industry—and especially Silicon Valley—which could lead to international business. One of the respondents ran a firm that had spun off from a prominent MNE, which effectively allowed its incubation, and confirms the importance of MNE subsidiaries located within clusters (Birkinshaw and Hood 2000).

Insert Table 2
The follow-up interviews with the three academics however indicated that these benefits are often accrued passively, rather than actively, by software firms in Bangalore. According to the academics, there is relatively little evidence of collaborative marketing efforts or strong inter-linkages to the rest of the economy; the greatest benefit in terms of improved infrastructure and standard of living has been confined to a small proportion of the populace. This is a cause for concern as it could imply that key local resources are being overlooked and wasted. In the literature, proactive strategies are associated with successful or success-seeking firms (Liao, Welsch and Stoica 2003) and regions (Beals, Ehrig and Pelz 1995). While Asian managers have been found to adopt reactive rather than proactive strategies when faced with perceived environmental hostility or unattractiveness (Tan and Litschert 1994); this however does not generally seem to be the case either with Bangalore locally or the global technology markets that Bangalore-based software firms have traditionally served. Thus there are clearly warning bells for these firms that mere proximity to important local network relationships is not enough (Martin and Sunley 2003; Romjin and Albu 2002).

5. Conclusions and Implications

This study has contributed to extant understanding of the phenomenon of SKIF internationalisation in two ways. First, it has focused on local network relationships, which is relatively neglected in comparison with network relationships located overseas. Second, it has considered a developing economy context, on which there is generally a dearth of literature. Four case-studies that were conducted in an Asian setting, viz., the Bangalore software industry, suggests that important benefits—particularly pertaining to reputation, quality and networks (including foreign ones)—do accrue to SKIFs in a developing economy. However subsequent expert interviews highlighted the disturbing passiveness that generally characterises the appropriation of such benefits by these firms. This observation is a vital one and leads to vital implications, considered below.

In normative terms, a key implication for small knowledge-intensive firms is that there should be conscious leverage of spatially concentrated local network relationships; it could well be that SKIFs
are overlooking significant resources that are ‘right under their nose’! These local network relationships could lead to international business opportunities, thereby compensating for a firm’s lack of foreign network relationships. There are several practical ways in which this can be achieved. There needs to be wider and more intensive utilisation of valuable local forums such as the National Association of Software and Service Companies (Nasscom) and the Confederation of Indian Industry; most developing economies should have their own counterpart entities. In particular, efforts should be made to build ties with ethnic entrepreneurs in overseas markets, particularly in regions like Silicon Valley that are at the cutting edge of technology; this of course is easier for certain countries (e.g., China, India and Israel) than others. A seen from (the somewhat extreme) case of Mitoken, potentially useful relationships can be fostered with local multinational subsidiaries (Enright 2000; Zhou and Xin 2003). Equally, ties can be usefully built with other local, domestic firms; SKIFs should seek to leverage economies of scale through efforts such as collaborative marketing (Brown and Bell 2001). Along these lines, from a policy perspective, policy-makers should make efforts to enhance the international reputation of clusters and, perhaps more importantly, facilitate the accrual of active benefits for the internationalisation of clusters’ constituent firms. Additionally, of concern to policy-makers in developing economies, such as India, should be the enhancement of the knowledge-intensity of SKIFs so that they move up the value chain to compete for higher-value business from abroad and avoid becoming vulnerable to cost-based competition from other emerging economies, such as China.

In terms of theory development, clearly more scholarly work is required, involving larger samples and quantitative methodology, to provide generalisable findings on the role of clusters in the internationalisation of SKIFs, particularly in a developing economy context. Issues of interest that could be explored are the differences in propensity to internationalisation between SKIFs located within clusters and ones that are not; comparisons of developing economy clusters (like Bangalore) with developed economy ones (like Silicon Valley); the influence of MNE subsidiaries within a cluster; and inter-cluster links on SKIF internationalisation. As for the last mentioned point, it could well be that there is an interesting phenomenon in terms of the link between the Bangalore software
industry and Silicon Valley, with its strong Indian presence; this is an issue warranting further research. In summary, consistent with the managerial recommendations above, the most valuable research will seek to unpack the conditions under which local network relationships are leveraged actively, effectively and creatively; herein may lie an important key that unlocks the potential for developing economy SKIFs to become world class, globally competitive players.
REFERENCES


Donald, A. (2001a), "Village India" has a long way to go’, FT-IT Review (with Financial Times), February 21, XV-XVI.

Donald, A. (2001b), 'Infrastructure bottlenecks hinder IT expansion’, FT-IT Review (with Financial Times), February 21, XVI.


Merchant, K (2001), 'Supply fails to meet demand’, *FT-IT Review (with Financial Times)*, February 21, XVI.


Saxenien, A. (1990), 'Regional Networks and the Resurgence of Silicon Valley’, California Management Review, Fall, pp 89-112.


### Table 1: Sample of Four Small Indian Software Firms

<table>
<thead>
<tr>
<th>Firm Age</th>
<th>Level of Internationalisation</th>
<th>Low (&lt;50% export intensity)</th>
<th>High (&gt;50% export intensity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young (&lt; 6 years)</td>
<td>Mitoken</td>
<td>New Creation</td>
<td></td>
</tr>
<tr>
<td>Old (&gt;= 6 years)</td>
<td>Vikas</td>
<td>Ekomate</td>
<td></td>
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</tbody>
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Source: The Author

### Table 2: Findings from the Four Case Firms

<table>
<thead>
<tr>
<th></th>
<th>Ekomate</th>
<th>Mitoken</th>
<th>New Creation</th>
<th>Vikas</th>
<th>Synthesis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Endowment of local network relationships</strong></td>
<td>Strong ties through family business</td>
<td>Strong local MNC ties through former employer, Motorola; also alumni network</td>
<td>No significant local ties owing to lengthy absence.</td>
<td>Strong local ties through conducting business in that market for over 6 years</td>
<td>Firms that leverage their local network relationships the best (provided they have them) are those with a clear global vision.</td>
</tr>
<tr>
<td><strong>Leverage of local network relationships</strong></td>
<td>Led to firm’s Chief Mentor, a strong advocate of Ekomate’s international business-seeking activities.</td>
<td>Led to domestic customers; low-risk opportunity to improve technology before launching overseas</td>
<td>Negligible owing to dearth of relationships</td>
<td>Led to domestic customers, which is the primary focus for this company.</td>
<td></td>
</tr>
</tbody>
</table>
| **Role of local network relationship in internationalisation** | Indirect access to valuable foreign ties through Chief Mentor; also reputation effects perceived. | Indirect access to valuable foreign ties through Motorola. | Bangalore’s infrastructure is conducive to serving international customers | Bangalore provides good support services and human resources. | Benefits that enhance international competitiveness:  
  - Reputation  
  - Infrastructure /quality  
  - Networks |

Source: The Author