

Delimiting the network context of the entrepreneurial firm – the reliance on local nets

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Abstract

This paper introduces the concept of local nets and applies it in a hi-tech entrepreneurial context. Local nets are defined by the authors as boundaries that a firm places on its networking activities and on its resource access in practice. Local nets are networks in use or in practice and are part of the broader strategic concepts of network context and horizon. The main finding from an electronic survey of entrepreneurs engaged in high tech enterprises in a major city in the Southeastern United States is that entrepreneurial firms rely on local nets especially personal contact networks which appear to change little over-time. Entrepreneurial firms may be more reluctant to use networks strategically than heretofore thought and their need to control their networking may be of greater perceived value to them than more networked modes of competing.

Keywords: Local Nets, Networks, Entrepreneurship, Network Scope, Network Use

Paper type: competitive

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Introduction

The literature linking entrepreneurship and networks is long established. A rich literature focuses on the structural aspects of networks, including, but not limited to network size, density and diversity. For example, it has been acknowledged that a larger network size enhances firm performance through a greater number of available opportunities (Burt, 1992; Hoang and Antoncic, 2003). Cromie and Birley (1992:239) found that increased network diversity can lead to “a wide range of experience, information and contacts”. Similarly network diversity may increase efficiency and flexibility when firms have complementary areas of specialisation and facilitate risk sharing between firms (Bartlett and Franičević, 2001). Extant studies also focus on network outcomes for the entrepreneurial firm including the availability and strategic use of external resources (Lechner et al., 2006), information and skills acquisition (Minitti, 2005) as a trajectory to enact the entrepreneurial growth process (Anderson et al., 2010). The relational aspects mediating networks including commitment, trust and cooperation factors are cited as integral features of successful relationships (e.g. Dwyer et al., 1987; Gundlach et al., 1995; Mohr and Spekman, 1994; Moorman et al., 1992; Morgan and Hunt, 1994) and widely recognised in both the entrepreneurial and IMP literature as being key determinants of high-quality relationships and networks (Dwyer et al., 1987; Morgan and Hunt 1994) created as a consequence of interaction over time by the parties involved (Håkansson and Johanson, 1992; Moorman et al., 1993).

Yet gaps still exist in the literature in relation to our knowledge regarding how the nascent entrepreneurial venture uses its networks. Every entrepreneurial firm is created within a network environment that can significantly contribute to its success and survival but the part of the network the entrepreneur uses or its local net may delimit its access to network resources. A firm’s network horizon and its more bounded context, the part of the network it considers relevant, are presented as strategic concepts in the IMP literature (Håkansson and Snehota, 1989; Anderson, Håkansson and Johanson, 1994; Holmen and Pedersen, 2003). This paper will explore these concepts in use and will argue that, in high technology ventures, which are often assumed to need and use substantial network resources, whilst the firms may have wide network horizons and detailed understanding of their network context, they restrict their activity to their more immediate or local nets and tend to be self-reliant where possible. Local nets including their scope and nature, will be the focus of this paper.

The paper will be organised as follows. The literature review will conceptualise the nature and scope of local nets and will be followed by the study’s methodology. Findings will examine the network context and network in use focusing on network categories accessed and for what resources, and the type of information accessed in the network and the reliance on these sources by the entrepreneurial firm. The main contribution of the paper will be the understanding of the concept of local nets and to the actual understanding of networks in use in the particular empirical context of high tech entrepreneurship.

Network Environment, Horizon and Context

To understand the concept of local nets, it is necessary to look at the wider network picture, including the network environment, horizon and context. Networks have been defined as loosely coupled systems with blurred boundaries which render them elusive to precise definition (Johannisson, 1986). Blurred boundaries and the vastness of network space would suggest that “actors have bounded knowledge about the networks in which they are engaged” (Anderson et al., 1994: 3). Firms operate within an environment with limitless network potential (see, figure 1). However, as can be seen in figure 1, within the infinite environmental space resides the network horizon. Network horizon (Håkansson and Snehota, 1989; Håkansson and Johanson, 1993; Holmen and Pederson, 2003) depicts networks as encompassing all connections within an SME’s view. Network horizon captures how extended an actor’s view of the network is highlighting the part of the network that they are aware of irrespective of relevance which provides a boundary from which SMEs can deduce their network context. Network context refers to “the part of the network within the horizon that the actor considers relevant” (Anderson et al., 1994: 4). This is similar to the concept of organising context (figure 1) put forward by Johannisson et al. (2002) in relation to embeddedness and social networks. For them, organising context consists of three level or layers (surroundings, enacted environment and organising context) which can largely determine both the potential and limitations of individual member firms. At their broadest level, surroundings, reflects “the existence of an environment not (yet) known to, or imagined by, the firm(s)” (Johannisson et al., 2002: 299). The enacted environment is recognised as being relevant to the development of the firm but not possible to systematically influence. The organising context, at the core of the model, “provides meaning and identity as well as resources to its individual entrepreneurs, who thereby can enact their environments more efficiently” (Johannisson, 1997:116). The organising context is organic and networked and allows members to collectively deal with challenges and provides a forum where local knowledge is shared, acknowledged and used (Johannisson, 2011).

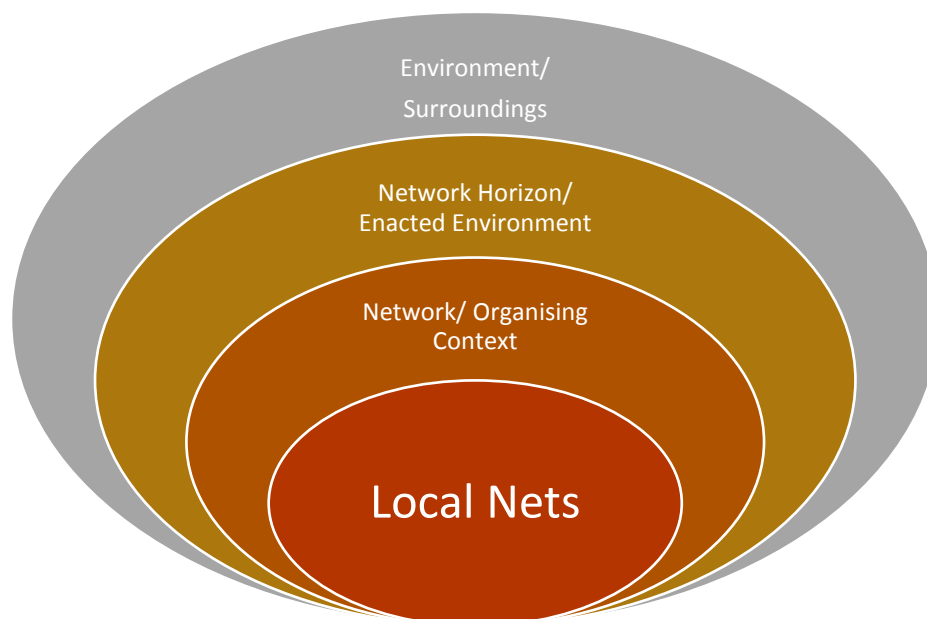


Figure 1 The interface between Network Environment, Horizon, Context and Local Nets

In agreeing with Johannisson (2011) that the boundaries between the organising context and its enacted environment are fuzzy we argue that the entrepreneur's view of their network horizon and context are also fuzzy and can impact their access to network resources. We further argue that whilst the firms may have wide network horizons and detailed understanding of their network and organising context, they restrict their activity to their more immediate or local nets and tend to be self-reliant where possible. As depicted graphically in Figure 1, we argue that local nets are the part of the network or organising context that the firm uses. Local nets refers to the boundary that the entrepreneurial firm places on its networking, and the network resource access that it is able to handle or is willing to use. Local nets are functional and provide a network boundary to the firm even through it realises the broader context and horizon in which it also exists. Local networks are practice-based but tend to be delimited in a similar way across entrepreneurial firms giving the authors an opportunity to develop the concept of a local net. To fully explore the concept of local nets, it is necessary to understand who comprises them and their actual use, hence, the next section will explore the potential scope and nature of local nets.

The Scope and Nature of Local Nets

Within the academic literature much research has focused on the types of connections that reside within the network context, horizon and environment. O'Donnell et al., (2001), in a qualitative study reviewing the network construct and entrepreneurship research, categorised networks as inter-organisational networks (vertical, horizontal and industrial districts) and personal networks. Gemünden et al. (1996), in linking network configuration with innovation success, identified different types of technology-oriented network configurations including: administration; co-suppliers; consultants; suppliers; buyers; research and training institutes; competitors and distributors and found that innovation success is significantly correlated with a firm's technological network. Lechner et al. (2006) in examining the role of different networks in an entrepreneurial context identified five types of networks: social networks; reputational networks; marketing information networks; co-opetition networks and co-operative technology networks. However, this paper moves away from categorising network types and instead seeks to identify the scope of actors that comprise the entrepreneur's local networks and the nature of their use in practice. Scope, in terms of local nets, refers to the extent or wideness of the network base that the entrepreneurs use in practice. Local nets may be socially orientated including the seminal personal contact network of friends, family and former work colleagues that preceded the business foundation (Ostgaard and Birely, 1996). This may be the case as entrepreneurs often establish new businesses related to their former occupations (Cooper and Dunkelberg, 1986; Davidsson and Honig, 2003). They may be reputational (McEvily and Zaheer, 1999; Lechner et al., 2006) consisting of research or training institutes, enterprise agencies or more formal relationships with banks, accountants and lawyers (Birely, 1985) also referred to as high trust specialist sources (Bennett and Robson, 1999). Supply chain connections (Gemünden et al., 1996; O'Donnell et al., 2001; Lamprinopoulou and Tregear, 2011) including suppliers, distributors and customers have the potential to form part of the local net in addition to co-opetition networks with competitors (O'Donnell et al., 2001; Lechner et al., 2006). However, we propose that local nets will mainly comprise socially embedded ties

that the firm is born within including family, friends and ex-colleagues in addition to mentors engaged during the initial set-up of the business. Therefore our first proposition is:

P1 Local nets comprise socially embedded ties including family, friends, ex-colleagues and mentors.

The temporal aspect of local nets will also be examined in this paper. It has been noted that entrepreneurial relationships and networks evolve overtime depending on the founders' context (Ostgaard and Birley, 1994) and that "how entrepreneurs network, and with whom they network, varies throughout the various stages of the entrepreneurial process" (Drakopoulou-Dodd et al., 2006: 115). It has been accepted that many of the nascent firms initial opportunities and resources are found within the relationally embedded ties of the entrepreneur's social networks, such as family and close friends (Hite and Hesterly, 2001; Jarillo, 1989; Larson and Starr, 1993) however, the literature remains relatively silent regarding different network types and on network evolution (Human and Provan, 2000; Jack, 2010). According to Anderson et al. (1994) a firm's network horizon is dependent dually on the structure of the network and the experience of the network actors suggesting that the network horizon of an actor changes overtime as a result of doing business. Lechner and Dowling (2003) address the relationship between the network mix and stages of firm development proposing that social and reputation networks decrease over time with the entrepreneurial firm's development and that the quantity of co-opetition relationships increases with the firm's sales growth. However, we posit that local nets tend to be quite resilient to change with its seminal personal contact network likely to remain in use by the firm as it develops. Hence our fourth proposition is as follows:

P2 Local nets do not change in composition overtime as the firm develops.

In addition to understanding the scope of local nets, given that they are defined in use, it is important to determine the nature, purpose and actual use of networks. For the entrepreneurial firm, networks can be used in a myriad of ways. Networks can be used as a trajectory for assistance in obtaining finance or investors (Ritter and Gemünden, 2003). This represents a key reason for engaging with local nets as the entrepreneurial or small venture are often characterised and defined by their resource constraints. Networks as a source of information are an accepted, valuable and widely cited aspect of network content. Information types are wide and varied including; access to market information (Jenssen, 2001; Jenssen and Greve, 2002; McEvily and Marcus, 2005; Ostgaard and Birley, 1996); advice on business technology (Jenssen and Koenig, 2002); access to expertise (Jenssen and Koenig, 2002); general business advice (Reagans and McEvily, 2003); price information (Ritter, 1999); competitor intelligence (Ostgaard and Birley, 1996; McEvily and Zaheer, 1999; Shaw, 2006); product /service design information (Ostgaard and Birley, 1996). Personal contact networks can provide the nascent entrepreneur with encouragement and personal support (Klyver and Hindle, 2007; Jack et al., 2010) in their initial set-up and early operations. Networks can also be used to broaden the scope of local nets through introductions to new contacts useful to the business, referrals to new customers, advertising by word of mouth and access to distribution channels (Ostgaard and Birley, 1996). This research will concentrate on how firms actually use their local nets, for access to

finance, information and/or support in addition to determining what kind of information that entrepreneurs seek within their local nets.

The literature supports networks as a useful trajectory for entrepreneurial marketing and market based information acquisition (Hoang and Antoncic, 2003; Shaw, 2006; Jones et al., 2013). In agreement with this body of literature we propose that:

P3 Local nets will be used primarily for marketing and market information purposes.

The scope and nature of local nets may be restricted by a tendency or preference to operate independently. That is, driven by an independence mentality characteristic of smaller entities, entrepreneurs may focus on PCNs or formal networks without consideration for the more complex interrelated relationships situated within the value chain. Entrepreneurs may favour reliance on personal judgment or personal research including social media and Internet sources in lieu of partnering with firms within their context or horizon. Independence may also stem from an internal locus of control, a perceived ability to influence the outcome of events encountered through the efficacy of their own behavior (Meuller and Thomas, 2000) or self-efficacy, the entrepreneurs belief in their capabilities to perform a specific “task” (Chen et al., 1998: 299). Therefore, in agreement with Hanna and Walsh (2008) and Shaw (2006), our third proposition is as follows:

P4 Should the firm have the necessary resources, the entrepreneurial firm will show a preference for operating in an independent as opposed to interdependent manner.

Method

The purpose of this paper is to determine the scope and nature of local nets. More specifically, we aim to extend our understanding of local nets, the networks that entrepreneurs actually use in practice; to provide a fuller understanding of who comprises their networks in use (local nets); for what purpose are local nets used; whether the scope and nature of local nets evolve over-time as the firm matures; and whether a preference for independent operation supersedes an interdependent orientation. Our method included personal interviews with high tech start-ups and CEOs of organisations (governmental and non-governmental) supporting entrepreneurs and an electronic survey of entrepreneurs engaged in high tech enterprises in a major city in the Southeastern United States. This city has the fourth-highest concentration of Fortune 500 companies in the US and is recognised as one of the top US cities to set-up new high tech companies. On-line survey participants were recruited via start-up support network organisations run by volunteers and those that had a paid membership as no sample list existed. 233 people connected into the on-line survey with 87 completing. The twin methodologies facilitated the understanding of the entrepreneurial eco-system (contextual) and the actual practice of the entrepreneurs in the particular high tech sector. An initial version of the online survey was piloted using a group of fifteen entrepreneurs and the CEOs of the organisations supporting entrepreneurs. Detailed feedback, comments and suggestions were obtained from each source post pilot via personal interview which proved invaluable and was incorporated into a revised version of the electronic survey. In addition to the initial survey mailing, extensive follow-up communications were carried out including; sending a reminder/thank you postcard and sending a second round of online surveys to non-respondents after two months.

Participant profiles

49% of the participating firms were less than 3 years old with the remainder more than three years old allowing for the temporal aspects of local nets to be examined. 83% of firms founded by two or less people. In line with similar studies in relation to new high-technology ventures the entrepreneurs surveyed were predominantly male (85%). The median age was 46-55 (41%) which indicates that the entrepreneurs had considerable experience in the workplace before commencing their own venture. Education, often used as a control variable in similar studies was very high. For 91% of participants, the minimum qualification was a Bachelor Degree level. This is significant as higher education has been shown to have a positive impact on firm growth and profitability. As noted, the entrepreneurs were all involved in the high tech sector yet their businesses varied within this category. Software provider represented the largest category at 20% with medical devices, consultancy and online services each comprising 15%. Other notable business types included mobile technology (10%), environmental technology (5%) and logistics (5%) with 7% representing many other high-tech businesses. All businesses varied significantly from the entrepreneurs' previous employment or former ventures highlighting that the entrepreneurs are innovative with an ability to carve multiple niches in the high-technology market space. The entrepreneurs noted on a 5 point scale (5 representing very different) that their new venture was very different in terms of the product or service provided (mean 3.8), their target customers (mean 3.83) in addition to their suppliers (mean 4.17).

Measures

Where possible, measures from the extant literature were used for this research. To gauge the scope of local nets we presented the respondents with a list of network types including; Family/Friends; Ex-colleagues; State and local development agencies; Trade organisations; Universities; Mentors; Banks, Accountants, Lawyers; Competitors; Customers; Suppliers and Distributors (similar to Ostgaard and Birley, 1996) and asked them to indicate how frequently they were in contact with them to discuss aspects of their business. Similar to the work of Burt (1997) in relation to social capital and network content, we analysed network scope using four levels of frequency of contact ranging from daily; weekly; monthly; or rarely. For network use, we asked the entrepreneurs to check what their main contacts had contributed to their business in the last six months. Categories which we presented to the participants included: Assistance in obtaining finance or investors; Market information; Advice on business technology; Access to expertise; General business advice; Referrals to new customers; Other new contacts useful to the business; Access to distribution channels; Product and service development; Advertising by word of mouth; Encouragement and personal support (Ostgaard and Birley, 1996; Shaw 2006; Reagans and McEvily, 2003; Podolny and Baron, 1997). Given the importance of networks as a means to acquire information, we also asked the participants to check the types of information that they had searched for in relation to their business in the last six months and from whom. Categories of information used for the purpose of this research included: General technical information; Price information; Market information/intelligence; Business funding/ finance insights; General information on running the business; Distribution know-how; Product and service technical development information; Product and service quality; Competitor intelligence; Packaging design/technology; Product /service design information; Purchasing/ supplies information.

We asked two separate questions in relation to the degree to which the entrepreneurs had a preference for independence. Using a 7 point Likert scale ranging from low to high, we asked how much they relied on personal judgement' personal research; employees; Internet and social media for commercial aspects of their business compared to information obtained from interactions with customers, suppliers, distributors and financial backers. We also used 3 items on a 5 point scale taking measures from Mueller and Thomas (2000) for locus of control.

Findings

Local Network Scope

As noted we used 11 categories of network content and four frequency variables to explore network scope. Using the four frequency variables, proposition 1 is supported as it is clear that local nets comprise mainly social nets with very limited emphasis place on supply chain nets or more formal nets. As can be seen from the category presented in table 1 (1=rarely, 4 = daily), family/friends, customers, mentors and former work colleagues were the most frequently contacted groups of people representing the local net, with state and local development agencies, competitors and universities among the lowest. At 2.2 ex-colleagues from previous employment is quite high which surprising given that the majority of firms noted that their venture was significantly different from their previous employment. All network types produced a mean of above 1 (rarely/monthly) showing that the entrepreneurs have a wide network horizon.

	Family /Friends	Ex-Colleagues	State and local development agencies	Trade Organisations	Universities	Mentors	Bands/ Accountants/ Lawyers (BAL)	Competitors	Customers	Suppliers	Distributors
Mean	3.27	2.20	1.31	1.57	1.46	2.33	1.73	1.34	3.12	2.15	1.98

Table 1 Network Scope Means

We used an independent sample t-test (see, table 2) to determine whether there was a significant difference between the scope of local networks between companies at the initial stages of their business (less than 3 year) or more mature businesses (more than three years). The p value for Levene's test are all above .05 so we can assume equal variance. The significance for all, with the exception of one category (mentor), is above the cut off of .05 so we can state that there is no statistically significant difference in network scope between firms aged less than three years and those aged more than three years. Mentors are more frequently contacted by firms in operation less than 3 years, which is not surprising given their central role during the initial stages of business formation. The means difference is also shown in table 1, which is small for each variable at a 95% confidence interval. This supports proposition 2, that local nets are relatively stable overtime as they do not change significantly as the nascent venture matures.

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Family/Friends	Equal variances assumed	1.435	.234	.034	81	.973	.006	.186	-.364	.377
	Equal variances not assumed			.034	79.507	.973	.006	.186	-.363	.376
Ex-Colleagues	Equal variances assumed	.294	.589	1.201	78	.233	.250	.208	-.164	.664
	Equal variances not assumed			1.201	77.932	.233	.250	.208	-.164	.664
Dev Agencies	Equal variances assumed	.005	.943	-.183	78	.855	-.025	.137	-.297	.247
	Equal variances not assumed			-.183	76.814	.855	-.025	.137	-.297	.247
Trade Orgs	Equal variances assumed	.270	.605	.289	79	.773	.042	.146	-.248	.332
	Equal variances not assumed			.289	77.412	.774	.042	.146	-.248	.333
University	Equal variances assumed	.221	.639	1.008	81	.317	.156	.154	-.152	.463
	Equal variances not assumed			1.008	80.747	.316	.156	.154	-.151	.463
Mentor	Equal variances assumed	.194	.660	3.154	76	.002	.530	.168	.195	.865
	Equal variances not assumed			3.159	75.992	.002	.530	.168	.196	.865
BAL	Equal variances assumed	2.350	.129	-.845	81	.401	-.151	.179	-.507	.205
	Equal variances not assumed			-.847	78.623	.400	-.151	.178	-.506	.204
Competitor	Equal variances assumed	4.602	.035	1.162	80	.249	.146	.126	-.104	.397
	Equal variances not assumed			1.162	76.079	.249	.146	.126	-.104	.397
Customer	Equal variances assumed	3.138	.080	.499	80	.619	.104	.207	-.309	.516
	Equal variances not assumed			.502	78.459	.617	.104	.207	-.308	.515
Supplier	Equal variances assumed	.104	.748	-.616	80	.540	-.139	.226	-.589	.311
	Equal variances not assumed			-.616	79.824	.540	-.139	.226	-.589	.311
Distributor	Equal variances assumed	.435	.512	-	80	.300	-.245	.235	-.713	.223
	Equal variances not assumed			-	79.969	.300	-.245	.235	-.713	.222

Table 2 T-Test Network Scope (less than three years and more than three years)

Local Network Nature/Use

To understand what the participant used their networks for we presented the same categories of networks on the vertical axis and a list of potential uses on the horizontal axis. The participants we asked to tick what they used their networks for with the corresponding category of tie with no limit placed on the amount of ticks that they could apply. No limit was placed on the number of ticks following the logic of network content put forward by O'Donnell et al. (2001: 752). They argue that "content is taken as the meaning that people attach to relationships and their understanding of the implications that their involvement may have". Similar to the suggestion that relationship may have more than one content, we argue that networks may have more than one use.

The participants were asked to tick what their main contacts had contributed to their business in the last six months. Given that we were analysing multiple categorical variables

we used a contingency table to present the results. As can be seen abbreviated in table 3, the categories presented for network use included; Assistance in obtaining finance or investors; Market information; Advice on business technology; Access to expertise; General business advice; Encouragement and personal support; Referrals to new customers; Other new contacts useful to the business; Access to distribution channels; Product and service development; and Advertising by word of mouth. The first line of table 3 shows the actual number of ticks by the participants in aggregate format. For example 28 people ticked that they had used family and friends in the last six months for assistance in obtaining finance or investors. Given that the focus of the question was on network use, we calculated percentages of ticks based on the horizontal (use) axis. For example for assistance in obtaining finance or investors, 16% of ticks we attributed to family and friends, 15% to ex-colleagues and so on. We further divided the analysis into businesses in operation less than three years in operation and those operating more than three years in operation to gauge the temporal orientation of network use. Therefore, out of the 28 people who used networks of family and friends for assistance in obtaining finance, 60% of them were in operation less than three year with 40% in operation more than four years.

In analysing network use, proposition 3 is supported as it is clear that within the past six months, networks were most widely used for; market information; advertising by word of mouth; referrals; and new contacts. Across all four categories of network use, customers represented the highest percentage of use; market information (16%); advertising by word of mouth (18%); referrals (14%); and new contacts (18%) with mentors, family/friends, ex-colleagues and trade organisations also featuring highly. Networks were used the least for: access to distribution channels; product and service development; and assistance in obtaining finance with the types of networks used the least including; state and local development agencies; universities; competitors; and banks/accountants/lawyers. This correlates with network scope as the means in table 1 show that state and local development agencies are contacted the least followed by competitors and universities.

As can be seen in table 3, we also split network use between the firms in operation less than three years and more than three years. Table 3 shows a marginal variation between the two groups, particularly where the number of ticks exceeded 30. The businesses in operation more than three years used trade organisations more for marketing information (62%/38%) whereas the nascent businesses used suppliers more (67%/33%). Encouragement and personal support which was mainly provided by family/friends, mentors and ex-colleagues remained even between the two groups. As expected, where the number of participant ticks was low, a large variation existed between the groups.

Network Use		Family/Friends	ExColl	Dev	Trade	Uni	Mentors	BAL	Competitors	Customers	Suppliers	Distributors
Finance	Number of ticks	28	25	10	20	7	36	28	2	13	3	3
	As a percentage	16%	15%	5%	11%	4%	21%	16%	1%	7%	2%	2%
	> three years	60%	60%	60%	45%	71%	58%	50%	0%	62%	67%	0%
	< three years	40%	40%	40%	55%	29%	42%	50%	100%	38%	33%	100%
MarketInfo	Number of ticks	33	41	14	39	14	34	14	33	53	33	23
	As a percentage	10%	13%	4%	12%	4%	10%	4%	10%	16%	10%	7%
	> three years	48%	54%	36%	38%	42%	59%	57%	55%	47%	67%	30%
	< three years	52%	46%	64%	62%	58%	41%	43%	45%	53%	33%	70%
AdviceBusTech	Number of ticks	31	34	5	33	11	35	5	13	20	26	10
	As a percentage	14%	15%	2%	15%	5%	16%	2%	6%	9%	12%	4%
	> three years	45%	50%	40%	42%	55%	46%	0%	31%	35%	38%	0%

		< three years	55%	50%	60%	58%	45%	54%	100%	69%	65%	62%	100%
AccesstoExpertise	Number of ticks	26	37	9	29	24	44	17	6	14	18	11	
	As a percentage	11%	16%	4%	12%	10%	19%	7%	3%	6%	8%	4%	
	> three years	50%	57%	33%	41%	58%	57%	35%	33%	50%	28%	27%	
	< three years	50%	43%	67%	59%	42%	43%	65%	67%	50%	72%	73%	
Genadv	Number of ticks	39	31	7	25	4	48	29	6	17	10	8	
	As a percentage	17%	14%	3%	11%	2%	21%	13%	3%	8%	5%	3%	
	> three years	51%	61%	57%	48%	50%	52%	55%	50%	47%	30%	50%	
	< three years	49%	39%	43%	52%	50%	48%	45%	50%	53%	70%	50%	
EncouragementPersonal	Number of ticks	65	40	4	14	3	46	9	2	20	7	4	
	As a percentage	30%	19%	2%	7%	1%	22%	4%	1%	9%	3%	2%	
	> three years	49%	53%	0%	43%	67%	48%	33%	0%	50%	0%	0%	
	< three years	51%	47%	100%	57%	33%	52%	67%	100%	50%	100%	100%	
Referrals	Number of ticks	33	37	6	30	7	34	15	9	50	32	26	
	As a percentage	12%	13%	2%	11%	3%	12%	5%	3%	18%	12%	9%	
	> three years	39%	46%	50%	40%	43%	50%	47%	44%	46%	44%	35%	
	< three years	61%	54%	50%	60%	57%	50%	53%	56%	54%	56%	65%	
Newcontacts	Number of ticks	31	32	9	30	14	42	23	10	39	28	18	
	As a percentage	11%	12%	3%	11%	5%	15%	8%	4%	14%	10%	7%	
	> three years	39%	50%	44%	33%	43%	55%	57%	40%	41%	43%	33%	
	< three years	61%	50%	56%	67%	57%	45%	43%	60%	59%	57%	67%	
DistChannels	Number of ticks	8	19	3	18	3	21	5	6	22	21	26	
	As a percentage	5%	13%	2%	12%	2%	14%	3%	4%	14%	14%	17%	
	> three years	25%	58%	0%	28%	67%	57%	60%	33%	42%	48%	42%	
	< three years	75%	42%	100%	72%	33%	43%	40%	67%	58%	52%	58%	
Product and service	Number of ticks	15	26	5	11	7	20	2	11	30	23	16	
	As a percentage	9%	16%	3%	7%	4%	12%	1%	7%	18%	14%	9%	
	> three years	53%	54%	0%	32%	57%	45%	100%	55%	40%	35%	25%	
	< three years	47%	46%	100%	68%	43%	55%	0%	45%	60%	65%	75%	
AdvertisingWoM	Number of ticks	37	37	7	30	13	32	14	10	53	31	24	
	As a percentage	14%	13%	2%	10%	5%	11%	5%	3%	18%	11%	8%	
	> three years	49%	51%	0%	33%	15%	47%	36%	60%	45%	48%	33%	
	< three years	51%	49%	100%	67%	85%	53%	64%	40%	55%	52%	67%	

Table 3 Network Use

Information Search

To further understand network use, similar to the previous question, we asked the respondents to tick the type of information that they had sought in the last six months and tick with the corresponding network contact. The types of information presented (see, contingency table 4) included: General technical information; Price information; Market information/ intelligence; Business funding/ finance insights; General information on running the business; Distribution know-how; Product and service technical development information; Product and service quality; Competitor intelligence; Packaging design/technology; Product /service design information; and Purchasing/ supplies information. The top three type of information sought by the participants were: general technical information; market information; and competitor intelligence. Packaging design; distribution know-how; purchasing/ supplies information; and product /service design information were the least sought after type of information searched for by the participants. Similar to network use, customers were the most used source of information, in addition to mentors, trade organisations and ex-colleagues. The main difference between table 3 and 4 is that suppliers were used more, and family/friends less for information search than for general network content. Again, there was little difference noted between the participant which were in operation less than three years and those in operation more than three years across each information category.

		Family/Friends	ExColl	DEV	Trade	Uni	Mentors	BAL	Competitors	Customers	Suppliers	Distributors
GeneralTechInfo	Number of ticks	27	38	5	36	13	24	9	23	30	31	14
	As a percentage	11%	15%	2%	14%	5%	10%	4%	9%	12%	12%	6%
	> three years	41%	50%	60%	41%	62%	33%	33%	52%	37%	45%	36%
	< three years	59%	50%	40%	59%	38%	67%	67%	48%	63%	55%	64%
Price	Number of ticks	13	21	2	21	3	18	2	32	34	26	14
	As a percentage	7%	11%	1%	11%	2%	10%	1%	17%	18%	14%	8%
	> three years	54%	43%	0%	43%	0%	50%	0%	66%	47%	58%	50%
	< three years	46%	57%	100%	57%	100%	50%	100%	34%	53%	42%	50%
MarketIn	Number of ticks	18	24	8	29	6	25	9	29	38	28	23
	As a percentage	7%	11%	1%	11%	2%	10%	1%	17%	18%	14%	8%
	> three years	56%	54%	25%	45%	33%	44%	67%	55%	42%	39%	48%
	< three years	44%	46%	75%	55%	67%	56%	3%	45%	58%	61%	52%
Fund	Number of ticks	24	19	9	19	5	33	29	9	7	9	3
	As a percentage	15%	12%	5%	11%	3%	20%	17%	5%	4%	5%	3%
	> three years	42%	53%	56%	47%	60%	55%	55%	56%	43%	44%	0%
	< three years	58%	47%	44%	53%	40%	45%	45%	44%	57%	56%	100%
Gen	Number of ticks	25	24	6	21	8	37	23	11	9	6	2
	As a percentage	15%	14%	3%	12%	5%	22%	13%	6%	55	4%	1%
	> three years	44%	50%	67%	48%	38%	49%	52%	36%	33%	0%	0%
	< three years	56%	50%	33%	52%	62%	51%	48%	64%	67%	100%	100%
Dist	Number of ticks	10	13	3	12	0	15	4	9	10	9	21
	As a percentage	10%	12%	3%	11%	0%	14%	4%	8%	9%	9%	20%
	> three years	50%	54%	0%	33%	0%	53%	50%	56%	70%	44%	43%
	< three years	50%	46%	100%	67%	0%	47%	50%	44%	30%	56%	57%
NPDinfo	Number of ticks	16	23	4	19	11	18	4	13	20	23	10
	As a percentage	10%	14%	2%	12%	7%	11%	3%	8%	13%	14%	6%
	> three years	50%	43%	50%	47%	55%	39%	0%	46%	40%	43%	20%
	< three years	50%	57%	50%	53%	45%	61%	100%	54%	60%	57%	80%
Qual	Number of ticks	14	16	3	15	5	17	4	13	34	23	14
	As a percentage	9%	10%	2%	10%	3%	11%	3%	8%	21%	14%	9%
	> three years	43%	50%	0%	33%	0%	35%	0%	46%	41%	35%	29%
	< three years	57%	50%	100%	67%	100%	65%	100%	54%	59%	65%	71%
CompInfo	Number of ticks	15	15	4	26	5	23	7	36	35	21	16
	As a percentage	7%	7%	2%	13%	3%	11%	4%	18%	17%	10%	8%
	> three years	40%	47%	50%	27%	0%	48%	29%	50%	43%	38%	44%
	< three years	60%	53%	50%	73%	100%	52%	71%	50%	57%	62%	56%
PackDes	Number of ticks	12	7	0	8	3	8	0	9	14	13	8
	As a percentage	15%	8%	0%	10%	4%	10%	0%	11%	17%	16%	9%
	> three years	67%	58%	0%	0%	100%	38%	0%	67%	50%	46%	38%
	< three years	33%	42%	0%	100%	0%	62%	0%	33%	50%	54%	62%
ProdDes	Number of ticks	12	14	0	13	3	17	4	12	25	21	17
	As a percentage	9%	10%	0%	10%	2%	12%	3%	9%	18%	15%	12%
	> three years	58%	43%	0%	15%	67%	35%	75%	42%	32%	29%	24%
	< three years	42%	57%	0%	85%	33%	65%	25%	58%	68%	71%	76%
PurchSupp	Number of ticks	10	12	0	11	0	10	2	10	12	27	20
	As a percentage	9%	10%	0%	10%	0%	9%	2%	9%	10%	24%	17%
	> three years	50%	42%	0%	18%	0%	50%	100%	50%	42%	48%	40%
	< three years	50%	58%	0%	82%	100%	50%	0%	50%	58%	52%	60%

Table 4 Information Search

Independence

To analyse the independent mind-set of the entrepreneurs we asked them, using a 7 point Likert scale ranging from low (1) to high (7), how much they rely on - their own Personal Judgment; Personal Research; Employees; Internet; and Social Media - for commercial aspects of their business compared to information obtained by interacting with customers, suppliers, distributors and financial backers. We also used three items/statements from a locus of control scale (Meuller and Thomas, 2000) asking the respondents to indicate how

strongly they disagree or agree with each statement on a 5 point likert scale (1 = strongly disagree, 5 = strongly agree). The statements used include: My life is determined by my own actions (LOC1); When I get what I want is it usually because I worked hard for it (LOC2); Whether or not I am successful in life depends mostly on my own abilities (LOC3).

As can be seen from table 5, proposition 4 is supported as independence is strong whereby the entrepreneurs favoured relying on their own personal judgement and research for information in lieu of networks. To a lesser extent they relied on employees and the Internet with no emphasis place on social media. The high mean scores for the three locus of control means show that the participants had an internal local of control.

	PersonalJud	PersonalRes	Employees	Internet	SocialMedia	LOC1	LOC2	LOC3
Mean	5.99	6.03	4.83	4.69	3.16	4.31	4.16	3.92
Std. Deviation	1.249	1.038	1.379	1.388	1.826	.827	.860	1.130

Table 5 Independence Means and SD

We used an independent sample t-test (see, table 6) to determine whether there was a significant difference in independence between companies at the early stages of their business (less than 3 year) or more mature businesses (more than three years). The p value for Levene’s test are all above .05 so we can assume equal variance. The significant values for the t-test equality of means are all above .05 so there is not a statistically significant difference in the means scores for independence between the groups. What is interesting is that the independence and locus of control results for the early stage companies is lower than those for the firms in operation more than four years highlighting that overtime, the entrepreneurs are not moving from an independent to more interdependent mind-set.

		Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
										Lower	Upper
PersonalJud	Equal variances assumed	1.166	.284	-1.770	74	.081	-.500	.283	-1.063	.063	
	Equal variances not assumed			-1.770	70.093	.081	-.500	.283	-1.063	.063	
PersonalRes	Equal variances assumed	.669	.416	-.653	75	.516	-.155	.238	-.628	.318	
	Equal variances not assumed			-.653	74.973	.516	-.155	.238	-.628	.318	
Employees	Equal variances assumed	2.596	.111	-.402	73	.689	-.129	.320	-.767	.510	
	Equal variances not assumed			-.403	71.593	.688	-.129	.320	-.766	.508	
Internet	Equal variances assumed	.876	.352	.959	75	.341	.304	.317	-.327	.934	
	Equal variances not assumed			.958	73.722	.341	.304	.317	-.328	.936	
SocialMedia	Equal variances assumed	.154	.696	1.391	74	.169	.579	.416	-.251	1.409	
	Equal variances not assumed			1.391	73.792	.169	.579	.416	-.251	1.409	
LOC 1	Equal variances assumed	.850	.360	-.939	59	.352	-.199	.212	-.624	.226	

	Equal variances not assumed			-.926	51.984	.359	-.199	.215	-.631	.233
LOC 2	Equal variances assumed	.482	.490	-.819	59	.416	-.181	.221	-.623	.261
	Equal variances not assumed			-.806	50.443	.424	-.181	.225	-.632	.270
LOC 3	Equal variances assumed	.504	.481	-.140	59	.889	-.041	.292	-.625	.543
	Equal variances not assumed			-.140	57.503	.889	-.041	.293	-.627	.546

Table 6 Independence T-Test

Discussion and Conclusion

This paper contributes to the extant network literature which calls for more research into the scope, nature and function of networks over-time (Burt, 1997; O'Donnell et al., 2001; Jack, 2010). We have defined local networks as networks in use and have positioned them within the network context, horizon and environment. That is, although network contacts may be deemed relevant by the entrepreneur and as such form part of the context, or they may be aware of their existence and be within their horizon, local nets comprise the connections that entrepreneurs actually use in practice.

Hence, the findings from this research broaden and deepen our understanding of the concept of local nets. As noted, previous research has tended to focus on one type of network, for example social networks or supply chain networks (Jones et al. 2013) and/or network size (Burt, 1992; Hoang and Antoncic, 2003). This study, in agreement with Lechner et al. (2006), finds that that exploring a variety of network types, or the relational mix is a more appropriate construct for explaining network activity than network size alone. The concept of the local or immediate net has not been widely explored in the literature. Our findings suggest, through an analysis of network type and frequency of contact that local nets seem to be dominated with social contacts or the widely cited personal contact networks and customers with supply chain and more formal sources playing a lesser role. This is similar to findings by Bennett and Robson (1999) who note that microbusinesses are particularly dependent upon the advice of friends and relatives in order to retain confidentiality as well as personal control. The central role that customers play in local nets is expected and in line with current thought as a trajectory to build customer loyalty and to manage customer expectations (Parvatiyar and Sheth, 2001; Walter et al., 2006; Jones and Rowley, 2011). It was surprising that former or ex-colleagues played a crucial role in the participants' networks, as, contrary to findings by Cooper and Dunkelberg (1986) who found that entrepreneurs often start businesses related to their former occupations, the findings suggest that the entrepreneurs who formed part of this study set up new operations that differed significantly from their past employment. Supply chain networks and formal networks are acknowledged by the entrepreneurs but not enacted in any real way on a regular basis. Their very existence would intimate that they form part of the entrepreneurial horizon or context, that they are within the entrepreneurs' extensive view of their networks but are not considered to be immediately relevant.

Findings from this study indicate that local nets are resilient to change with the personal contact network and customer network remaining in use by the firm as it develops. This is in contrast to finding by Lechner and Dowling (2003) who found, in high-growth entrepreneurial firms in the IT industry, that the relational mix changes with the development of the firms. We agree with Lechner and Dowling (2003) that social networks are the entrance ticket for a start-up company in the networked economy but found that

their importance did not decrease with the firms' development, instead that their central place within local nets remained overtime. We also found that co-operation with competitors was rare, even for the firms in operation more than three years which contracts with Lechner and Dowling (2003) who noted that while the relative importance of social and reputational networks decreases overtime, cooperation with competitors as the firm develops. This reluctance to engage with competitors mirrors findings by Shaw (2006) in relation to the creative industries in Scotland.

It has been found that social networks provide a more used and more stable flow of information and resources than formalised business network approaches (Premaratne, 2001). Our findings are in keeping with this, that local nets are used for primarily for marketing purposes; market information; advertising by word of mouth; referrals; and new contacts. This is in keeping with Gilmore et al. (2006) who noted that, in the food distribution channel, networks were used to increase market knowledge including gathering information on competitor activity and obtaining advice. Lechner et al. (2006) term this "marketing information networks" with one purpose of such nets being to act as a referral to establish contact with a new client, with the literature linking social networks as a source of referrals being established (Reingen and Kernan, 1986; Burt, 1997). Similarly, Shaw (2006) found that SMEs seek marketing and competitive information and the sources of this advice can best be described as informal, existing within the owner's PCN including family members or friends owning non-competing small firms. During the initial phases of a new entrepreneurial venture, it is clear that preexisting local nets encompassing social ties and customers, act as an importance source of external resources (Birley, 1985; Ardichvili et al., 2003; Lechner et al., 2006). However, the entrepreneurs' reliance on local nets has the potential to delimit its access to network information and resources. Due to the liability of newness and smallness (Stinchcombe, 1965; Baum, 1996), networks have been widely cited as a means to acquire financial resources (Ritter and Gemünden, 2003), for information (McEvily and Marcus, 2005); access to distribution channels, product and service development (Ostgaard and Birley, 1996; Van den Bulte and Wuyts, 2007); and as a locus of innovation (Håkansson, 1989). Relationships with competitors can provide access to temporarily needed resources or lead to the temporary pooling of resources (Lechner and Dowling, 2003). However, this study suggests that firms both less than and more than three year in operation rely on their local nets suggesting enduring relationships and a reluctance to change. This has been known to cause problems after the start-up phase of an enterprise (Lechner et al., 2006) due to the concept of lock-in or being 'trapped in one's own net' (Gargiulo and Benassi, 2000; Uzzi, 1997).

This is clear from figure 2 which depicts the four categories of networks; family/friends; customers; mentors; and ex-colleagues that comprise local nets for the participant entrepreneurs and their corresponding use. Through an over-reliance on social nets their use is both limited and redundant. For the most part family/friends, customers, mentors, and ex-colleagues are used for the same reason with the same types of information being sought through them. This translates to a lack of use in terms of innovation, access to distribution channels, product and service development, and assistance in obtaining finance, core reasons and benefits cited for network participation. Furthermore, product and service quality information, pricing information and product /service design information is not prioritised.

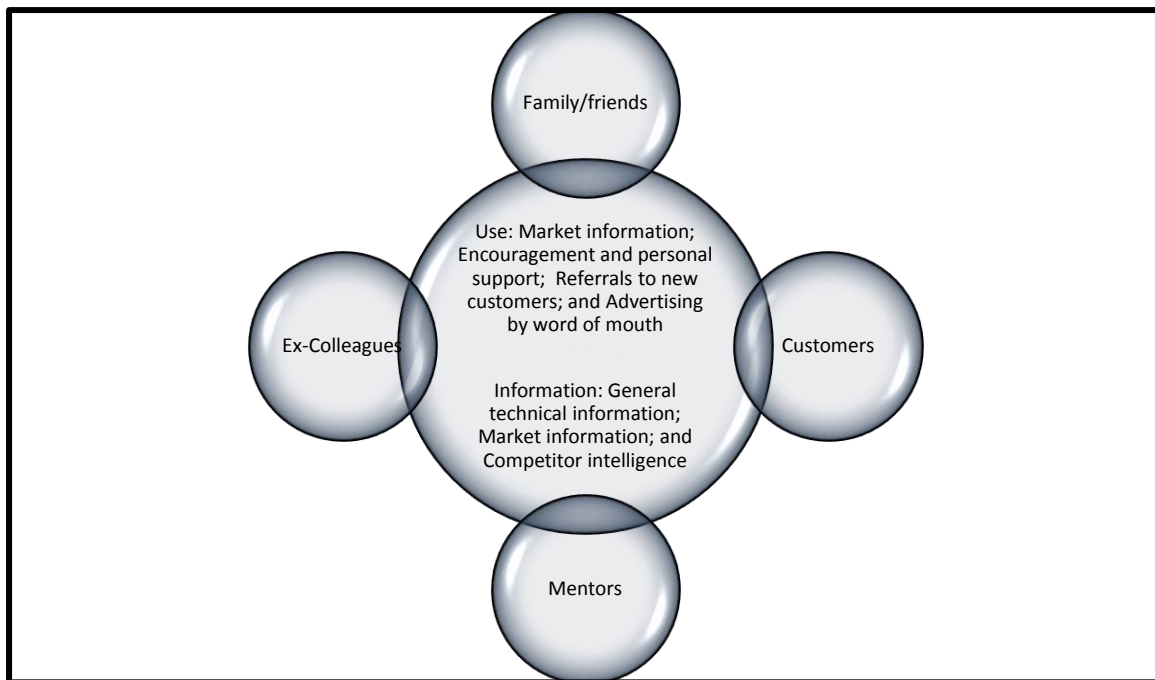


Figure 2 The Scope and Use of Local Nets

An independence mentality and internal local of control can also trap entrepreneurs within their local nets. The findings suggest that a preference exists to operate in an independent as opposed to interdependent manner which is similar to findings by (Hanna and Walsh, 2008) that if a firm has both the time and finance available to develop the required capability, they would generally prefer to remain operating independently. This did not change overtime, in fact the finding suggest that a proclivity for independence increased as the firms matured.

As with all studies, this research is not without its limitations. The main limit of the paper is that the data represents a snapshot of the firms studied at a point in time, and would be complemented by an in-depth study of local networks using the conceptual definition provided by the authors. However, the firms in the sample were hi-tech which would be expected to be more networked which underlines to the need to address the limits and logics of how small firms network in practice.

One of the key implications of our paper is that the strategic use of network resources is a more sticky process than presented in existing research and not easily implemented by firms. Indeed, it may be more apposite to the larger firm which tends to plan more strategically than its small or entrepreneurial firm counterpart. Defining the local network as one in use relates the concept to practice and at a level very amenable to application in the entrepreneurial firm. It matches the experience based learning cycle through doing which often characterises the entrepreneur and separates their knowledge of the broader operational network horizon and context from what they are willing to use. Indeed, many nascent firms may not grow because they rely on local nets, for example, they may remain with less sophisticated customers, and are unwilling to cede some control over their decisions to partners. This implies that local nets can act as a limit on growth if they do not change over-time which was the case in the firms reported on in this paper.

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