

Suppliers of Networks, Networks of Suppliers

Sara Denize

University of Western Sydney
Locked Bag 1797, Penrith South DC NSW 1797, Australia
s.denize@uws.edu.au

Louise Young

University of Technology, Sydney
PO Box 123, Broadway NSW 2007, Australia
louise.young@uts.edu.au

KEYWORDS: Collaboration, Social Network Analysis, Content Analysis, Empirical

The authors acknowledge the intellectual contributions of Theresa Anderson, Ellen Baker, Tim Mansfield and Andrew Wood to earlier parts of this work. Particular thanks are extended to Melanie Kan for her substantial contribution to the data collection reported here and for her intellectual contributions on earlier work. This research was funded by a University of Technology, Sydney Faculty of Business research grant and a University of Technology, Sydney partnership grant.

Suppliers of Networks, Networks of Suppliers

Introduction

The “networked organisation” has a myriad of meanings — from those organisations that have acquired sophisticated communication technology enabling high(er) levels of functionality, to firms who join together so that each can provide a component or components of an integrated product and/or develop a more commanding marketing position (e.g. export groups). Systems consisting of multiple organisations that have joined together to enable wider distribution of goods or services can also be considered to be networks. This paper reports a case study of such a service-providing organisation — a collection of small, locally-oriented job providers who have amalgamated into a network and entered into contracts with the Australian government to find jobs for the unemployed throughout Australia — and focuses on the coordination issues within the many layers of the network. The paper explores the network in terms of theories of social network structure and group dynamics. The differences in the network properties, competencies and effectiveness and the relationships between the individual organisations within the extended network are the focus of the case study reported here.

Networks and Grouping Schemes

The study of industrial networks "is concerned with the understanding of the totality of relationships among firms" (Easton, 1992, p.3). These relationships within a business network display properties of emergence. By this we mean that the interactions between relationships (as distinct from the organisations within them) create many of the network's properties. There are particular coordination issues associated with this. Wilkinson and Young (2002, p.2) discuss the “problematic” nature of network coordination in terms of the importance of “coordination between as well as within relationships”, the problems associated with network interdependencies where “all actors in a network are simultaneously trying to achieve their own objectives while taking into account the effect and responses of other actors” and where “no one actor is in overall control”. At the heart of these issues is the reality that in a network competitiveness depends not only on a firm's own efforts and behaviour but also on other firms and organisations with which they are directly or indirectly connected (Wilkinson and Young, 2002).

A growing awareness of this is reflected in the increased attention given by business to coordination issues in external partnering forms such as strategic alliances, key account management, just-in-time relationships, outsourcing, virtual and hollow corporations and business eco-systems (e.g. Contractor and Lorange, 1988; Hagedoorn, 2002; Davidow and Malone, 1992; De Rond, 2003; Moore, 1995; Moore, 1996). The benefits include the mutual coordination and adaptation of products and processes, the development and use of relationship specific assets, the creation and sharing of knowledge, decreased relationship governance costs, reduced risks of opportunistic behaviour, reduced search costs for new suppliers and customers and referral and reputation effects (Håkansson and Snehota, 1995;

Hausman, 2001; Kalwani and Narayandas, 1995; Möller and Wilson, 1995; Turnbull, Ford and Cunningham, 1996).

For small firms, participating in networks has emerged as a possible way of increasing both competitiveness (Barney, 1991; Jarillo, 1988) and opportunities (Powell, Koput and Smith-Doerr, 1996). However entry into, or starting up, value-creating networks can be difficult. In the literature of international marketing, authors such as Welch, et al (1996b; , 1996a) report the effectiveness of (at least initially) centrally led grouping schemes as a way developing cooperative networks. Facilitators of such schemes seek members and convince them of the possible gains to be made as well as introducing them to like-minded firms as a means of generating networks to seek overseas business. We observe such configurations in other settings. For example, as governments increasingly outsource services they previously provided the ‘service delivery contract’—where the provision of public services (such a food, health and employment services) are set to tender— is seen (Thompson, 2000). The complexities attendant in the tender process has ‘forced’ many small and medium sized, previously independent service providers to amalgamate into formal collaborative arrangements to participate in this new market structure. The experiences reported by participants within these emerging organisations are diverse and include descriptions of “benign competition”, “dependencies” and the “idiosyncratic” nature of the relationship (Thompson, 2000, p. 1).

Such schemes seek to obtain benefits from coordinated action among members. This may simply involve a pooling of resources to support joint research, marketing and promotion activities, thereby gaining greater impact from a given expenditure per company, or enabling cost reductions. Information and knowledge can be shared to mutual advantage. The benefits of such pooling of existing group resources stem from the economies of scale and scope made possible (Welch et al., 1996b; Welch et al., 1996a).

Within such schemes, some form of centralised facilitation is often required. This can stem from the lack of awareness among potential participants of the benefits of cooperation and/or an inability for individual members to coordinate their activities for the start up or continuing processes. In networks involved in tendering for government work centralised facilitation for coordination may be particularly critical in preparing and fulfilling the tender conditions. Unlike other network forms where 'success' is often measured as, simply, the continuity of the group (Welch, 1992) in fulfilment of complex tenders, performance metrics are likely to be complex and multi-dimensional (Gadde and Persson, 2004). This creates further potential for tension amongst members whose performance is measured in part on the skills and implementation of others (Wilkinson and Young, 2002).

The manner in which a facilitator(s) interacts with group members, and the relationships between the facilitating personnel and members of the network have been identified as important issues in group operation and network development (Welch et al., 1996b; Welch et al., 1996a) as have group dynamics (the social processes and interactions within groups) (Welch et al., 2000). For network grouping schemes to succeed, member companies are required to accept group-determined goals and activities. This is particularly difficult for independent owners of small companies, and even more so when

the group comprises competitors (Welch and Joynt, 1987). As Van de Ven (1976, p.28) has noted: "organizations do not coordinate for coordination's sake. Instead, organisations strain to maintain their autonomy".

Grouping schemes have not generally been conceived of or analysed in business network terms — no doubt this is because their internal processes are not concerned with market transactions. Instead, the focus to date has been on economic exchange relations i.e. buyer-seller relationships and how cooperation affects performance. While cooperative buyer-seller relationships play a central role in market success, there are various types of non-economic exchange relations that exist within networks that can substantially impact on performance. Industrial networks comprise many different types of interfirm relations including a variety of linkages between the companies within it and to various external organisations. The group members bring with them their own (pre-existing) networks, parts of which may be activated and proactively linked to the networks evolving for the group as a whole, as well as to those of other individual members (Welch et al., 1996a).

This diversity can create challenges. "Networks run on cooperation," (Easton and Araujo, 1992, p.80) and the nature and development of cooperation in these non-economic as well as economic exchange relationships may be more diverse and may influence the structure and operation of the network as a whole — in particular its performance — in different ways. Nor can we assume that the differentiation is as simple as a dichotomy of economic and non economic relationships. Easton and Araujo (1992) identify four types of cooperative, non-economic exchange relations in networks that can display different cooperative properties: competitor relationships, complementary supply relations, relations between firms and third parties and potential relationships.

Also, the benefits that arise from grouping schemes can be interpreted in network terms. Benefits arising can be understood in terms of changes resulting in the relations among firms within the group and with other firms and organisations. These changes can be analysed in terms of activity links, resource ties, actor bonds and schema couplings (Håkansson and Snehota, 1995; Welch and Wilkinson, 2002). The changes and benefits arising in these dimensions in turn depend on the mix of firms involved in the group, the nature of any pre-existing relationships and networks, the potential benefits that can arise from more cooperative relations and the extent to which these are recognised, and the types of intervention strategies used. In short, the developing network configuration and its utilisation can be seen as both an indicator of the group's operation and as a foundation for its effective functioning.

Case details

To understand the challenges and nature of network cooperation within a grouped set of suppliers, this research investigates the nature of the interactions within a set of organisations that supply a portfolio of services to job seekers. The network comprises approximately thirty actor-organisations, each with one or more sites that are tied by virtue of a service delivery contract. Collectively the organisations provide geographic coverage (service is delivered in a face-to-face context, at local sites). While in most

locations the sites are semi-monopolists, some of the organisations that the individual sites are components of have traditionally been competitors. A central organisation coordinates the network; they brought together the participating organisations, work to maintain and development network ties among the participants, negotiate the service delivery contracts with the government tenderer on behalf of the network members, monitor the performance of the members and handle reporting and payment. The organisations are diverse. Some are not-for-profit and others profit-taking and they range in size from being a single site organisation to having up to six sites.

The case uses two research lenses to explore the linkage quality within the network and the associated performance. The broad pattern of network linkages is summarised using social network analysis with data from an email survey. A more focussed perspective emerges from analysis of depth interviews undertaken with staff from one member organisation in two of their six locations. The analysis is augmented by considering the relationship between these two sets of findings. These are interpreted in an organisational framework obtained via five days of on-site observation in the two focal locations, a number of shorter, informal interviews in these locations, a review of archives (digital and paper-based), meetings with the network’s coordinating body and the observation and informal interviews that occurred when members of the research team attended two national conferences of the extended organisation

An email survey exploring the communication between managers and senior consultants in each of the member sites was conducted. Informants were provided a list of 92 individuals from 54 sites including the national office and asked to indicate with whom they communicate and who initiates communication sequences. Email surveys were sent to targeted informants, with a follow-up reminder email sent four-weeks after the initial request. Replies were received from eighteen individuals. Three of these were from individuals not on the target informant list. These informants had replaced or were acting on behalf of the named individual. Table 1 provides a summary of the inter-organisational network, the numbers of nodes, members and sites in each Australian state and the head office. “Nodes” are the individual site managers and senior consultants, members are independent organisations which are members of the job network, and sites are individual business units which deliver the services of the network.

Table 1: Network Description

	Nodes	Members	Sites
Centre Organisation	10	-	1
NSW	25	8	16
VIC	22	11	13
QLD	14	2	6
SA	3	2	2
NT	1	1	1
TAS	6	1	4
WA	14	8	11
Total	95	33	54

Seven depth interviews were also conducted. Using a minimal interview guide, interviews focused on the ways in which intra- and inter-organisational collaboration occurred and how effective it was. Informants were encouraged to freely discuss whatever issues they thought to be relevant/important in relation to what they did and how they worked with others. They were prompted (if necessary) to consider both positive and negative instances of collaboration. Interviews were 15 to 60 minutes in duration depending largely on the breadth of informants' experiences in the network — which was often dictated by length of employment.

The findings that emerge from these two complementary perspectives are now considered.

A macro lens – communication networks

It is always a challenge to obtain complete information from all individuals in social networks — even with very small and circumscribed networks — this study is no exception. A strategy that is effectively employed when network data is incomplete is to treat each respondent's descriptions of their direct ties with other individuals as a sample of the network (called ego nets). These sample points provide a great deal of information about the likely structure of the network, its degree and the directed patterns of communication. Limitations are noted with this approach, particularly in respect to non-response bias. For example in this network respondents are likely to be those who communicate more extensively than do non-respondents. Thus estimates of centrality (average degree) are likely to overstate the actual network communication.

Ego nets diagrams for each of the respondents were prepared and the statistical properties of each were calculated using UCInet (2002). For convenience the eighteen individual ego net diagrams have been combined to produce an aggregate ego net map. This is shown in Figure 1.

Table 2 provides the number of people with whom there is other-initiated (Indegree) and self-initiated (Outdegree) communication for each of the respondents.

Table 2: Communication pattern by node (and State) showing other initiated communication (Indegree) and self-initiated communication (Outdegree)

ID	Node Type	State	Self Reported	
			Indegree	OutDegree
N1_01a	Focal Site	NSW	18	17
O1_01c	Centre Office	NSW	26	46
O1_01f	Centre Office	NSW	25	9
V1_01a	Other Site	VIC	23	22
V1_01f	Other Site	VIC	22	26
W1_01a	Other Site	WA	20	18
V2_01	Other Site	VIC	17	12
W1_02	Other Site	WA	15	18
T1_01	Other Site	NT	15	16
V5_01	Other Site	VIC	15	10
N3_01	Other Site	NSW	12	12
V3_01	Other Site	VIC	11	13
V6_01d	Other Site	VIC	9	13
N2_01	Other Site	NSW	9	10
V7_01	Other Site	VIC	6	5
N2_02	Other Site	NSW	5	7
V4_01	Other Site	VIC	5	1
N1_02	Affiliated Site	NSW	4	6
Average ALL Respondent Nodes			14	15
Average NSW			10	10
Average VIC			13	13
Average Center Office			26	28

In line with Figure 1, Table 2 illustrates that people within the centre organisation have relatively high levels of communication linkages. Other individuals surveyed vary considerably in their levels of communication (both other and self initiated). Clearly, geographic and organisational proximity provide some of the explanation for differences in linkages, but even accounting for this there is considerable variation in the communication patterns of individuals. Take for example, the striking differences between the communication patterns of the site manager at the focal site (node N1_01a) and the site manager of an affiliated site (node = N1_02) set out in Table 2. Despite being part of the same member organisation and in the same state (in fact located within five kilometres of each other) they represent extremes in the number of communication linkages (obviously other factors are driving the reported degrees of connectedness). The manager of the focal site has many connections with individuals from the centre office. This manager also reports self- and other-initiated communication between himself and six other site managers, with four of these other managers operating affiliated sites (i.e.

part of the same member organisation). This can be more readily seen in Figure 2, which shows the direct communication linkages for the manager at the focal site.

Figure 2: Communication linkages for manager of Focal site (node N1_01a) (Respondent nodes are shown in blue)

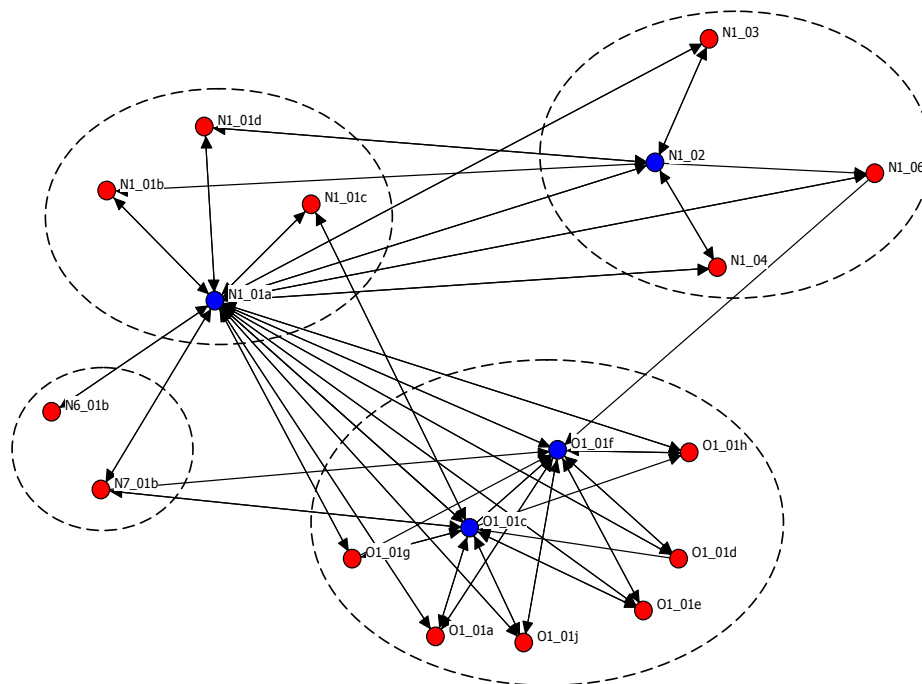


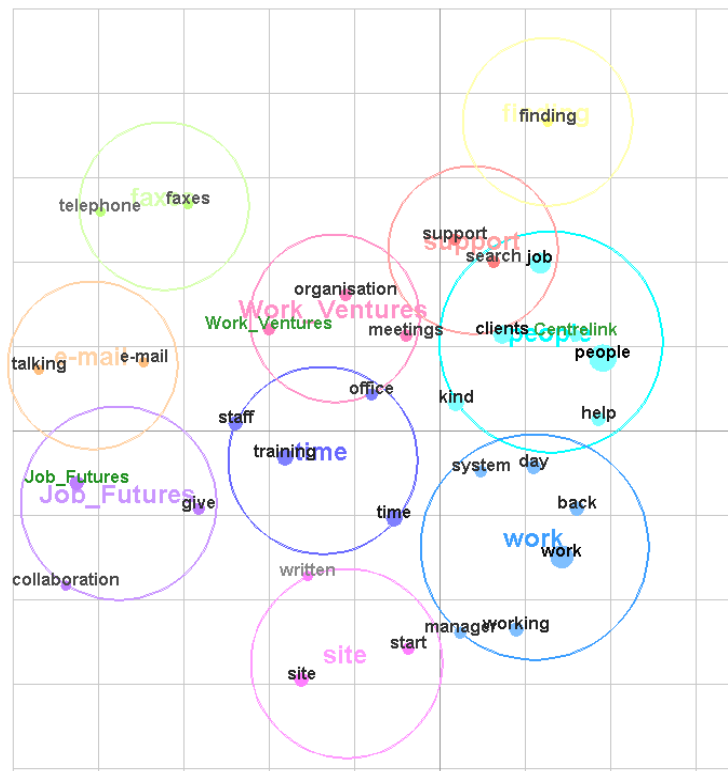
Figure 2 depicts the pattern of relationships in more detail for the focal site manager (i.e. the very connected communicator). The figure indicates this manager has linkages of many different kinds – some within the site and others to other parts of the network and some initiated by the manager and others initiated by people from outside the site. This figure also shows all available information about how people in the focal managers’ immediate network are connected to each other (this under-reports the connections between these individuals because of non-response).

This analysis contributes to our understanding of the mechanisms that do and do not drive this network. Communication linkages are not strongly positively correlated with performance (as we might expect). Broad performance data was provided during interviews with staff from the centre organisation. We know that the focal site is performing poorly in contrast to its rich communication linkages. In addition, Queensland sites with few communication links (see Table 1) are among the outstanding performers of this network. We might speculate that the high level of connectedness of the focal site is due to the performance problems rather than being a symptom of network competence. This is in line with studies of communication between organisations that reveal communication intensity does not necessarily predict performance (and has been found to be associated with both good and poor performing relationships).

Another lens – analysis of depth interviews

The deeper social processes that drive the observed communication connected are revealed in the interview data. Computer-aided content analysis was used to discover the main themes contained in the depth interviews and subsequently to profile the nature of the coordination/communication that occurs in the network. The software used in this analysis, Leximancer (2006), identifies the frequently occurring and co-occurring words in the transcribed interviews and amalgamates these into “concepts” with the text of the interviews automatically coded as reflecting one or more of these. Concepts are not key words; they include multiple, related ideas, formed by word proximity and co-occurrence. Calculating the connectedness of pairs of concepts in turn identifies higher-order themes. The concepts are linked back to the text via a text browser so that concepts and their interconnections to other concepts can be explored and interpreted. Figure 3, the map generated by Leximancer to summarise and inter-relate concepts and themes, emerges from an analysis of the interviews.

Figure 3: Content analysis/summary of depth interviews

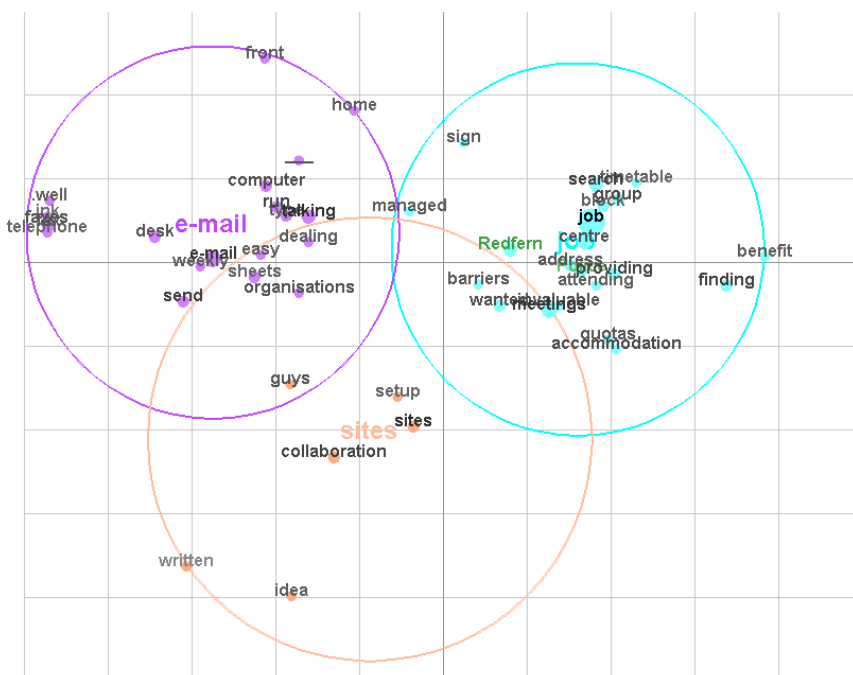


The map summarises the main themes that summarise the content of the interviews. Theme size indicates relative importance (importance is defined by frequency of occurrence in interview text). Map proximity indicates theme and concept similarity. Interpretation of the map (which is done by the analyst) shows one cluster of themes that is concerned with the job placement functions of the network. “Support,” Centerlink (the government job provider), “Work” and the concepts contained within them (i.e. system,

day, people, help, clients, search, finding, etc.) are included in this group. These themes contain the three most frequently occurring concepts (based on the ranked concept list also generated by the program), “people,” “work” and “job.” A closely related cluster of themes is concerned with the work practices that facilitate and impede the job placement function. “Time,” “Work Ventures” (the focal organisation’s name) and again “Support” are part of this group and contained here are concepts such as “training,” “meetings” and “staff.” The third cluster is concerned with means of coordination and includes “Faxes,” “emails” and “Job Futures” (the extended network of organisation where depth interviews were conducted) and contains concepts such as “telephone” and “collaboration.”

While this summary confirms the importance of coordination in the workplace in the minds of the informants, a more in-depth analysis of coordination aspects is needed for further insight into the network’s connections. This is done by lexicographic profiling, which allows the analyst to focus on the text including relationships of interest and to explore these in a deeper way. Otherwise, in this case the job facilitation function of the organisation, dominates the findings - given the importance of this to the informants (see Young and Denize 2007 for further discussion of this). Profiling involved “seeding” a “collaboration” concept, whereby Leximancer looked for words provided by the analyst thought to indicate collaboration and the means by which collaboration is/could be facilitated, e.g. “phone,” “fax,” “email,” “meetings,” etc. and built concepts based on the co-occurrence of these and their co-occurrence with other terms. The interview text that was coded as part of the collaboration concept that emerged was then analysed by Leximancer in the previously-described way to discover other concepts and themes. Figure 4 presents the resulting map.

Figure 4: Collaboration Profile Map



Two cautionary points need to be made. First, this is no longer a summary of the interviews but rather an in-depth analysis of a portion of them. Second, this therefore is a small portion of an already small set of data and therefore must be considered very cautiously. Despite this a clear and fairly stable picture emerges. The map shows three main themes: “Job,” “Sites” and “Email.” The text browser indicates “Job” continues to contain those concepts that are concerned with providing job-related services to the community; however the focus is now on the co-ordination of the processes of network for these external stakeholders. “Email” presents means of network communicating and coordinating and includes concepts such as “telephone,” “fax,” “talking.” These two themes are linked by the third, “Sites,” which contains the underlying collaborative elements. An indicative quote coded as both “Job” and “Link” is made by a consultant who when asked how they interacted with other sites said:

I don't mind checking out the other structures of the other organisations how they do things okay. (As) I don't know how many people look after certain clients.

And an indicative quote coded as both “Email” and “Link” is a site manager's response to a query as to how collaboration was developed:

(W)e started attending a lot of the community consultative meetings. I also went along to meetings at the Redfern Community Centre and the Redfern Legal Centre. The meetings with the Police were established when we were at the Legal Center and the Domestic Violence Officer approached us.

Both indicate communication links but the first remains impersonal and grounded in information collection from beyond their own site. In contrast the second looks at extending the network beyond the group to include others who can assist in improving the functionality and perhaps the (economic) performance of the network. This is grounded in developing connectedness between sites and/or sites and external organisations. There is further evidence of this with another site manager talking about the collaborative responsiveness of the Central body of the network for relevant training of their staff in this way:

...(I)instead of saying “they need training on this, they need training on that”, it's like, “this is the staff, this is the personality of them, this is where they are”.

Managers report growing network connectedness within their more immediate network and report the following innovations as emerging from inter site collaboration.

....(O)nce, everyone never used to share their information. (But now) it's like, why invent the wheel? We have seven offices. So what we've managed to do, there's been a few things like that reverse marketing log and we've just started the Indigenous mentoring program.

In line with previous work, the value of external links and the devices by which they are fostered emerge primarily from members of the central organisation and managers of sites. They report the devices by which connections are fostered and the development of

communication linkages, which support those devices. Consultants, who work directly with job-seeking clients, are more likely to see value in the devices that link them to others (rather than in terms of the others with whom they are then linked). Managers instead see the possibilities of the connected network:

... (*When*) I first came here it seemed to be site against site, "Oh we've got to do this" and "We've got to get that and don't share any of your information". I was like, "Aren't we all pushing the same barrow? We all work for (*the same organisation*) you know."

Discussion, Conclusions, Implications and Future Research

The two forms of analysis provide important synergy in understanding the network. The social network analysis highlights the importance of organisational and geographical proximity in developing network connections. However this macro lens doesn't show the provenance of these connections and their role in shaping the patterns of communication we observe and the performance that we observe. Nor does it consider the connections external to the network and their role in shaping the extended organisation. Depth interviews in part fill these gaps, providing a thick description of the types of connectedness that exist in this network – in particular highlighting that for many participants the inter site and inter organisational linkages are a response to the performance problems and reflect attempts by managers to activate the network and address these problems. Dealing with these challenges is part of what drives the pattern of communication for the focal site, as articulated in Figure 2.

Such a view is only possible when the profiling emerging from the depth interview analysis is considered in the context of the social network analysis, as this highlights the site managers' rich personal networks of linkages to local community organisations and the importance of these to the managers.

Interviews with consultants highlight the considerable heterogeneity with respect to attitudes towards participating in the (extra-site) group dynamics of this network. There are those who are participants, those who are not but are aware and supportive of the benefits that inter-site and interorganisational connections can bring and there are others for whom this is of no interest. Often this last outcome is due to lack of perceived relevance – it is perceived as not directly contributing to finding jobs for those seeking them and thus is of little or no value for those who see this as their only concern (see Young and Denize 2007 for further discussion of this.) This is a concerning pattern; lack of/inconsistent group goals have been shown to have a negative impact on performance in network groups (Welch et al 2000).

Other factors contributing to the observed incompatible goals are job functionality and longevity (Young and Denize, 2007). Some jobs are boundary-spanning and thus require developing cooperative links with other parts of the network. In this network many other jobs are not. Without the motivation (and opportunity) to build cross-site links these individuals have no opportunity to assess the value of links. The issue then is whether building a cooperative network culture involving managers and the central organisation is

sufficient for network competence and opportunities to arise. If not, then means of motivating consultants into utilising inter-site links is needed.

Those who had been employed for a longer time by an organisation within the network were more network-oriented (Young and Denize, 2007). This is line with previous group dynamics research that has shown that "few groups are productive immediately; instead, productivity must usually wait until the group matures" (Forsyth, 1990, p.85). Unfortunately our interviews throughout the network highlight that this is a network with a very high staff turnover, particularly at the consultant level (reflecting the industry as a whole), thus impeding the development of the requisite maturity. Concerning is whether groups with high turnover of membership can ever mature sufficiently to leverage a full range of network competencies (Ritter and Wilkinson, 2002). Alternatively, it may be possible to build pro-network attitudes that in part exist at the organisational and relational levels rather than the individual level which can therefore instruct in-coming consultants. Maturity will then be grounded in network itself rather than its members, further facilitating a network-oriented culture.

Possibly network connectedness and competence can be facilitated by greater attention being paid to the composition of the network at the tendering stage. Network and relationship development is not easy. It requires examination of pre-existing network relations, including the presence of underexploited or unexploited relations and existing perceptions of the potential benefits of closer cooperation. Members of the group should be included based on network and personal complementarity, including the proportion of competitors feasible to include in the group. The choice of liaison and boundary people, both within the group and from the facilitator, to maximise the chances of constructive group interaction and to permit the results of group processes to translate into self-sustaining action and not just meeting of short-term performance targets is critical. Lastly, care must be undertaken in evaluating the group's success in terms of both the concrete, externally imposed performance indicators but also in terms of network impacts (Welch et al 1996a).

This research is limited by its scope. The response rate to the email survey that provided the input for the social network analysis was reasonable but not high and high response rates contribute to the descriptive power (though not necessarily the analytical power) of social network analysis. In addition, our network analysis to date has focussed only on network connectedness. The quality and value of links has not been considered. Future research will analyse the qualitative data collected in the email survey that considers the substance and quality of some of these links. The interview data comes from only three locations – two in the same member organisation and the head office. Greater diversity of informants would increase the heterogeneity of available information (as recommended by Patton 1990). The analysis to date has only considered connections between firms; the interrelatedness of relationships will be considered in future research. In addition to augmenting this case, an additional case could be considered to enable another level of comparative analysis. Either or both approaches will enable more in-depth examination of the impact of different types of network management strategies and

will assist in the further development of the theoretical base from which such schemes can be analysed and evaluated.

References

- (2006), Leximancer. Leximancer Pty Ltd. www.leximancer.com
- Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management Studies*, 17:1 99-120.
- Contractor, F. J. and Lorange, P. (eds.) (1988), *Cooperative strategies in international business*, Lexington, Massachusetts, Lexington Books.
- Davidow, W. H. and Malone, M. S. (1992), *The virtual corporation*, Harper Collins, New York.
- De Rond, M. (2003), *Strategic alliances as social facts: Business, biotechnology, and intellectual history*, Cambridge University Press, Cambridge, UK.
- Easton, G. (1992), "Industrial networks: a review". in Axelsson, B. and Easton, G. (eds.) *Industrial networks: A new view of reality*. Routledge London.
- Easton, G. and Araujo, L. (1992), "Non-economic exchange in industrial networks". in Axelsson, B. and Easton, G. (eds.) *Industrial Networks: A new view of reality*. Routledge New York, pp. 62-84.
- Forsyth, D. R. (1990), *Group dynamics*, Brooks/Cole Publishing Company, Pacific Grove, CA.
- Gadde, L.-E. and Persson, G. (2004), "Developments on the supply side of companies". in Håkansson, H., Harrison, D. and Waluszewski, A. (eds.) *Rethinking Marketing - developing a new understanding of markets*. Wiley.
- Hagedoorn, J. (2002), "Inter-firm R&D Partnerships: An overview of major trends and patterns since 1960", *Research Policy* 31:4 477-492.
- Håkansson, H. and Snehota, I. (1995), *Developing business relationships in business networks*, Routledge, London, UK.
- Hausman, A. (2001), "Variation in relationship strength and its impact on performance and satisfaction in business relationships", *Journal of Business and Industrial Marketing*, 16:7 600-616.
- Jarillo, J. C. (1988), "On strategic networks", *Strategic Management Journal*, 9:1 31-41.
- Kalwani, M. U. and Narayandas, N. (1995), "Long-term manufacturer-supplier relationships: Do they pay off for supplier firms?" *Journal of Marketing*, 59:1 1-16.
- Möller, K. and Wilson, D. T. (1995), *Business marketing: Interaction and network perspective*, Kluwer Academic Publisher, Boston, MA.
- Moore, G. A. (1995), *Inside the tornado: Marketing strategies from silicon valley's cutting edge*, Harper Business, New York, NY.
- Moore, J. F. (1996), *The death of competition: Leadership and strategy in the age of business ecosystems*, John Wiley, Chichester, U.K.
- Powell, W. W., Koput, K. W. and Smith-Doerr, L. (1996), "Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology", *Administrative Science Quarterly*, 41:1 116-145.
- Ritter, T. and Wilkinson, I. F. (2002), "Measuring network competence: Some international evidence", *Journal of Business and Industrial Marketing*, 117: 119-138.

- Thompson, D. (2000), Challenges to the way we work - how should we respond? *NCOSS Conference, Networking for Success, 12 May 2000*. Sydney, Australia.
<http://www.ncoss.org.au/bookshelf/conference/download/networking/thompson.rtf>
- Turnbull, P. W., Ford, D. and Cunningham, M. T. (1996), "Interaction, relationships and networks: an evolving perspective", *Journal of Business and Industrial Marketing*, 11:3/4 44-62.
- Van De Ven, A. H. (1976), "On the nature, formation and maintenance of relations among organizations", *Academy of Management Review*, 7:Oct 24-36.
- Welch, C. and Wilkinson, I. F. (2002), "Idea logics and network theory in business marketing", *Journal of Business to Business Marketing*, 8:3 27-48.
- Welch, D., Welch, L., Wilkinson, I. F. and Young, L. (1996a), "Network analysis of a new export grouping scheme: The role of economic and non-economic relations", *International Journal of Research in Marketing*, 13:5 463-477.
- Welch, D., Welch, L., Wilkinson, I. F. and Young, L. (1996b), "Network development in international project marketing and the impact of external facilitation", *International Business Review*, 5:6 579-602.
- Welch, D., Welch, L., Wilkinson, I. F. and Young, L. (2000), "Market Focus or Group Functioning? Analysis of an Export Grouping Scheme". in Beamish, P. (ed.) *International Entrepreneurship*. University of Singapore pp. 111-133.
- Welch, L. (1992), "The use of alliances by small firms in achieving internationalization", *Scandinavian International Business Review*, 1:2 21-37.
- Welch, L. and Joynt, P. (1987), "Grouping for export: An effective solution?" in Rosson, P. J. and Reid, S. T. (eds.) *Managing Export Entry and Expansion*. Praeger New York, NY.
- Wilkinson, I. F. and Young, L. C. (2002), "On cooperating: Firms, relations and networks", *Journal of Business Research*, 55:2 123-132.
- Young, L. and Denize, S. (2007), Competing interests: the challenge to collaboration in the public sector.