

**INTER-ORGANISATIONAL KNOWLEDGE SHARING BY OWNERS  
AND MANAGERS OF TOURISM AND HOSPITALITY BUSINESSES  
OF THE BOURNEMOUTH, POOLE AND CHRISTCHURCH  
CONURBATION, UNITED KINGDOM: AN ANALYSIS OF THE  
MOTIVES, INFORMATION CONTENT AND NETWORKING**

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## **ABSTRACT**

This research study relates to knowledge management within the tourism sector and makes a contribution to the subject matter of inter-organisational knowledge sharing. The tourism sector has been slow to adopt the principles of knowledge management (Cooper, 2006; Cooper and Sheldon, 2010) and there has been focus on knowledge transfer (Shaw and Williams, 2009) rather than on knowledge sharing. Knowledge sharing is a social practice. This research study makes a contribution towards understanding the motives, information content and networking practices of inter-organisational knowledge sharing in the tourism sector.

Theoretical contributions have been made which include: (1) the choice of a model which can be used to show knowledge sharing activities, the knowledge creation theory (Nonaka and Toyama, 2003) and relating the concept of information richness with the I-Space concept (Boisot, 1998); (2) a review and synthesis of a body of social network related theories in regard to embeddedness, structural influence and the innovative characteristics of social networks; (3) an explanation of the systemic features of shared knowledge through social networks as supported by systems, social systems and structuration theories; (4) the integration of theories and concepts regarding knowledge sharing and social networks with a view to better understanding the inter-organisational knowledge sharing practices of tourism businesses.

The research approach combined both attribute and relational data in the same piece of work. Data were collected using a structured questionnaire and survey method. Inter-organisational knowledge sharing relationships were mapped using social network analytical techniques (Wasserman and Faust, 1994). Data were analysed using frequencies, central tendency, inferential, Principal Components Analysis (PCA) and social network measurements.

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Empirical contributions were revealed through the discovery of why, how and what business people benefited from, overall and differently, and the examination of the different types of networking practices. As a result, the initial conceptual framework was revised and highlights several knowledge management concepts including: knowledge domain, knowledge specialists, knowledge diffusion, knowledge scanning, knowledge acquisition and knowledge dissemination. Motives were associated with two constructs: (1) social network; and (2) knowledge sharing, and these components enable and facilitate inter-organisational knowledge sharing practices within tourism destinations. Information content and networking were distinguished, network outcomes determined and structural processes measured in terms of embeddedness, structural influence and innovation regarding their potential knowledge sharing capability.

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## CHAPTER 1 INTRODUCTION

### 1.1 Introduction

Inter-organisational knowledge sharing involves complex processes which occur in the businesses' external environment (Easterby-Smith, Lyles and Tsang, 2008). Knowledge sharing is viewed as an ongoing, reciprocated process by which knowledge stocks are built up. As such, knowledge sharing is an overarching concept to knowledge transfer (flow of knowledge from donor (A) to recipient (B) business). Authors propose that the factors influencing knowledge transfer are those relating to the donor business, nature of knowledge, inter-organisational dynamics and recipient business (Grant, 1996; Easterby-Smith et al., 2008). The donor and recipient business characteristics are internal to the business and the nature of knowledge and inter-organisational dynamics are external to the business.

While the characteristics of the donor and recipient business are important, equally important are the needs to understand how and why knowledge is shared based on the information content and inter-organisational dynamics of social networking? Knowledge sharing means that shared knowledge moves within a network structure (flow of knowledge from point A to B, B to A, B to C and potentially A to C). Hence the reason this research study is about knowledge sharing, which encompasses knowledge transfer (knowledge received by a business from another business). According to Bartol and Srivastava (2002:65) knowledge sharing is defined as, "*individuals sharing relevant information, ideas, suggestions, and expertise with one another.*" Knowledge sharing takes place through relationships (Liebowitz, 2007; Marouf, 2007; Yang, 2008) and shared knowledge is assimilated based on absorptive capacity (Cohen and Levinthal, 1990).

The topic of inter-organisational knowledge sharing as a doctoral study is particularly relevant since, firstly knowledge management as a topic is relatively new, having emerged in the 1990s (Easterby-Smith and Lyles, 2003). Secondly, the knowledge management literature on intra-organisational knowledge sharing has been discussed earlier (Musen, 1992; Davenport and Prusak, 1998; Hansen, 1999; Awad and Ghaziri, 2004; Hansen, Mors and Lovas, 2005; Haas and Hansen, 2007; Marouf, 2007) than the knowledge management literature on inter-organisational knowledge sharing (Cross, Parker, Prusak and Borgatti, 2001; Carlsson, 2003; Santoro, Borges and Rezende, 2006). Thirdly, there are concerns as to how knowledge may be acquired and used to achieve organisational goals in a sustained manner (Bennett, 1998; Cooper, 2006). Fourthly, knowledge sharing is not only required within each tourism and hospitality business but also across groupings of businesses for sustained success (Halme and Fadeeva, 2000; Halme, 2001; Hawkins, 2004; Novelli, Schmitz and Spencer, 2006).

In this introductory chapter the context of the research is examined including competitiveness, social networks and knowledge sharing contexts and the aim and consequent objectives are proposed. In order to achieve the research study aim, the quantitative methodology was adopted. This is introduced. Finally, the thesis's structure is outlined.

## 1.2 The Context of the Research Study

According to Senge, people are “*bound by invisible fabrics of interrelated actions*” (Senge, 2006:7). These actions form a structure which is associated with patterns of behaviour (Senge, 2006). One such pattern relates to the sharing of information through a system of personal and business relationships. Such relationships that business people have may be used to relay information, which is a source of ‘know-how’ and ‘know what’ for business people. Information becomes knowledge which is a resource, similar to land, capital and labour (Carlsson, 2003). As a result, people can be the agents of knowledge (Argote and Ingram, 2000) and their inter-relationships with persons outside their business need to be examined if we are to understand inter-organisational knowledge sharing.

The study is based on a systems thinking perspective involving five aspects of information sharing: the input, the process, the content, the output and the outcome. The input is the motive to share information. The process is the way people share information with, in this case, the focus being sharing information through social networking. The content of the inter-organisational knowledge sharing process can be viewed as the relational patterns formed through social networking activities and what is shared in terms of the type of information: technical, managerial, strategic and local information. The output of information sharing is the form in which the information is shared, whether verbal or written, in other words the various tacit-based and explicit-based forms of communication. The outcome is the perceived effect on the business as a result of the social networking process and information sharing content. In addition, both the process (social networking) and the content (information) have motivational and behavioural explanations that form part of the conceptual framework which underpins this study.

Tourism as a subject area lacks discipline status (Tribe, 1997) and new ways of thinking about the tourism sector are needed for the sector's growth and sustainability. Tourism borrows theories and concepts from other disciplines in order to explain how the sector is to grow and develop and one example of this is the Tourism Life Cycle Model (Butler, 1980) borrowed from the Product Life Cycle Model (Vernon, 1966). While such theories can guide the development of our understanding of the tourism sector there is also a need for a deeper understanding of how tourism entities interact and depend on each other. Through understanding these relational processes the tourism sector will enter another dimension that can improve strategies implemented to grow and sustain the sector. Equally knowledge is one resource that can be used to grow and sustain the tourism sector and enhance its competitiveness (Cooper, 2006). Such knowledge resources can be obtained through human and technological interaction (Skyrme, 1999). Human interactions involve social processes, many of which are incorporated social networks. It is therefore feasible to examine how and why social networks facilitate knowledge sharing and what knowledge is shared.

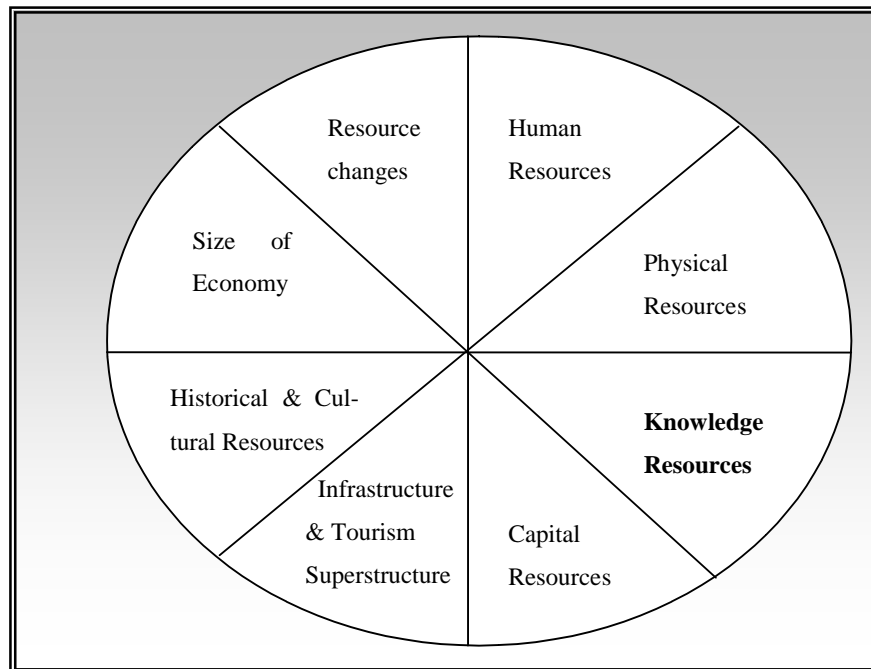
### **1.2.1 Competitiveness in the Tourism Sector**

The tourism sector is comprised of the tourism and hospitality industries. **Tourism** as a concept is defined as *“the processes, activities, and outcomes arising from the relationships and the interaction among tourists, tourism suppliers, host governments, host communities, and surrounding environments that are involved in the attracting and hosting of visitors”* (Goeldner and Ritchie, 2006:5). As accepted by the World Tourism Organisation (WTO), *“tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes”* (Goeldner and Ritchie, 2006:7). **Hospitality** relates largely to the supply-side of the tourism sector of which the accommodation sector forms a major part (Cooper, Fletcher, Fyall, Gilbert and Wanhill, 2005).

Based on the demand and supply activities within the tourism sector, tourism activity is largely interdependent since a range of products and services come together to form a tourism sector and this interdependence affects the competitiveness of the tourism destination. Competitiveness is developed through certain factor conditions: human resources, physical resources, knowledge resources, capital resources and infrastructure (Porter, 1990). Within the tourism context, competitiveness can be viewed as including these factor conditions in addition to tourism superstructure, historical and cultural resources, size of the economy and resource changes (augmentation and depletion) (Ritchie and Crouch, 2003).

**Figure 1-1 Competitiveness Factors**

Sources: Adapted from Porter (1990) and Ritchie and Crouch (2003)



Knowledge management within the tourism sector brings with it the hope that those developing and managing tourism destinations can become more knowledgeable, with 'know how', and therefore respond to changes within the external environment in a timely manner (Cooper, 2006). As noted above, competitiveness factors include knowledge resources (Figure 1-1). Accordingly, knowledge resources are important for the competitive advantage of the tourism destination as in theory, knowledge may be a stimulus that can transform the tourism system when tourism specific knowledge flows. Knowledge flows create knowledgeable agents who can engage in an adaptive process, which results in the tourism sector re-inventing itself. For example, new knowledge coming into the complex tourism system creates a situation in which the people in tourism and hospitality businesses may make timely decisions and self-adjust to achieve productive outcomes.

Obtaining knowledge provide an information advantage. The need for an information advantage stems from a requirement for the business to become flexible and timely in its response to every 'wave' of change. As a result, the tourism destination is 'first off the blocks' and adapts to changes in the tourism environment (Poon, 1993). A competitive tourism destination may for instance be the first to have a green hotel since the greening of hotels, is currently favoured as it appears to indicate environmental awareness: an attitude tourists are believed to attach importance to. Notions of flexibility (adjusting to change) and timeliness (adapting to change) reflected in the example given have brought awareness of knowledge management to the attention of those working in the tourism sector. Additionally, the need for knowledge is supported by Kozak and Rimmington's (1999) argument that low service levels in the tourism sector are as a result of the lack of knowledge and motivation.

Additionally, competitive advantage comes through the use of information (Porter and Millar, 1985; Choo, 1998). The speed at which information can be processed makes explicit knowledge readily available. Explicit knowledge which involves the processing of information becomes particularly important for achieving business competitiveness. Information is the source of knowledge and the processing of information is the creation of knowledge (Nonaka, Umemoto and Senoo, 1996). Once knowledge is created it may be stored in some form or the other for future creation of more knowledge. By processing information business people become knowledge specialists. Developing people as knowledge specialists makes businesses survive and remain competitive (Drucker, 1998). The creation of knowledge specialists is a central activity of businesses since more knowledge, whether that knowledge is tacit or explicit, becomes available to others (Nonaka, 1998). Generally, businesses which create and share knowledge would achieve sustainable competitive advantage and superior profitability (von Krogh, Nonaka and Aben, 2001).

### **1.2.2 Social Networks in the Tourism Sector**

A social network is based on social ties and it is through these social ties that a structure is formed. The main distinction that is needed is that of a formal and an informal network. Whether formal or informal a social network involves a relationship between agents (Seufert, von Krogh and Bach, 1999). Social networks are formed through various means. Seufert et al. (1999:183) stated,

*“Networks may result on the one hand through internalization, that is to say, an intensification of cooperation, or externalization in the form of a limited functional outsourcing achieved by loosening hierarchical co-ordination mechanism.”*

As such, they suggested that a network is a ‘loose’ (meaning emergent and not fixed) structure driven by forces of co-operation and co-ordination (Seufert et al., 1999). The network is comprised of a social object, referred to as agent which may be either an ego who is the point of reference or an alter who is any other individual agent (Parsons, 1951).



Social networks are therefore based on relationships. Mutch (1996) posited that in order to manage the tourism sector, of critical importance is not only the technical components but also the construction of relationships within the tourism sector. Social networks may facilitate knowledge sharing and therefore these relationships are important sources of information. There are problems of obtaining new knowledge for people within tourism sector businesses. Knowledge is obtained through collaboration and there is need to create a space (Nonaka and Toyama, 2003) at various times to ensure that people in these businesses obtain information in a timely manner. In view of this, information is obtained through relationships within social networks.

Crucially, the lack of destination information and knowledge poses one of the greatest challenges for the management of tourism destination growth (Ritchie and Ritchie, 2002). There has been much focus on information technological processes (Buhalis and Licata, 2002) but these assets come at a cost. Therefore there is need to understand how other processes of information sharing operate. By examining these other processes that are social rather than technological in nature, a business can understand how relationships benefit from information flows that will improve business performance.

In addition, a plethora of tourism networks on planning and development exist in the tourism sector (Halme, 2001; Tyler and Dinan, 2001; Pavlovich, 2003; Saxena, 2005; Pforr, 2006). Networks are based on one to one and group interaction. Networks can also be based on business or personal reasons. In the tourism sector networks are emerging (Tyler and Dinan, 2001) and generally seek to formulate policy (Pforr, 2006). Thus, tourism practitioners and academics alike are seeking to understand how the tourism sector develops and evolves based on networking activities.

### **1.2.3 Knowledge Management in the Tourism Sector**

Knowledge management can benefit businesses within the tourism sector. Knowledge management is the term used for the creation and dissemination of knowledge in an organisational context (Davenport and Prusak, 1998). The management of knowledge is necessary, both from its creation to dissemination and should not be left to chance (Blumentritt and Johnston, 1999). The challenge is how to create, convert (codify), and diffuse knowledge so that learning takes place. Cooper's (2006) paper about knowledge management and tourism highlights two main reasons why an understanding of networks of businesses and the management of knowledge are important. First, there is need to consider knowledge in an inter-organisational context since previous research in knowledge management has focused on knowledge sharing within organisations. Evidently knowledge sharing between tourism and hospitality businesses, as a topic, had not been examined and published when this research began as up to that time the focus had been within businesses such as hotels (Yang, 2007; Yang, 2008).

Second, based on the fragmentation of the businesses within the tourism sector, knowledge sharing is particularly challenging in light of the sector's human resource practices (seasonality of the sector) and its composition of largely small and medium sized businesses (Cooper, 2006). A sector of this nature has specific issues since knowledge may not readily be available from within the business for the successful operation of the business and thus there is need to look outside the business for new knowledge. This is the case particularly with the hospitality arm of the tourism sector. Hospitality businesses are predominantly comprised of sole proprietorships which may involve a couple operating the business. As a result, business innovation may only be obtained by collaborative mechanisms with other similar businesses.

### 1.3 Aim and Consequent Objectives

Based on the literature about knowledge management, social networks and tourism, the aim of the research study is: *to examine inter-organisational knowledge sharing, by considering the individual and group relationships of business people in different tourism and hospitality businesses and focusing on the contribution of social networks to this knowledge sharing.*

The objectives of the research study are:

- 1) To identify gaps in the literature by a selective review and systematic synthesis of the literature concerning knowledge management, knowledge sharing and social networks, and the relationship of these theories and concepts to the tourism sector.
- 2) To examine concepts and their relationships in regard to why, why not, how and what inter-organisational knowledge sharing practices take place within the tourism sector.
- 3) A critical examination of inter-organisational knowledge sharing within a tourist destination using both attribute and relational data.
- 4) To make a contribution towards building an awareness and understanding of the mechanisms of inter-organisational knowledge sharing within the tourism sector.

## **1.4 Research Methodology**

This research study seeks, through empirical evidence, to examine whether there are inter-organisational social networks of owners and managers in the tourism sector of the Bournemouth, Poole and Christchurch conurbation and whether these social networks facilitate the sharing of information and thereby the building of knowledge stocks. The selection of respondents for the study was based on a sample of tourism and hospitality businesses in the Bournemouth, Poole and Christchurch conurbation. Questionnaire design was based on a consideration of the various types of formal and informal networks and questionnaire administration was a survey method.

Respondents were asked about the specific types of information received, namely technical, managerial, strategic and local. The reasons for inter-organisational knowledge sharing, giving consideration to personality and identity traits, were operationally defined and were measured using a 5-point Likert agreement scale. The Statistical Package for Social Scientists (SPSS) was used to analyse the attribute data. UCINET 6.232 software for social network analysis (Borgatti, Everett, and Freeman, 2002) and NetDraw 2.089 network visualisation (Borgatti, 2002) were used to analyse and illustrate the relational data. The main findings will determine whether social networking allows inter-organisational knowledge sharing and why, what types of information are shared and how this information is shared as a result of respondents' social networking activities.

## **1.5 Thesis Structure**

This thesis critically explains the main theories and concepts of inter-organisational knowledge sharing within the tourism sector and includes literature, methods, results and conclusions in eleven chapters.

Chapter 1 is an introduction and sets the scope of the research study.

Chapter 2 synthesises the characteristics of knowledge, knowledge management models including knowledge creation theory, and knowledge sharing.

Chapter 3 reviews characteristics of social networks and social network related theories including communication network theories.

Chapter 4 discusses systems, social systems and structuration theories, which are used to explain the occurrence of inter-organisational knowledge sharing networks.

Chapter 5 concerns the tourism sector and is divided into two parts. The first part discusses the tourism system and includes agents, boundaries and resources. The second part discusses tourism knowledge networks.

Chapter 6 outlines the quantitative methodology and the social network analysis method which were used to understand practices of inter-organisational knowledge sharing. A research process which involved developing a research problem and approach, conceptual framework, research design, data collection and data analysis was implemented. The research design outlines the rationale for location selection, survey method, questionnaire design, questionnaire content and pilot study. Primary data collection and data analysis including a detailed example of conducting social network analysis are also included.

Research findings based on 200 responses to the questionnaire are reported in three chapters.

Chapter 7 concerns dispositions and attitudes towards inter-organisational knowledge sharing including the reasons for social networking and knowledge sharing. Personality and identity characteristics are examined as the underlying traits of inter-organisational knowledge sharing. Reasons for networking relate to the theories explaining the formation of networks and include interests, contagion, semantic, cognitive, trust, exchange and dependency, homophily, proximity, social support, time and cost. Reasons for knowledge sharing include feelings, preferences, status of knower, prior experience, serendipity, time and cost.

Chapter 8 explains the information content and dissemination processes. The instrumental reasons, types of information and communication methods are analysed to explain what information was shared based on social networking practices. Additionally, the types and forms of information are analysed based on individual and group network types.

Chapter 9 contains elements of networking. These elements include networking characteristics based on whether the respondent was an owner or manager and their networking practices, which are the network types: individual business, individual personal, group formal and group informal.

Chapter 10 is a discussion and evaluation of inter-organisational knowledge sharing. The conceptual and methodological approaches are evaluated. Based on a revised conceptual framework the discussion section sets out: the motives, characteristics and social identity of business people; enablers of social networking and knowledge sharing; network structures and knowledge sharing activities; and creation of tacit and explicit knowledge.

Chapter 11 concludes the thesis with a discussion about the achievement of research objectives, management implications and further research. The thesis's approach is the use of empirical evidence to understand inter-organisational knowledge sharing within a tourism destination.

## **1.6 Conclusion**

This research study is an examination of inter-organisational knowledge sharing within the tourism sector. The inter-relationships of people in a range of tourism and hospitality businesses are examined to determine what type of information was shared and how and why these types of information were shared thereby the research study examines information which becomes knowledge. The context of the research is based on the perception that the tourism and hospitality businesses are fragmented and therefore a complex process of inter-organisational knowledge sharing becomes a difficult if not impossible task. In other words, there are conceptual and methodological gaps as to how and why inter-organisational knowledge sharing takes place and what information is shared, particularly in a perceived fragmented tourism sector.

The first literature chapter is a review of knowledge management, including knowledge sharing, which is the main subject matter of this thesis. While some authors propose models for managing knowledge other authors argue that by its very nature knowledge cannot be managed. Particular attention is paid to tacit knowledge sharing since tacit knowledge is viewed as less easily diffusible than explicit knowledge. In addition, the characteristics, elements and benefits of knowledge sharing are examined to understand the importance of knowledge sharing.

## **CHAPTER 2 KNOWLEDGE MANAGEMENT AND KNOWLEDGE SHARING**

### **2.1 Introduction**

Knowledge is the basis by which all factors of production (land, labour and capital) are applied (Badaracco, 1991). Knowledge management is important since knowledge, when applied, helps businesses adjust to their environment. Arguably, the term knowledge management is preferred rather than information management since knowledge, which is processed data and information, is a resource which when applied achieves business goals. Although knowledge has always existed the idea of managing knowledge is relatively new as a concept, and has largely been developed over the last twenty years. Some of the well-known authors such as Davenport, Drucker, Nonaka, Prusak, Senge and Takeuchi all seek to show the importance of knowledge management within an organisation (Nonaka and Takeuchi, 1995; Prusak, 1996; Davenport and Prusak, 1998; Drucker, 1998; Senge, 2006).

This chapter critically reviews the literature relevant to an understanding of knowledge management and knowledge sharing. It begins (Sub-section 2.2) by establishing the distinction between knowledge, information and data and between tacit and explicit knowledge. Both tacit and explicit knowledge are shown to diffuse using the I-Space (information space) concept (Boisot, 1998).

Several models of knowledge management are then reviewed (Sub-section 2.3) and these models include those relating to an inter-organisational context, which is an open system perspective. Knowledge creation theory is used to explain knowledge sharing and therefore a knowledge sharing model is proposed based on the knowledge creation theory (Nonaka and Toyama, 2003). It is also argued that the form of shared knowledge, tacit-based or explicit-based, is related to the type of communication method.



Knowledge sharing is also reviewed (Sub-section 2.4) to determine the characteristics of shared knowledge, the elements of knowledge sharing and benefits of knowledge sharing. There is a specific focus on tacit knowledge sharing since it is believed that this form of knowledge is particularly difficult to share (Nonaka, 1998).

A conclusion (Sub-section 2.5) summarises the chapter to highlight the key determinants of knowledge management and knowledge sharing.

## **2.2 The Characteristics of Knowledge**

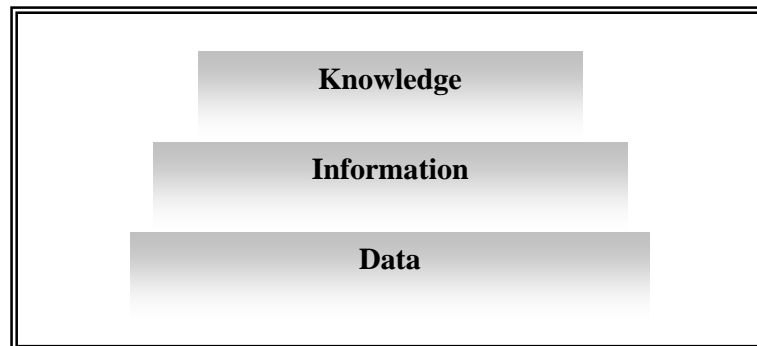
This section is divided into three parts: knowledge, information and data; tacit and explicit knowledge; and the information space (I-space) and the purpose is to examine what makes knowledge shareable. It is important to examine characteristics of knowledge since by its very nature knowledge cannot be managed however data and information can be managed (Wilson, 2002). Knowledge involves the mental processes of comprehension, understanding and learning within people resulting from their interaction with the outside world (Wilson, 2002). As a result, managing such knowledge processes is abstract hence the reason there is much confusion about the use of the term knowledge management and this confusion is aided by the loose terminology in the subject area (Beesley and Cooper, 2008). In order to provide clarity, knowledge management is seen as an activity whereas data and information are the objects that are the building block of knowledge management activity and knowledge creation (Beesley and Cooper, 2008). Accordingly, how and why knowledge is managed means that the objects of knowledge, data and information must be examined to understand what makes knowledge sharable.

### 2.2.1 Knowledge, Information and Data

This section clarifies the difference between knowledge, information and data. These terms are important for those seeking to manage the flow of knowledge resources (Davenport and Prusak, 1998). Knowledge resources may be utilised to build innovative practices and can be grouped together in a knowledge hierarchy (Figure 2-1). Data are facts about activities (Davenport and Prusak, 1998) they may for instance be a record of a transaction. These facts are processed to produce information. Data are transformed to information when it is “*contextualized, categorized, calculated, corrected and condensed*” (Davenport and Prusak, 1998:3). After these data transformation processes, information may then be communicated to recipients.

**Figure 2-1 Knowledge hierarchy**

Source: Adapted from Skyrme (1999)



Information is a form of communication. That is, information is data that is sent and received, which may be stored for present and/or future use in decision-making. Information transmission refers to the production of information and dissemination of existing knowledge (Rich, 1991). Information is transmitted, picked up, processed and then applied (Rich, 1991). When information is shared it becomes knowledge and therefore knowledge is information which has a particular meaning.

The sources of knowledge are data and information. Both data and information are transformed and become knowledge which is then stored for future use. It is on receipt of information that knowledge is formulated. *“Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information”* (Davenport and Prusak, 1998:5). As a result, knowledge is insight, interpretation, ‘know-what’ and ‘know-how’ formulated through processes of comparison, consequences, connections and conversation (Davenport and Prusak, 1998). Knowledge is therefore obtained from information flowing through connections of people in different businesses and results from interpreting information.

Simply put, knowledge, as the term implies, is to know. Specifically, knowledge is not only to know what but also to know how (Prusak, 1996). This ‘know how’ is embodied in people. As knowledge is embodied in people the issue then becomes one of how to ‘dis-embody’ knowledge (Spender and Grant, 1996). When knowledge is ‘dis-embodied’ it becomes information. Thus the vastness of human knowledge can only be communicated as information. In view of this, it becomes important to understand whether the tacit or explicit dimension is more useful. In other words, should knowledge remain tacit and used when needed or should tacit knowledge be converted to information and become explicit which is easier to share?

### **2.2.2 Tacit and Explicit Knowledge**

Considering the knowledge dynamic, there are basically two kinds of knowledge: tacit, which is highly personal, and explicit, which is codified and easily transferable (Nonaka et al., 1996; Nonaka, 1998). There is a need to understand the differences between tacit and explicit knowledge since tacit knowledge is uncodified and not easily expressed and explicit knowledge is codified and can be easily expressed (Polanyi, 1966; Spender, 1996). Tacit knowledge is important since it is needed for strategic deliberations in decision-making (Bennett, 1998). Additionally, knowledge management brings competitive advantage through the use of the tacit form of knowledge and the more tacit the knowledge the more advantageous a firm's position over its competitors (Chakravarthy, McEvily, Doz and Rau, 2003). On the other hand, explicit knowledge is that, which is known, it is understood, reasoned and explained and therefore easily transferable. Explicit knowledge is obtained through the processing of information which provides new knowledge for decision-making.

The complex nature of knowledge makes it difficult to understand what tacit knowledge is all about and in fact how and why this type of knowledge is shared. One argument is that there are two components of tacit knowledge, distal (far) and proximal (near) and these components form the structure of tacit knowing (Polanyi, 1966). An example of the operation of tacit knowing is a recent experience (proximal 'near' knowledge) which is then used to solve a business problem (distal 'far' knowledge). Tacit knowing therefore involves an idea from one context which is then applied within another context (Polanyi, 1966).

The complexity of knowledge is evidenced by Polanyi's suggestion that one's knowledge may be embedded to an extent that it may not be known to oneself. If one does not know one's own knowledge then how can this knowledge be made known as information? As a result, tacit knowledge is innate 'know how.' A fact supported by Polanyi's (1966) suggestion that one knows more than one can tell. It is what we do, not knowing how we know what we do. For instance, decisions made from time to time are often tacit-based. The decision maker decides not necessarily knowing what 'hidden' information, experiences, and events that would have contributed to the decision.

Tacit knowledge is needed to deal with sense-making in a complex organisational environment (Choo, 1998). Sense-making of tacit knowledge is an abstraction data reduction process (Boisot, 1998). As a result, tacit knowledge is the most valuable form of knowledge that an organisation holds (Skyrme, 1999). It is a lack of conscious awareness of the tacit knowledge that has been built up and stored over time that limits an individual's ability to explicate it (Chilton and Bloodgood, 2007). Explicate here means to draw out one's tacit knowledge so that this knowledge can be expressed as information. Tacit knowledge management therefore can be achieved through mechanisms that provide direct access to people's tacit knowledge (Spender, 1996). Direct access to people's tacit knowledge helps with making sense of the business environment. Nonetheless, there is concern that people would not want to share their proprietary information (Pena, 2002), although this information is needed for business profitability. If proprietary information is shared, individuals and businesses may then be able to obtain a strong competitive position.

Promoting greater use of a tacit knowledge base is also important since the more tacit the knowledge base of a firm, the easier it is for a firm to defend a competitive position based on that knowledge (Chakravarthy et al., 2003). A tacit knowledge base is facilitated through frequent communication exchanges between experts and dissemination of their expertise (Chakravarthy et al., 2003). Additionally, through social networking, a particularly informal process, knowledge remains in a tacit form and so the business is capable of maintaining its tacit knowledge base which is the basis of its competitive advantage (Chakravarthy et al., 2003).

### **2.2.3 Information Space, the I-Space**

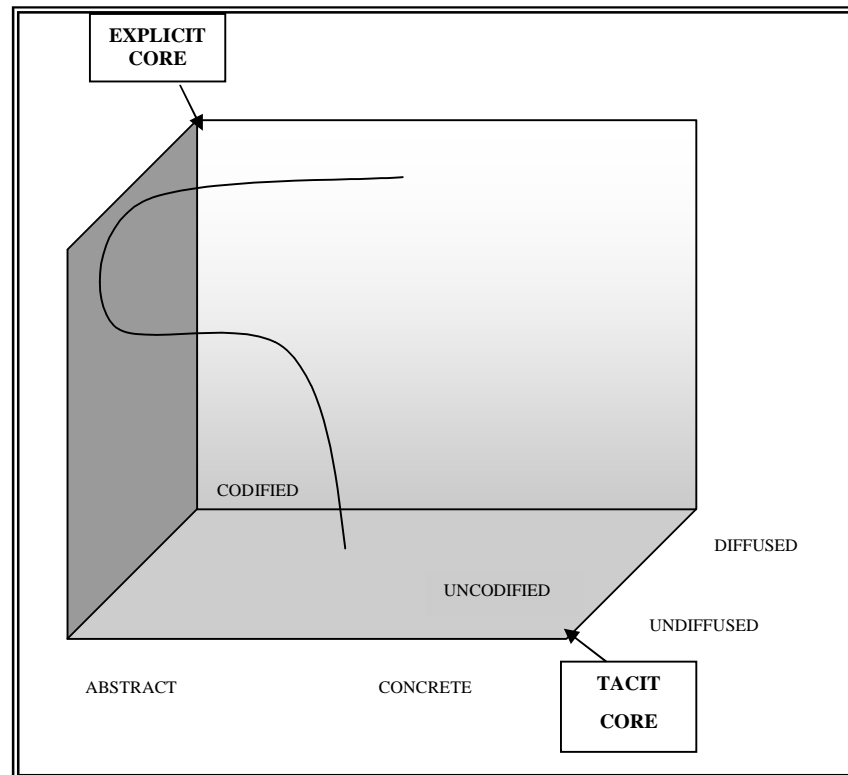
The diffusion of tacit and explicit knowledge has been conceptualised by Boisot (1998) who suggests that tacit and explicit knowledge diffuse in an information space, the I-Space. The I-Space is defined as an area in which codification, abstraction and diffusion of information takes place (Boisot, 1998). Codification which is constrained by time attempts to reduce uncertainty. It is a process based on a person's perceptual and conceptual perspectives. In a computerised sense codification is the shedding of excess data while in a socialisation sense codification may be viewed as taking forward what is really important.

Unlike codification, abstraction goes further and minimizes the number of categories. For example, while codification places data and information into groups and makes associations, abstraction reduces the number of groups and associations. If a tourism business person obtains information about the number of visitors to an attraction, the codification process will, for instance, place in ranking order the level of visitors to this attraction in comparison with other similar attractions. Following codification the abstraction process will, for example, reduce the number of groups into categories of high, medium and low. Abstraction is a process of understanding. When abstraction takes place knowledge is produced.

Boisot (1998) argues that the diffusion of information is facilitated by the processes of codification and abstraction. “*Diffusibility establishes the availability of data and information for those who want to use it*” (Boisot 1998:52). Data and information become available when these are codified and abstracted. The codification and abstraction cycle is a rapid process which results in ongoing conversion of information used to build knowledge. As a result, diffusion is aided by the speed at which the codification and abstraction processes can take place. Arguably, codification takes *time*, abstraction is based on prior experiences and learning which occur in a particular *space* and diffusion is facilitated by *speed* of the codification and abstraction processes. Hence, diffusion of shared knowledge engages a time, space and speed continuum.

**Figure 2-2 The diffusion curve in the I-Space**

Source: Boisot and Child (1999); This author’s tacit and explicit core boxes



The more codified and abstracted an item of information becomes, the more this item of information will be diffused in a period of time (Figure 2-2). The curve moves to the left as an item of information becomes more codified and abstracted and at the same time moves upwards as an item of information becomes diffused. As a result, the speed or diffusion of information is the result of the extent of codification and abstraction taking place within the I-Space. The *speed* of diffusion is facilitated by several factors: means of communication, sharing of codes (same language and symbols), prior sharing of context, frequency of interaction, urban versus rural setting, cultural dispositions and legal considerations (Boisot, 1998). The means of communication are for instance the tacit-based and explicit-based methods of communication and the sharing of codes are for example the types of information: technical, managerial, strategic and local. These diffusion facilitators have a cost (Boisot, 1998).

The means of communication affects the richness of information. Information richness is defined as “*the potential information-carrying capacity of data*” (Daft and Lengel, 1984:196). The face-to-face medium carries the richest information while documents carry the least rich information (Daft and Lengel, 1984). Face-to-face and telephone conversations are the media through which the rapid feedback provided helps to deal with complex issues (Daft and Lengel 1984). As a result, managers use personal contact to solve unclear problems whereas managers use paperwork communications for routine matters (Daft and Lengel, 1984). Therefore, the means of communication is an important mechanism in the creation of new knowledge for the business and individual.



In summary, an important aspect for understanding knowledge sharing is the form of knowledge and its relationship with the means of communication. Within this research study means of communication have been distinguished as: tacit-based and explicit-based. The link is made based on concepts of I-Space and information richness. When tacit knowledge is drawn out, it becomes information. Certain types of communication carry more information than others. The greater the information-carrying capacity is the more tacit-based the communication means. This is because based on the I-Space concept the processes of codification and abstraction reduces the data within information. As a result, tacit-based means of communication that are less codified and abstracted are more information rich, although less diffusible.

### **2.3 Models of Knowledge Management**

Easterby-Smith and Lyles (2003) note that knowledge management is a relatively new concept and borrows ideas from other disciplines, particularly organisational behaviour and information technology and most of the literature relating to knowledge management emerged after 1996. However, they also identified that the most frequently cited works before 1996 are by Argyris and Schon (1978), Nelson and Winter (1982), Levitt and March (1988), Cohen and Levinthal (1990), Senge (1990), Brown and Duguid (1991), Huber (1991), March (1991), Kogut and Zander (1992) and Nonaka and Takeuchi (1995) (Easterby-Smith and Lyles, 2003). As a result, knowledge management theory has been recently developed.

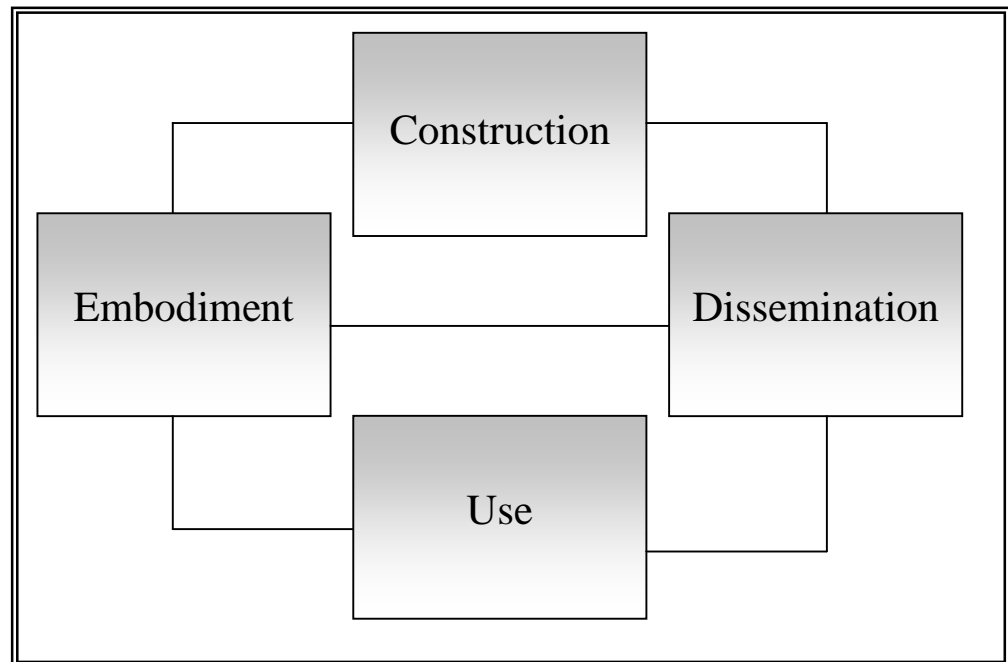
The focus on knowledge management (KM) results from a paradigm shift from an industrial society to an information society, from national economy to world economy and from hierarchies to networks (Naisbitt, 1984). These shifts facilitate an information revolution. The information revolution is affecting organisations in three ways: changing industry structure by creating niche opportunities; creating competitive advantage through lowering cost, enhancing differentiation and changing competitive scope; and spawning whole new businesses (Porter and Millar, 1985). Coupled with the information revolution and society is the possibility of information overload and irrelevance and therefore there is a need to obtain relevant information that will improve business performance and success.

Generally, the processes of knowledge management, whether that knowledge is tacit or explicit, involve: creation, storage/retrieval, transfer and application (Alavi and Tiwana, 2003). These knowledge management (KM) processes have resulted in the proposition of several models of knowledge management. These models may be regarded as an evolution of sorts, moving from knowledge management components, through to a focus on knowledge management within organisations, then on to knowledge management between organisations and later to an inside and outside organisations approach to knowledge management. As a result, there are three groups of knowledge management models: (1) those based on a closed system wherein the focus is intra-organisational, (2) those based on an open system wherein the focus is inter-organisational and (3) those based both on closed intra-organisational and open inter-organisational elements.

### 2.3.1 Closed Systems Models

An early knowledge management model was that of Demarest (1997). This model of knowledge management considers four elements: embodiment, construction, dissemination and use (Demarest, 1997). Embodiment is a process of placing the constructed knowledge in a container. Such a container may be viewed as being either human or non-human. Construction may be viewed as a process of putting things together and thereby discoveries are made. Dissemination is the process of releasing embodied knowledge and use means that knowledge is applied to bring about some benefit.

**Figure 2-3 Demarest's Knowledge Management Process**  
Source: Demarest (1997)



Demarest's (1997) model suggests that the organisation engages in knowledge management through explicating tacit knowledge by converting it to explicit form and this is then disseminated through human and technical processes. These processes, in turn, are used to bring commercial value to the business and customer. The model, however, does not consider the complex environment within which an organisation exists. In terms of managing knowledge, one has to consider particular characteristics of a business's external environment since these characteristics may determine the business's survival.

### 2.3.2 Open Systems Models

Knowledge management may also be achieved through an open system, which involves an inter-organisational knowledge sharing process. Knowledge crosses organisational boundaries spanning the knowledge network (Swan, Langford and Watson, 2000; Hansen, 2002). The knowledge network view has been spawned by the fact that organisations have evolved from boundary to boundary-less entities, to become fluid and flexible (Ilinitch, D'Aveni, and Lewin, 1996; Spender, 1996; Scott, 1998; Schneider and Somers, 2006). One open systems model is based on the type of knowledge to be managed. Open organisational systems generate two kinds of knowledge: the individual tacit-based, knowledge (private good) and the social explicit-based, shared knowledge (public good) (Spender, 1996). The challenge that knowledge management has is to move knowledge from the individual to the social (Figure 2-4).

**Figure 2-4** Types of Knowledge

Source: Spender (1996)

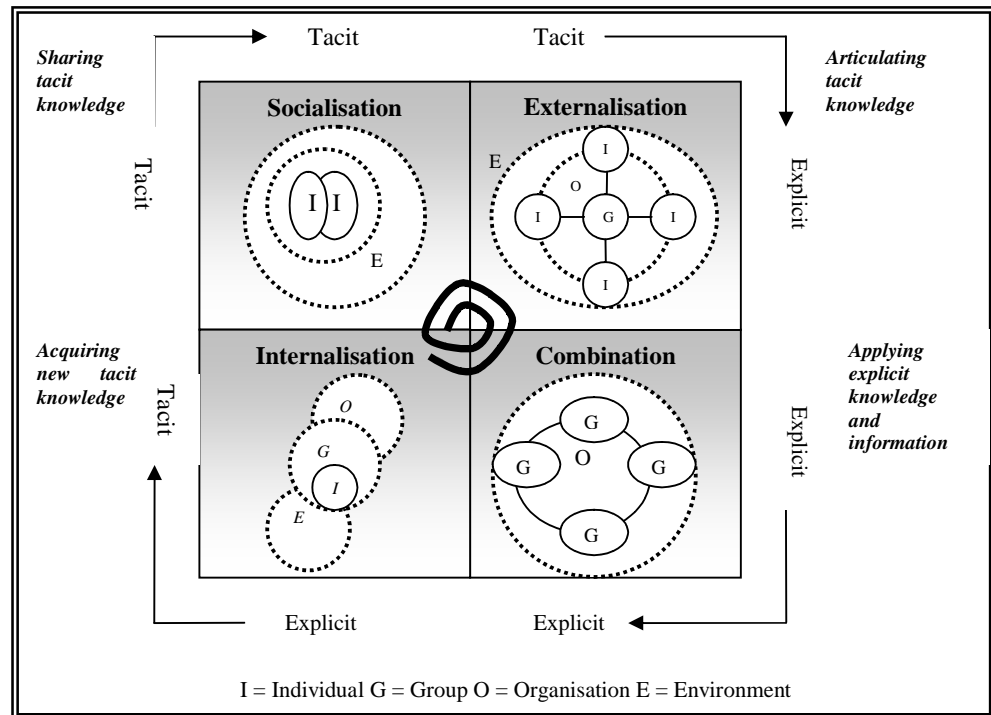
	<i>INDIVIDUAL</i>	<i>SOCIAL</i>
<i>EXPLICIT</i>	Conscious	Objectified
<i>IMPLICIT</i>	Automatic	Collective

Based on the type of knowledge, the Spender's model (1996) involves four processes: interpretive flexibility; boundary management; identification of institutional influences and the distinction between systemic and component features. Interpretive flexibility means that within open knowledge systems there are various specialists who can contribute to the knowledge base. Boundary management is needed for dynamic knowledge systems since business processes may be influenced by several external entities. These influences must be identified and the influences of the system, such as human knowledge and influences of component features, such as the level of technology should be distinguished.

Another open systems model is based on the concept of the social network. Social networks are influenced by dynamic capabilities, absorptive capacity and the gift economy (Cohen and Levinthal, 1990; Carlsson, 2003). First, dynamic capabilities are developed through combining and using resources and engaging knowledge management processes: acquisition, dissemination and use of knowledge resources. Dynamic capabilities are built up when knowledge is shared through social network mechanisms. These mechanisms are used for environmental scanning and strategic information purposes. Second, absorptive capacity was conceptualised by Cohen and Levinthal (1990) and is viewed as the capability to understand and apply new knowledge. As argued by Kogut and Zander (2003) businesses operate within social communities specialising in the creation and dissemination of knowledge (Kogut and Zander, 2003), and therefore it is suggested that these social communities aid absorptive capacity. Third, the gift economy, which is a type of exchange system, means that knowledge is shared as a gift (Carlsson, 2003). Knowledge is shared based on an influence to give back, rather than the value of the knowledge being shared. The gift economy contributes to understanding the concept of knowledge sharing (Choi and Hilton, 2005) and the social network is therefore a knowledge sharing tool.

**Figure 2-5 Knowledge Creation Model**

Source: Nonaka and Toyama (2003)



The knowledge creation model is an open systems model and may be viewed as a process which results in new knowledge being produced. Knowledge is created through the processes of converting information through a series of tacit and explicit forms (Nonaka and Takeuchi, 1995). Nonaka and Toyama (2003) revolutionised thinking about how knowledge is created and utilised (Figure 2-5). The organisation is not machine-like in terms of processing information but rather it exists in an organic form (Nonaka and Toyama, 2003). As a result, created knowledge is context specific and is facilitated by relationships with others inside and outside the business.

Nonaka and Toyama (2003) argue that knowledge is created when it is shared through tacit and explicit forms as some sort of spiral (Nonaka and Toyama, 2003). They propose that there are four knowledge creation processes: socialisation, externalisation, combination and internalisation. The top left box of the diagram relates to tacit to tacit knowledge conversion which is also called socialisation and involves the sharing of tacit knowledge. Socialisation occurs when tacit knowledge is obtained, for example, through a face to face conversation. The next box on the top right hand side represents tacit to explicit knowledge conversion which occurs when there is dialogue and as a result tacit knowledge is articulated. This articulation may for example, be the result of sending an e-mail and hence this form of knowledge conversion is called externalisation. Combination occurs when the explicit knowledge is implemented. Internalisation occurs when explicit knowledge is absorbed and the individual learns. Knowledge creation is an activity and the created knowledge is disseminated based on some kind of communication process (Chua, 2001; Beesley and Cooper, 2008). The creation of new knowledge within the individual and by extension the business are related to the various tools of communication, for example face to face conversation, written documentation, telephone conversation, electronic mail, electronic discussion and video conferencing.

Knowledge management in an open systems model has been explained by Jackson (2005) and involves four processes: the knowledge creation spiral, knowledge-enabling characteristics, 'Ba' (a space created for discussion) and dialectics (Jackson, 2005). The knowledge creation spiral (Nonaka and Toyama, 2003) shows the tacit and explicit knowledge conversion processes. Knowledge enabling characteristics are the conditions for knowledge creation which are brought about by certain stimuli such as changing market conditions. 'Ba' is the context within which knowledge is created and dialectics are the creative discussions which enable creation of new knowledge. A business environmental stimulus results in knowledge being created through a spiral of creative discussion within a certain context which then becomes shared knowledge.

A complex adaptive system is another example of an open systems model. A complex adaptive system view of knowledge creation and dissemination considers the broader organisational dynamics and it is illustrated as an organisational system that is open to information flows or stimuli, and adjusts processes and outcomes to suit the stimuli. Within a complex adaptive system there is maintenance and growth. System maintenance relates to the processes of relational structures and competencies and system growth is based on the strategic direction of the business (Jantzen, 2002). Through relationships new knowledge is created as a response to a stimulus (Sherif and Xing, 2006) and therefore relationships result in knowledge sharing which in turn facilitate the creation of new knowledge.

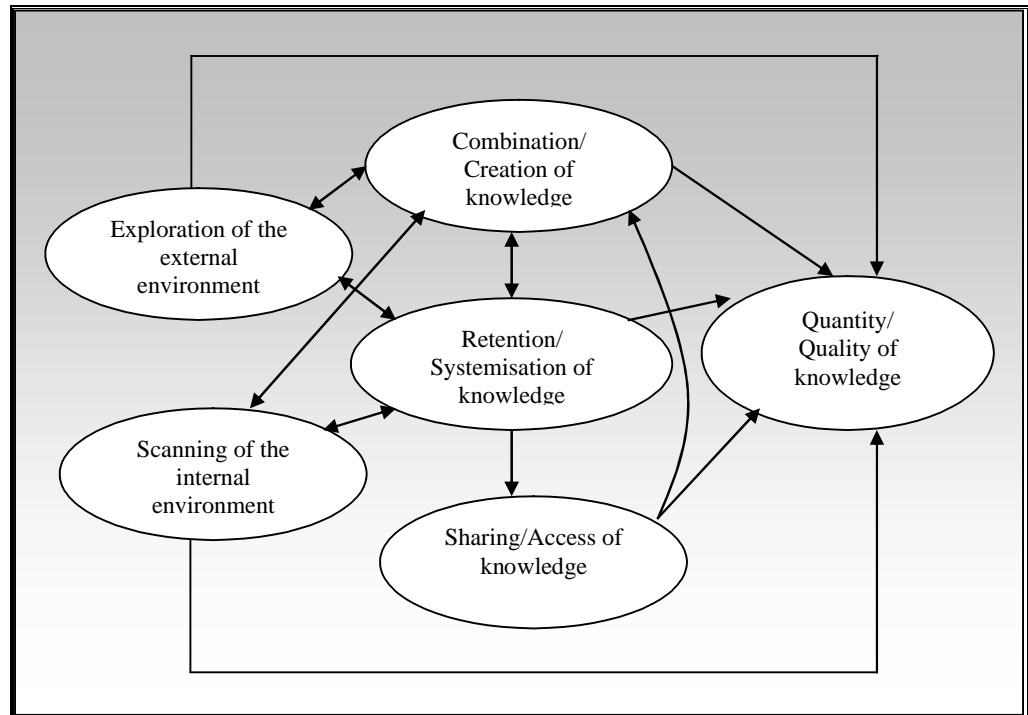
### ***2.3.3 Integrated Closed and Open Systems Models***

A new knowledge management model, which brings together the intra-organisational and inter-organisational elements of knowledge, was proposed by Diakoulakis, Georgopoulos, Koulouriotis and Emiris (2004). This integrated model comprises the processes of retention-systemization of knowledge, sharing-access of knowledge, combination-creation of knowledge, exploration of the external environment, scanning of the internal context and the use of knowledge (Diakoulakis et al., 2004) (Figure 2-6). The model is both a closed and open systems model since both the external and internal environment are examined. The model also links knowledge sharing with knowledge creation. Based on the model, created, absorbed and shared knowledge are the pre-requisites of the quantity and quality of knowledge.



**Figure 2-6 Holistic Knowledge Management Approach**

Source: Diakoulakis et al (2004)



Models of knowledge management were reviewed and assessed based on their knowledge sharing conceptualisation. First, knowledge management involves the effective sharing of knowledge. While adoption of technological advances may aid the management of knowledge within businesses, there is also need to understand how the flow of knowledge can be managed between businesses using processes that are rather social. Social practices are rather organic in nature and may be viewed as simply talking with and writing to other people. Second, within the literature, recognition is given to the fact that businesses are affected by their external environment. People in businesses obtain information which improves the knowledge base of individuals within these businesses. As a result, an open systems model of KM has been adopted within this research study. The main advantage of an open system model of KM is that both system components and system resources can be examined within a broader context of an external environment.

## **2.4 Knowledge Sharing**

This review of knowledge sharing is divided into three parts: (1) the characteristics of shared knowledge; (2) the elements of knowledge sharing; and (3) the benefits of knowledge sharing. Knowledge sharing is a knowledge management activity. The sharing of knowledge, communicated through information, from the tacit to the explicit forms, has been examined by several authors (Schermerhorn, 1977; Nonaka and Takeuchi, 1995; Bennett, 1998; Choo 1998; Davenport and Prusak, 1998; Skyrme, 1999; Rogers, 2003; Awad and Ghaziri, 2004; Uzzi and Dunlap, 2005). Knowledge is built through information (Awad and Ghaziri, 2004) hence we may say that knowledge is shared when information is disseminated. The process is called knowledge sharing since there is a basis for exchanging information, which means that the other person in the knowledge sharing relationship may in turn share their information. Knowledge sharing processes inside and outside businesses are seen as essential goals for any business (Easterby-Smith and Lyles, 2003) because businesses operate within a dynamic external environment.

### **2.4.1 *The Characteristics of Shared Knowledge***

The characteristics of shared knowledge include: embodiment, fluidity, and intangibility. Embodiment relates to how the knowledge is stored, fluidity relates to the viscosity of knowledge being shared, whilst intangibility relates to the perish-ability of shared knowledge. These characteristics can be examined to understand what makes knowledge flow from one person to another.

### 2.4.1.1 Embodiment

**Embodiment** is an important characteristic of shared knowledge. Given that knowledge is embodied in organisational practices (Spender and Grant, 1996), knowledge sharing becomes difficult when businesses are unsuccessful in their ability to share knowledge embodied in organisational routines. There are two views as to how knowledge becomes embodied, an inward view and an outward view. An in-ward view has to do with inertia in which knowledge embodiment is based within organisational practices. Knowledge sharing in the inward view is based on the idea that organisational knowledge is developed through people, tasks and tools (Argote and Ingram, 2000). Knowledge developed through these interactions is difficult to share outside the organisation since this knowledge is least likely to fit the new context (Argote and Ingram, 2000). The outward view is based on the idea that organisations innovate through inter-organisational collaboration (Powell, Koput and Smith-Doerr, 1996). Inter-organisational collaboration means that networks of organisations provide new knowledge which transforms organisations within the networks.

### 2.4.1.2 Fluidity

**Fluidity** may be viewed as knowledge coming without one knowing it is here, it goes before it is noticed and then it may be lost forever. Fluidity, which relates to viscosity, is a feature of shared knowledge. Viscosity means thick and sticky (McKeown and Summers, 2005). Knowledge therefore possesses certain properties which make it become thick and sticky. The more viscous the knowledge the less it will flow. Fluidity is facilitated by certain forces acting to enable or constrain the flow of knowledge. Fluidity means that knowledge is like a river, no one knows if the river will take particular channels. Such channelling depends on the volume, the landscape and the gravity of the river flowing, and so it depends on the volume of knowledge, the connectivity of the channel, the capacity of the knower and the pull or attraction of the knowledge.

### 2.4.1.3 Intangibility

Knowledge is **intangible** (Diakoulakis et al., 2004; Choi and Hilton, 2005). Its intangibility means that it is highly perishable. Perishability makes the importance of managing the asset more crucial. In terms of a strategy for managing an intangible item, the functions of management, such as planning, organising, co-ordinating and controlling may no longer be relevant. Managing knowledge means that the knowledge flow process must be understood. If the process is viewed as a system, then managing knowledge is like managing a system and therefore the creation of knowledge is a determinant of the system and not linked to its intangibility. For instance, if an organisation knows that being placed in a particular structural position or being connected to certain agents, allows it to create new knowledge, then the fact that knowledge is intangible becomes irrelevant. The conceptualisation of structural positions to facilitate knowledge creation is particularly important and explains the sharing of knowledge between businesses.

## **2.4.2 The Elements of Knowledge Sharing**

Main elements of knowledge sharing are: the size of business, the cost and social processes. These elements set the parameters of knowledge sharing activity.

### 2.4.2.1 Size of Business

Within small and medium sized businesses knowledge and decision making are concentrated in a few key persons. Obtaining new knowledge may become difficult depending on the size of the business which can influence a number of factors that themselves affect the process of knowledge sharing and these factors include: similarity of tasks; source of knowledge; perception of an opportunity to share knowledge; execution of sharing such as absorption; individual motivation; social network ties; tools and technology; and cognition (Argote and Ingram, 2000). For example, within a large business presumably with more people, there are greater opportunities through more social network ties for sharing knowledge both inside and outside the business.

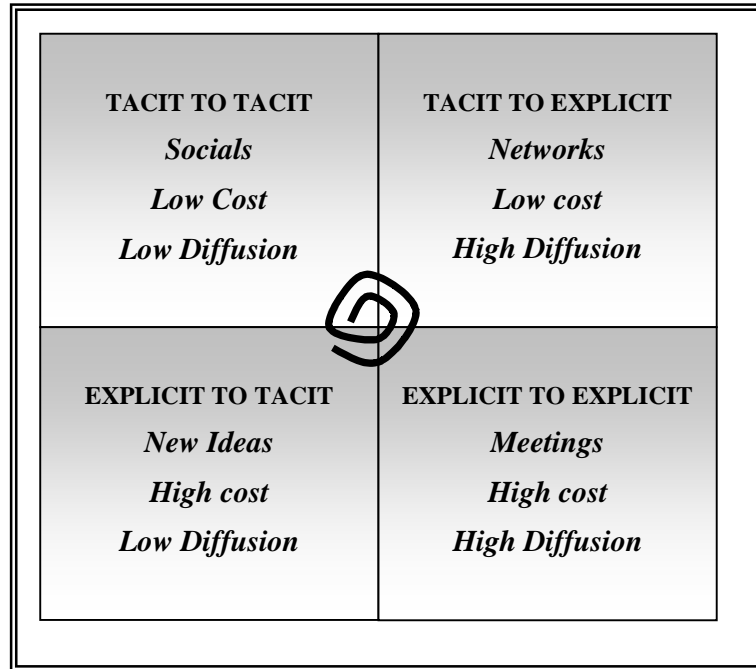
Certain characteristics of small and medium-sized enterprises (SME) may facilitate obtaining new knowledge such as appreciation of individual and shared understanding, possession of an effective knowledge base and system, integrated and contextualised action, and effective learning processes (Sparrow, 2001). In theory therefore, developing new knowledge in SME is based on individual competency, team work and learning (Sparrow, 2001). These characteristics of SMEs are linked with factors which affect knowledge sharing and one such characteristic is for example, individual competency facilitates the absorption of knowledge.

#### 2.4.2.2 Cost

Cost refers to the costs incurred in converting tacit knowledge into an explicit form and vice versa. A cost can be assigned based on the businesses' knowledge strategy which is the allocation of resources to share knowledge (von Krogh et al., 2001). While the cost of implementing a knowledge sharing strategy may be high, it is a necessity since it is a means of generating new knowledge which the business needs for improving business performance. As such, knowledge sharing theory is linked to the concept of cost (von Krogh et al., 2001; Hansen, 2002), diffusion (Rogers, 2003), communication process (Beesley and Cooper, 2008) and relationships (Carlsson, 2003). There are various circumstances under which knowledge sharing may occur and therefore knowledge sharing processes can be viewed from most tacit through social interaction at low cost and low shared information to most explicit at high cost and high shared information (Figure 2-4).

**Figure 2-7 Cost Framework of Knowledge Creation Strategies**

Source: Adapted from Nonaka and Toyama (2003); Cost and Diffusion (this author)



### 2.4.2.3 Social Processes

Tacit knowledge sharing is a natural social process (Yang and Farn, 2009). Based on an individual's behaviour to hoard his/her tacit knowledge, a fact noted previously by Pena (2002), Yang and Farn (2009) wanted to find out more about intention and behaviour to share tacit knowledge, though their work is intra-organisational based, it is useful as far as it examined factors that influenced tacit knowledge sharing intention and behaviour and also whether knowledge sharing intention lead to tacit knowledge sharing behaviour.

Their main findings were firstly that factors affecting intention to share tacit knowledge are affect-based trust, shared values and control (affect-based trust develops through relational ties, shared value develops based on a common understanding between individuals and internal control is based on self efficacy) (Yang and Farn, 2009). Secondly, tacit knowledge sharing intention does not necessarily result in tacit knowledge sharing behaviour, the reason for this being that external control moderated the relationship between tacit knowledge sharing intention and behaviour (external control is based on opportunities to share and prior experiences for sharing tacit knowledge). As a result, people did not share their tacit knowledge when there were no opportunities to share and had no prior experience of sharing tacit knowledge.

### ***2.4.3 The Benefits of Knowledge Sharing***

The form of shared information, tacit or explicit, is important since different knowledge brings different benefits or resource savings, based on the type of knowledge shared (Haas and Hansen, 2007). Sharing explicit knowledge in the form of electronic documents saves time but does not necessarily improve work quality (Haas and Hansen, 2007). On the other hand, sharing knowledge in the form of advice improves work quality but does not necessarily save time (Haas and Hansen, 2007). As a result, different forms of knowledge, one that is tacit-based (face to face conversation) and one that is explicit-based (documents) cannot be substituted one for the other. Such findings confirm the productive output of a knowledge sharing environment (Hansen, 2002; Haas and Hansen, 2007).

Applying tacit knowledge will result in organisational innovation, improved performance, and render the organisation more competitive (Grant, 1996). As argued by Prusak, the only thing that gives an organisation sustainable competitive advantage is “*what it knows, how it uses what it knows and how fast it can know something new*” (Prusak, 1996:8). The question is how may business people **position** themselves to achieve this? The answer relates to the capability of obtaining tacit and/or explicit knowledge. As stated before tacit knowledge can be embedded in the interactions of people, tools and tasks (Argote and Ingram, 2000). If there is a case that tacit knowledge is embedded in the characteristics of people, tools and tasks then these characteristics are the mechanisms through which knowledge is shared. As a result, innovation and improved performance is facilitated through mechanisms of people, tools and tasks.

Tacit knowledge may be further enhanced by adding explicit knowledge (Bennett, 1998). Explicit knowledge may be developed through the application of advanced information technologies (e.g., the Internet, intranets, web browsers, data warehouses, data mining and software agents) to systematize, facilitate, and expedite firm-wide knowledge management (Alavi and Tiwana, 2003). Explicit knowledge is easier to share. An understanding of the creation of explicit knowledge will also guide inter-organisational knowledge sharing processes. The need to create explicit knowledge is linked to the fact that the information revolution is transforming organisations in a manner that can affect profitability (Porter, 1998).

In summary, the characteristics of shared knowledge are important. Such characteristics typify the capability to share knowledge. For instance, if certain types of information are more readily communicated than other types of information then the former is rather fluid. Related to the characteristics of shared knowledge are factors which influence knowledge sharing. For example, cost can influence whether an opportunity is created for knowledge sharing. There are benefits to be derived from shared knowledge and these benefits are linked to the type of knowledge shared. As such, if we are to examine knowledge sharing, the information content is a particularly important concept to understand.



## **2.5 Conclusion**

Knowledge is needed for business success. This chapter has examined the characteristics, models of knowledge management and characteristics, elements and benefits of shared knowledge. In particular, by examining the dynamics of knowledge sharing, the means to manage tacit knowledge which is often 'hidden' within individuals can be understood. Tacit knowledge emerges when knowledge creation processes operate. Such knowledge creation processes are in fact facilitators of knowledge sharing. Facilitators of knowledge sharing include socials, meetings, new ideas and non-human networks. Knowledge is therefore obtained through these facilitators which are predominantly social interaction mechanisms. The elements of knowledge sharing, the business size, cost and social processes are also important since these moderate the level of shared knowledge. In view of these facilitators and elements, the social network can be used as a mechanism of knowledge sharing.

The next chapter examines the literature about social interaction mechanisms, also called social networks. Social networks of people are formed through business and personal processes and as such these networks can be examined to understand in particular knowledge sharing. Bodies of theories relating to social networks including social capital theory are reviewed. These theories explain the formation and operation of social networks.

## CHAPTER 3 SOCIAL NETWORKS

### 3.1 Introduction

As discussed in the previous chapter, knowledge is shared through social networks and therefore this chapter takes the opportunity to review theories of social networks. The importance of studying social networks relates to the fact that networks exist everywhere and enterprises collaborate then compete (Thorelli, 1986). Social network theory posits that people are tied together in some kind of structure which is formed through the individual, the dyad (two individuals) and the triad (two individuals plus a third individual) (Wolff, 1950) which are the basic social structures used to describe relationships. Consequently we may argue that relationships between business people have a structural dimension, which is an overarching pattern, and a way of analysing where people fit within their group, which is a relational dimension. The structural and relational dimensions influence behaviour and behaviour is both an outcome of a person's attribute and also of the structure and relation of individuals and groups (Degenne and Forse, 1999).

Social network literature is based in the discipline of sociology, and the works of main authors such as Granovetter (1973), Friedkin (1982), Burt (1984), Degenne and Forse (1999), Monge and Contractor (2003) and Freeman (2004) are critically reviewed. The first section considers the characteristics of social networks including types, embeddedness, structural influences and innovation. The types of social networks are important to characterise the different reasons for social networking. Based on the reasons for social networking, business people become fixed within their social networks, carry out ongoing practices of social networking and obtain network resources and this is *embeddedness, structural influence* and *innovation*.

The second section is a review of social network theory. A multi-theoretical framework for studying communication networks (Monge and Contractor, 2003) is built up towards creating a general social network theory. These theories are self and mutual interest; contagion, semantic and cognitive theories; exchange and dependency theories; homophily, physical proximity, electronic proximity, and social support theories; and co-evolution theory.

The third section reviews concepts which are used to apply social network theory. Based on the characteristics of embeddedness, structural influence and innovation, social networks can be examined using certain measures and are related to the body of social network theories. The measures of embeddedness comprise density, transitivity and clustering. The measures of structural influence comprise strength of tie, centrality and clique. The measures of innovation comprise structural holes and brokerage. Finally, the chapter is concluded with a review of main theories and concepts.

### **3.2 The Characteristics of Social Networks**

Social networking is an important activity for entrepreneurs and managers (Birley, Cromie and Myers, 1991) in that a social network emerges as people search for resources to meet their needs. Liebowitz's (2007:3) definition of a social network is "*a set of relationships between a group of 'actors' (the 'actors' could be individuals, departments, and so on) who usually have similar interests.*" Based on their networking practices, business people are also called network agents. In order to explain the characteristics of social networks, this section examines the types of social networks, network embeddedness, structural influence and innovation. Embeddedness relates to the fixing of agents within network structures and is formed through the inter-connectedness of the network, the relationships of agents within the network's structure influence these agents and innovation is the ability of the network to utilise network resources to achieve outcomes.

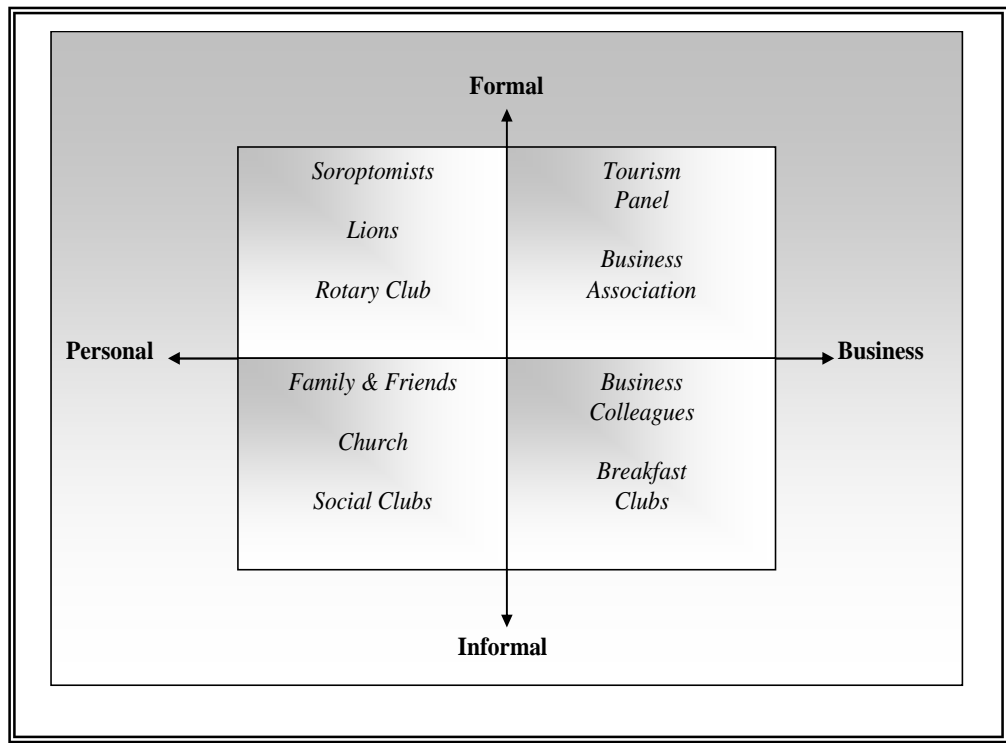
### 3.2.1 Types of Social Networks

Within social networks a distinction is made between two types of relationships: business and social. Some authors argue that a business relationship may form in addition to an existing social relationship (Birley et al., 1991; Moller and Wilson, 1995). A business relationship is based on common tasks, mutual interests and the achievement of goals (Marouf, 2007). On the other hand, a social relationship, which is viewed as a friendship, is defined as linkages based on emotional, non-instrumental relationships (Marouf, 2007). Business relationships can be based on mutuality (resource-dependent bonds between business people), long-term character (continuation and strength of relationships), process nature (dynamics of exchanges such as the content and means of communication) and context dependence (embeddedness of actions and outcomes) (Holmlund and Tornroos, 1997). A resource dependent relationship for example is one that the business has with a supplier while continuing strong relationships can be established through emotional bonds. The dynamics of exchanges include for instance, the type of information and tacit-based and explicit-based communication methods.

Social networks are established through formal and informal activities and engage in business and personal relationships and these are illustrated in respect of two axis: formal to informal; and personal to business (Figure 3-1). The term personal has been used to describe the opposing pole to business rather than social so as to not confuse the terms social and social networks. Each of the four quadrants is a type of social network. Named examples within each quadrant are for clarification purposes only and are not listed in any particular order neither are they an exhaustive list. A social network can be viewed as comprising a number of agents, who are often referred to as nodes, within the network. The relationships of these agents are based upon their 'ties' one with another and to assist in understanding social network theory it is helpful to recognise two types of tie. Firstly, ties that are business focused and, secondly those ties that are personal or friendship based.

**Figure 3-1** Quadrant of Types of Social Network Relationships

Source: Author



Monge and Contractor (2003) argue that both formal and emergent networks can be identified and knowledge may be obtained through both of these social networking practices. Generally, a formal network is an imposed structure of relationships and an emergent network is a free flowing structure of relationships. Emergent networks come into being based on some pre-existing ongoing relationship whether for business or personal reasons. Seufert et al., (1999:184) stated, “*Intentional knowledge networks are seen as networks that are built up from scratch, whereas emergent knowledge networks already exist but have to be cultivated in order to become high-performing.*” Whether the network is intentional or emergent, business people participate in social networks for both business and personal reasons.

### **3.2.2 Embeddedness**

Fundamentally embeddedness means that network structures influence outcomes (Granovetter, 1985) and outcomes are determined by the resource exchanges. Resource exchanges can therefore be seen as being immersed in a social context (Gulati, 1998; Bengtsson and Kock, 1999; Rowley, 1997; Green and McNaughton, 2000; Borgatti and Foster, 2003; Kadushin, 2004). This is because as business people repeat the same resource exchanges their network ties become fixed and the network agent obtains a particular position. Embeddedness has been used to explain network influences, as to why agents gain networked resource advantages based on their position within the network (Kadushin, 2004). Resource exchanges occur based on certain conditions including: geographic region, proximity, clusters and strategic alliances. Business people therefore become embedded within these conditions and embeddedness has an almost pre-determined impact on the firm's ability to obtain and use resources, including knowledge.

#### **3.2.2.1 Geographic Region**

Social networks within a geographic region have been linked to knowledge resource exchanges. Anderson, Hakansson and Johanson (1994) assert that business relationships become embedded within a geographic region and therefore a firm's location may mean that it has an opportunity to become part of a dense network of other similar businesses (Rowley, 1997). Based on a dense network structure, the basic assumption is that knowledge exchange will occur (Powell et al., 1996; Osborn and Hagedoorn, 1997) since dense network structures facilitate diffusion of information. Density increases communication across the network and also diffuses norms across the network (Rowley, 1997). The characteristics of dense networks include shared expectations, ease of information exchange between stakeholders and potential for coalition formation (Rowley, 1997).

### 3.2.2.2 Proximity

Dense networks emerge from inter-firm linkages and may be the result of members being located in close proximity to one another (Akoorie, 2000) and within a geographic region businesses may be located within close proximity to other businesses. Proximity effects are important since outside the boundaries of firms, a complex web of relationships and resources influence the behaviour of these firms (Green and McNaughton, 2000). On one side, proximity has the positive effect of leveraging competencies and knowledge wherein business people can exchange resources and therefore contribute to endogenous growth and internationalisation (Green and McNaughton, 2000). On the other side, dense local networks can constrain innovation, by creating entry barriers to new entrants and the resources these new entrants may bring, and by reinforcing poor management practices (Green and McNaughton, 2000).

### 3.2.2.3 Clusters

Closely located businesses can be viewed as a cluster and it has been argued that network clusters create innovative environments for firms (Porter, 1998). A cluster is defined as, “*concentrations of interconnected companies and institutions in a particular field*” (Porter, 1998:78). Clusters therefore promote “*competition and co-operation*” (Porter, 1998:79). Clusters promote competition by increasing productivity, driving innovation and stimulating new businesses and clusters also promote co-operation by providing an environment for collaboration which is created as employees move from one organisation to the next inside the cluster (Porter, 1998). A cluster however has a high level of redundant information and each cluster is one source of information and therefore to benefit from the cluster an agent has to have relationships of non-redundant information with other agents within the cluster (Burt, 1992a). As a result, benefits from a cluster are not automatic and will depend on the characteristics of the ties an agent has within the cluster.

### 3.2.2.4 Strategic Alliances

Embeddedness affects the selection of organisations for strategic alliances (Gulati, 1998). Strategic alliances are “*voluntary arrangements between firms involving exchange, sharing, or co-development of products, technologies, or service*” (Gulati, 1998:293) and provide opportunities and constraints that influence the performance of businesses within the alliance (Gulati, 1998). By participating in a strategic alliance, social networks develop, and these networks provide opportunities and constraints based on their direct and indirect network connections. One motive for initiating a network connection is for some benefit to accrue (Kadushin, 2004) and so it is important that the quantity and quality of ties be carefully selected. The combination of network ties in turn influence the choice of a tie and thus the knowledge exchange possibilities (Spender, 1996a). Thus, through tie selection, structures are formed which result in the embeddedness of agents within the strategic alliance.

### 3.2.3 Structural Influence

Structural influence is created through the relationship of an agent within the network's structure and a network structure is formed through the interdependent links connecting the 'ego' and 'alters' (Parsons, 1951). The ego is the focal agent (node) of the network and is connected to the other agents (nodes) or 'alters' by ties (Borgatti and Foster, 2003). Nodes may be persons, teams and organisations which perform the network activity, which for example may be information sharing, whereas ties connect these nodes. Ties may be dichotomous, either present or absent, or valued. A tie's value is a reflection of the frequency of its use. For instance, if an agent contacts the same ego on four occasions the tie is valued as four (4). The combination of ego together with the associated alters, and the ties among these are called an ego-network (Hanneman and Riddle, 2005). Based on the inter-connectedness of the network, each ego has a particular relationship within the network's structure, which influences other egos and alters.



Network structure facilitates paths along which information, ideas and influence move between agents and therefore social network structure impacts economic outcomes (Granovetter, 2005) through certain characteristics including the strength of weak ties, centrality and cliques. This is because information that passes through networks is influenced by an agent's relationships within the network's structure (Powell et al., 1996). If an ego is frequently central within the network's structure then this centrally located ego will have timely access to new business opportunities and it is proposed that centrality in a network facilitates understanding, cooperation and enhances further exchange (Powell et al., 1996). Sparrow (2001) noted that centrality of a managing director and managers have been shown to impact upon the maintenance and development of capability in small firms. Structural influences are also evident based on the role of social networks on the performance of individuals and groups (Sparrowe, Liden, Wayne and Kraimer, 2001).

### **3.2.4 Innovation**

Innovation is viewed as the use of knowledge to bring about performance benefits for businesses and this knowledge may be found in inter-organisational relationships (Powell et al., 1996). Collaboration and innovation work hand in hand and businesses often turn to collaboration to acquire new skills and resources as new knowledge can be acquired through repeated interaction between firms in a network (Kogut, 2000). Thus it is argued that social networking is the essence of innovation (Liebowitz, 2007) in that social networking activities produce networks of learning. *“When the sources of knowledge are disparate and the pathways of technological development uncharted, we would expect the emergence of networks of learning”* (Powell et al., 1996:143). In addition, other evidence suggests that centrality based on managerial ties and institutional ties enhance innovativeness (Bell, 2005).

There are however limits to innovative capability. Beeby and Booth (2000) noted that inter-dependent business relationships create dependency which results in limitations. Furthermore, there is no evidence to suggest, that networks result in innovation through learning new ways (Beeby and Booth, 2000). They pointed out that successful knowledge transfer is dependant upon a firm's technology and past, present and future experiences rather than the network (Beeby and Booth, 2000). On the other hand, Kogut (2000) noted that repeated interaction between firms in the network resulted in the emergence of a series of innovations. Repeated interactions result in the creation of structural holes (Burt, 1992b) and brokerage opportunities (Gould and Fernandez, 1989).

Moreover, business size can enhance innovation and build competitiveness and it has been shown that small business networks are important in enhancing competitiveness (Szarka, 1990; Perrow, 1992). There are certain other characteristics within small businesses which can enhance innovation. Small business networks produce trust, are centralised, reduce hierarchy, standardise the distribution of wealth and thereby reduce uneven development (Perrow, 1992). These small business networks are therefore more accessible for collaborative purposes and are arguably more innovative.

### 3.3 Social Network Theory

This section about social network theory examines the inter-relatedness of groups of theories and their relevance to studying social networks. Social network theory involves the study of social structures to understand their emergence and function and a contiguous social network theory is still emerging. To date much of the development in the subject area surrounds the methodology of analysing social networks. Monge and Contractor (2003) have reviewed theories which explain the formation and function of communication networks (Figure 3-2). These theories are self and mutual interest; contagion, semantic and cognitive theories; exchange and dependency theories; homophily, physical proximity, electronic proximity, and social support theories; and co-evolutionary theory.

**Figure 3-2 Theories Relating to Social Networks**

Source: Monge and Contractor (2003)

<b>GROUPS OF THEORIES</b>	<b>OF</b>	<b>RELATED THEORIES AND CONCEPTS</b>
Self Interest		Social Capital Theory; Transaction Costs Theory
Mutual Self Interest		Public Good Theory; Critical Mass Theory
Cognitive		Cognitive Consistency Theory; Cognitive Dissonance Theory
Contagion		Social Learning Theory; Structural Theory of Action
Exchange and Dependency		Social Exchange Theory; Resource Dependency Theory
Homophily, Social Support and Proximity		Social Comparison Theory; Social Identity Theory; Physical and Electronic Proximity Concepts
Co-evolution		Organisational Ecology; Complexity Theory

A multi-theoretical, multi-level framework for understanding communication networks has been developed through integrating these theories (Monge and Contractor, 2003). There are several reasons for the Monge and Contractor's (2003) approach. First, the majority of previous network research was 'atheoretical.' Second most scholars approached network research from a single-level perspective. Third, focus was given on the structural properties of networks rather than more complex properties such as the attributes of nodes. Fourth, most network research used descriptive rather than inferential statistics. Thus, research about social networks needs further development in terms of theoretical, methodological and analytical approaches.

### **3.3.1 Self and Mutual Interest Theories**

Self and mutual interest theories are based on action where persons seek their best interest or that of the group. Contractor and Monge (2002) defined self-interest as choices people make to favour their personal preferences and desires as they seek to achieve goals. Mutual interest means that choices are made to achieve mutual goals.

#### **3.3.1.1 Self Interest**

An actor's self-interest is the reason for network connections. Self-interest concepts were used to develop Coleman's social capital theory (Coleman, 1988) and Burt's 'structural hole' theory (Burt, 1992b). Social capital and 'structural hole' concepts are examined to explain how network connections provide benefit. Benefit is provided at a cost and so self-interest is based on transaction cost and therefore the concept of transaction cost has been used as a basis for a theory of social networks (Blois, 1990).

### 3.3.1.1.1 *Social Capital Theory*

Information resources obtained through social networking may be viewed as a form of social capital, hence, the reason for the inter-connectedness of social capital and social network theories. Social capital is a resource provided through relationships (Burt, 1992a) and basically, social capital is a resource provided from one actor to another as a gift (Choi and Hilton, 2005) and may be provided in several ways (Coleman, 1988). The first is obligations and expectations which depend on trust and the second is information channels (Coleman, 1988). Information is provided through social relations. Norms and effective sanctions are the third form of social capital (Coleman, 1998). These norms and effective sanctions may either facilitate or constrain action.

Social capital has value which can be quantified. Four separately accessed portions of social capital have been quantified: prestige and education related social capital, political and financial skills social capital, personal skills social capital and personal support social capital (van Der Gaag and Snijders, 2005). Within their study van Der Gaag and Snijders (2005) used a resource generator instrument to quantify social capital and respondents were asked about the access and availability of resources. An overarching finding was that access to social capital was positively correlated with access to all personal resources. There is however another side of social capital in that there can also be negative consequences. Social ties increase vulnerability to fraud when trust is placed in social relationships (Baker and Faulkner, 2004). Baker and Faulkner's (2004) findings were based on empirical evidence, which showed that investors who fail to conduct due diligence and do not use social ties had a 79% probability of loss of capital (financial). On the other hand, investors with pre-existing social ties and who do not conduct due diligence had a 39% probability of loss (Baker and Faulkner, 2004).

### **3.3.1.1.2 Transaction Costs Theory**

The level of transaction cost may influence self interest. Transaction costs are incurred during the exchange of goods and services (Williamson, 1979) and the concept of transaction cost has been used to explain how networks can become economically efficient (Jarillo, 1988). “*In the absence of transaction costs firms would not integrate functions*” (Jarillo, 1988:33). The reverse is true; businesses integrate because there are transaction costs and therefore by sharing transaction costs, businesses become more efficient (Jarillo, 1988). Transaction costs can therefore influence if a business person may enter into exchange relationships.

### **3.3.1.2 Mutual Interest**

Mutual interest means that network connections are made to achieve some collective good. Collective goods are viewed as resources that benefit the group as a whole as well as the individual. Two theories are used to explain mutual interest: public good theory (Samuelson, 1954) and critical mass theory (Marwell and Oliver, 1993).

#### **3.3.1.2.1 Public Good Theory**

The theory of public goods states that a public good is one that if consumed by one individual, does not subtract from another individual’s consumption of the good (Samuelson, 1954). As a result, there is collective consumption of the good. Goldin (1977) disagrees and suggests that goods are not public in the sense that access is unequal but rather access is selective. Selective access means that some resources become unavailable and therefore mutual interest is not achieved. Consequently, even though social networks may be sources of collective goods, networks may not function as such if network connections result in selective access to these goods.

### 3.3.1.2.2 *Critical Mass Theory*

Critical mass theory (Marwell and Oliver, 1993) suggests a minimum number of people are required to achieve collective action to obtain a collective good. Marwell and Oliver (1993) researched the 'critical mass', required using social network methods to examine structural processes of density, centralisation and cliques. They theorise that,

*“For collective action to occur, the group must contain at least one organiser network with enough resourceful people that the sum of their contributions forms a viable contract. That same network must also have an organiser who can afford to contact enough people to form the contract”*  
(Marwell and Oliver, 1993:115).

Critical mass theory is relevant to understand how adoption processes work within the larger social context. A review of their work demonstrates that critical mass theory has been used to build models of adaptive learning, sanctioning systems and influence (Oliver and Marwell, 2001).

### 3.3.2 *Cognitive Theories*

Cognitive social structure has been studied by several social network theorists (Wasserman and Galaskiewicz, 1994; Moller and Wilson, 1995, Monge and Contractor, 2003 and Borgatti and Foster, 2003). Cognitive theories explain the formation of social networks by suggesting that networks are formed based on an individual's perception. Social networks can be formed through peoples' cognition of others and cognition includes responses such as like and dislike. Cognitive theories include: cognitive consistency theory and cognitive dissonance theory (Monge and Contractor, 2003). Cognitive consistency theory (Rosenberg, 1960) distinguishes between beliefs and feelings, constructs of attitudes, which affect an individual's behaviour while cognitive dissonance theory (Festinger, 1957) explains how people seek to reduce inconsistent beliefs.

### 3.3.2.1 Cognitive Consistency Theory

Cognitive consistency theory (Rosenberg, 1960:319) states that, “*if people seek congruence between their beliefs and feelings toward objects, then attitudes can be changed by modifying either the beliefs or feelings associated with them.*” As a result, an individual’s feeling about an object changes based on their beliefs or beliefs change to be congruent with feelings, thus achieving consistency. Based on the feeling (affective) and belief (cognitive) constructs, the cognitive consistency theory is also called affective-cognitive consistency theory. Affective-consistency theory has been operationalised to identify the least effort required to move an individual from attitude, belief and behavioural intention positions (Milne and Meier, 1976). Cognitive consistency theory can be used to explain how social networks drive consistency in peoples’ attitudes and therefore pre-determine their network connections (Monge and Contractor, 2003).

### 3.3.2.2 Cognitive Dissonance Theory

Cognitive dissonance theory (Festinger, 1957) aims to explain how people perceptively adjust unresolved issues. This theory states that an individual seeks to reduce dissonance which is “*the existence of non-fitting relations among cognitions*” (Festinger, 1957:3). Dissonance may be triggered by new information. Dissonance is reduced by achieving psychological consonance or avoiding situations and information. A relevant example of reducing the level of cognitive dissonance occurs when an individual avoids new information (Choo, 1998) and therefore both consonance and avoidance may influence the formation of network connections between individuals.



### 3.3.3 Contagion Theories

Contagion theories explain the influence social networks have on the spread of attitudes and behaviour (Monge and Contractor, 2003) and these theories relate to exchange and dependency. Two contagion theories are social learning (Mischel, 1968) and structural theory of action (Burt, 1982).

#### 3.3.3.1 Social Learning Theory

Social learning theory (Mischel, 1968) suggests that behaviour is adapted based on past experiences. Certain cognitive and learning conditions stimulate present behaviour (Mischel, 1968). Principles of social learning include observation, contiguous associations and distinction between acquisition and performance of what is learnt. Social learning takes place as a result of stimuli from the external environment. *“The central idea of social learning theory is that one individual learns from another by means of observational modelling”* (Rogers, 2003:342). Patterns of behaviour are observed through verbal and non-verbal clues and thus, social learning drives the diffusion processes (Rogers, 2003).

#### 3.3.3.2 Structural Theory of Action

A structural theory of action (Burt, 1982) suggests that network structure affects the performance of roles based on relational and positional approaches to action. A relational approach describes the relationship between pairs of agents whereas a positional approach describes the pattern of relationships within a system of agents (Burt, 1980). The former is a network clique while the latter is a jointly occupied network position. *“A clique is a set of actors in a network who are connected to one another by strong relations”* (Burt, 1980:97). *“A jointly occupied network position is a set of structurally equivalent actors”* (Burt, 1980:100). Structural equivalence means that an agent has similar relationships as other agents and therefore both the focal agent and these other agents perform the same role and therefore action is the result of the network’s structure.

### 3.3.4 Exchange and Dependency Theories

Businesses become more inter-dependent and have long-term relationships that will benefit the business. Exchange and dependency theories explain how social networks are forged through the need to obtain information and material resources. An exchange relationship becomes dependent when persons have limited access to resources (Buttery and Buttery, 1994; Moller and Wilson, 1995; Monge and Contractor, 2003). If an agent expands their network of agents, the focal agent is able to broker the dependent relationship and therefore become less dependent on a few sources of information (Monge and Contractor, 2003). Dependency on a particular agent is reduced creating an improvement in the power balance. The main exchange and dependency theories are social exchange theory (Homans, 1958; Emerson, 1962; Blau, 1964,) and resource dependency theory (Ulrich and Barney, 1984).

#### 3.3.4.1 Social Exchange Theory

There are three main social exchange theorists, Homans (1958), Emerson (1962) and Blau (1964). An exchange relationship is a form of social behaviour which is facilitated through cohesiveness, communication or interaction and norms (Homans, 1958). *“Social behaviour is an exchange of goods, material goods but also non-material ones, such as the symbols of approval or prestige”* (Homans, 1958:606). He noted that individual behaviour forms a social structure which arises from processes of exchange between members and exchanges have costs and values which in turn balance the exchange. Exchanges are also power-dependent. *“Persons that give much to others try to get much from them, and persons that get much from others are under pressure to give much to them”* (Homans, 1958:606).

Power-dependent relationships were theorised by Emerson (1962). Power is not an attribute of a person but an outcome of a social relationship (Emerson, 1962). It is also noted that power relationships (a relationship where A dominates B but not C) are not passed on from one person to another. Dependence and power are two sides of the same coin. The power of A over B ( $P_{ab}$ ) is based on the dependence of B on A ( $D_{ba}$ ) and therefore  $P_{ab}=D_{ba}$  (Emerson, 1962). Dependence is based on motivational interest in the exchange relationship and power is based on resistance to dependence (Emerson, 1962). Hence the two concepts of dependence and power work hand in hand in the performance of an exchange relationship. The main point is that if the relationship is one of power an exchange may occur, but if the relationship is one of dependence an exchange will occur.

Blau (1964:89 & 90) proposed the distinctive meaning of social exchange, which involves,

*“An individual who supplies rewarding services to another obligates him. To discharge this obligation, the second must furnish benefits to the first in turn. ... If both individuals value what they receive from the other, both are prone to supply more of their own services to provide incentives for the other to increase his supply and to avoid becoming indebted to him. As both receive increasing amounts of assistance they originally needed rather badly, however, their need for still further assistance typically declines.”*

In theory, social exchange is involved in human interaction. Interaction is viewed as a complex exchange process (Moller and Wilson, 1995). Network agents have social exchange relations (Hakansson & Johanson, 1993) and exchange resources based on reciprocity (Blau, 1964; Choi & Hilton, 2005). Knowledge is shared as a means of social exchange based on feelings to reciprocate rather than any specific reward to be obtained (Bock and Kim, 2002). According to Bock and Kim (2002), social exchange entails unspecified obligations which engender feelings of personal obligation, gratitude and trust.

### 3.3.4.2 Resource Dependency Theory

Resource dependency theory explains why business people rely on each other. A resource dependence view of business operation means that businesses alter their behaviour to acquire and maintain resources and the main assumptions are internal and external features of businesses, scarce resources and leveraging power-dependent relationships between businesses (Ulrich and Barney, 1984). Based on these assumptions, businesses seek to control the acquisition of scarce resources and limit their dependence on other businesses for scarce resources. In order to leverage resource dependency businesses can adopt several strategies: de-link internal and external features of the business, re-locate to an area where resources are less scarce and balance power-dependent relationships by increasing its networking activities (Ulrich and Barney, 1984). Thus, controlling resource dependency is rooted in business strategy (Medcof, 2001).

### **3.3.5 Homophily and Social Support Theories and Proximity Concepts**

Homophily relates to persons networking with persons to which they are similar to (Degenne and Forse, 1999; Rogers, 2003; Skvoretz et al., 2004). The most common characteristics, according to Monge and Contractor (2003) are gender, age, race, religion, product or service sector or membership. The desire for social support may arguably be a reason for the formation of a communication relationship. For instance being embedded in dense networks will provide actors with resources and social support to cope with day to day business life (Monge and Contractor, 2003). Physical proximity influences the probability of a network of agents being formed. Electronic proximity relates to familiarity and use of modern technology as a communication mechanism. Main theories of the homophily, social support and proximity group of theories include social comparison theory (Turner, 1975), social identity theory (Ashforth and Mael, 1989), physical and electronic propinquity (Walther and Bazarova, 2008).

### 3.3.5.1 Social Comparison Theory

Social comparison theory explains the dynamics between in-group and out-group interaction. A social comparison is a process by which one individual competes with another to achieve a certain 'social' status. That is to move from the out-group to the in-group. "*Social comparisons give rise to processes of mutual differentiation between groups which can be analysed as a form of 'social' competition*" (Turner, 1975:5). There are four main assumptions: (1) the individual has knowledge of her/his group; (2) the individual will tend to remain a member of a group and seek membership of new groups; (3) all groups exist in the midst of other groups; and (4) a group will be capable of preserving its contribution to those aspects of an individual's social identity which are positively valued (Turner, 1975). Comparison involves three activities: (1) self-categorisation; (2) identifying the dimensions of comparison; and (3) values associated with a particular comparison (Turner, 1975).

### 3.3.5.2 Social Identity Theory

Social identity theory explains the categorisation of individuals based on their characteristics (Ashforth and Mael, 1989). Characteristics include symbols of prestige, status and reputation and as a result, an individual locates herself/himself within the social environment (Ashforth and Mael, 1989). Social identification means that the individual is also associated with a group which has the same attitudes and values. Individuals who have the same social identity will communicate or interact with each other thereby promulgating those similar attitudes and values. Self-categorisation theory is linked to social identity theory and specifies the cognitive processes that form the basis of distinguishing between the in-group and out-group (Hogg and Terry, 2000). Accordingly, based on self-identification and categorisation, individuals behave in a manner that is typical of the group to which they ascribe to.

### 3.3.5.3 Physical and Electronic Proximity Concepts

*“Physical propinquity means nearness to another person and is associated with the opportunity to converse and a psychological feeling of involvement with others”* (Walther and Bazarova, 2008:624). Empirical research on proximity suggests that ties are formed and maintained when persons are closer to one another (Stokowski, 1994; Akoorie, 2000; Green and McNaughton, 2000; McNaughton, 2000; Oerlemans, Meeus and Boekema, 2000; Rogers, 2003). Physical proximity affects group formation and in turn the interaction and affective behaviour of members of the group (Borgatti and Foster, 2003). Physical proximity makes it easier to interact (Hansen, 2002) and as a result through interaction ties are formed. Ongoing physical proximity therefore results in reinforcement of ties and provides an environment for sustaining ties.

Electronic proximity involves the ability to communicate through electronic media, such as blogs and electronic forum, which influences the formation of network ties (Monge and Contractor, 2003; Awad and Ghaziri, 2004; Liebowitz, 2007). The type of electronic media influences electronic proximity and is explained by the theory of electronic propinquity. The theory of electronic propinquity seeks to explain and predict the consequences of using alternative media (Walther and Bazarova, 2008). This theory suggests that individuals feel a sense of nearness when one communication channel is used as compared with another (Walther and Bazarova, 2008). Factors that increase electronic propinquity include: *“bandwidth of the communication medium, the capacity of the communication channel for mutual directionality and the communication skills of the individual communicators”* (Walther and Bazarova, 2008:624). Walther and Bazarova (2008) note that electronic propinquity decreases when the information is complex, there are perceived communication rules and the perceived number of communication channels. As a result, certain types of information, for example one that is more technical may be suitable to be communicated using a certain communication channel as compared with another communication channel.

### 3.3.6 Co-evolution Theories

Network evolution theories explain how networks acquire resources through interaction with each other (Easton, Wilkinson and Georgieva, 1997; Osborn and Hagedoorn, 1997; Monge and Contractor, 2003). According to Monge and Contractor (2003) networks evolve based on commensality and symbiosis (biological terms). Commensalistic action ranges from mutualism to competition while symbiosis is based on functional differences relating to the supply chain as for example, a tourism organisation providing marketing services for an hotelier.

In terms of inter-organisational relationships of information sharing commensalistic actions relate to sharing information to improve business performance on the mutualism end of the scale. On the competition end of the scale, information is not shared. Theories can be used to explain both commensalistic action and symbiosis, which control the network's circumstances and thus maintain and grow the network. Two main theories which explain co-evolution are organisational ecology theory (Carroll, 1984) and complexity theory (Schneider and Somers, 2006).

#### 3.3.6.1 Organisational Ecology Theory

Organisational ecology theory explains how organisations grow and develop (Carroll, 1984). Approaches to organisational ecology include: development, selection and macro-evolutionary. Carroll (1984) explains that the development approach states that organisations adapt in response to internal and external stimuli, while the selection approach suggests that organisations are eliminated or selected to survive and the macro-evolutionary approach examines communities of organisations, for instance industrial districts, to determine patterns of new organisational forms. Organisations may grow and develop based on one or more of these approaches. There is still need to clarify how environmental changes affect organisations and hence the reason for a review of complexity theory.

### 3.3.6.2 Complexity Theory

It is proposed by Schneider and Somers (2006) that complexity theory has three building blocks: non-linear dynamics, chaos theory and adaptation and evolution. Non-linear dynamics mean that there are different responses to the same external stimuli. For instance, a butterfly effect happens when a large disproportionate change is a result of an external stimulus. As a result, complexity theory proposes that change to the system is not always in proportion to the given external stimuli. Chaos theory suggests that change dynamics are not random and that there is some attractor which brings about the change. Adaptation and evolution mean that a complex system changes based on exposure to certain stimuli. Schneider and Somers (2006:355) note,

*“Highly chaotic systems cannot maintain their behaviours, as small forces can result in systems disruption, i.e. the butterfly effect. ... With optimal levels of chaos and anti-chaos/order, a system will then be poised, and hence, potentially adaptive and capable of evolution.”*

Co-evolution can be explained using complexity theory since within a network, the agent's exposure to an external stimulus is not random but determined by the network's structure and the degree of adaptation and co-evolution determined by both the attribute traits and relational dynamics of that connection.

In summary, social network theory is built by using a multi-theoretical framework. Such a framework considers the broad context within which social networks emerge and function. Theories of emergence include interest, cognitive, homophily, social support and proximity theories, while theories of function include contagion, exchange and dependency and co-evolution theories. These theories can be used to explain the characteristics of social networks, for example the types of social networks (self-interest), how agents become enabled or constrained within networks (power-dependent relationships) and adoption of certain business practices (social learning theory). The next section reviews how social network theory is applied. The review has been categorised based on certain characteristics of social networks: embeddedness, structural influence and innovation.



### 3.4 Social Network Theory Application

This section integrates the main characteristics of social networks, embeddedness, structural influence and innovation (Sub-section 3.2) with social network related theories (Sub-section 3.3). Social network analysts are engaged in mapping patterns formed through interaction of social agents. Basically social network theory is the study of these network patterns and explains how network patterns operate. To formulate social network theory, network patterns may be studied from three perspectives: the overall network, the relationships within the network's structure and the outcomes of the network's structure. Consequently, social network theory is applied using the categories of: (1) embeddedness (overall network position perspective); (2) structural influence (agent relational perspective); and (3) innovation (outcome of network structure). Each of these characteristics is linked to a group of theories which can be used to explain the emerging network pattern.

#### 3.4.1 *Embeddedness*

Embeddedness means that the overall network structure enables or constrains agents within that structure. Density, transitivity and clustering are three measures which can be used to study the level of embeddedness within the network's structure and three groups of theories can be used to explain the characteristic of embeddedness. Exchange and dependency theories can be used to explain the level of density within the network. The level of transitivity determines contagion effects and therefore, social learning theory provides an explanation of the level of transitivity within the network's structure. Network clusters are formed through mutual interest and therefore public good and critical mass theories can be used to understand the level of network clustering.

### 3.4.1.1 Density

Density is a means of describing one embedded characteristic of social structures (Wasserman and Faust, 1994; Moller and Wilson, 1995). Connectivity relates to the number of network dyads (two connected agents) and triads (dyad plus one connected agent) and these connections are formed through exchange and dependent relationships between agents. Therefore the exchange of resources is based on cohesiveness of social behaviour and resource dependency. Birley et al. (1991) viewed a personal dense network as one in which all the individuals in the personal network of an entrepreneur have contact with one another. These contacts are forged through power-dependent relationships of dyadic connections for a group of agents defined within a particular boundary and thus the measure of density has been applied to understand network dynamics. Burt (1992a) argued that high density is an indication of increasing competition for available resources. As a result, denser networks mean that there are more exchanges based on resource dependency.

### 3.4.1.2 Transitivity

Transitivity measures the number of sharing triads within the network's structure (Figure 6-9). Wasserman and Faust (1994) defined a triad as three agents and their ties. The importance of studying the triad relates to the fact that according to Degenne and Forse (1999) triads often catalyse and therefore transitivity is an indication of the network's strength in terms of resource sharing. For instance, even though A and C are not directly connected, if they are connected through B there is transitivity between A and C which strengthens the network. Since triads catalyse network resources, social learning theory can be used to explain the transitive effects within the network's structure. Social learning theory (Mischel, 1968) involves learning from each other and therefore the operation of social learning can be used to explain the existence of transitive connections within the network as A learns from B and B learns from C and therefore A learns from C.

### 3.4.1.3 Clustering

Clusters are contiguous groups of connected nodes (agents). A cluster is a group of nodes within a short geodesic distance (the length of the shortest path between two nodes on a graph). According to Hanneman & Riddle (2005), two agents are joined in a cluster when they both have similar patterns of ties. Clusters are identified not based on points that are equally 'close' to one another but rather there is contiguity in the graph and there is a clear separation from other clusters (Scott, 2000). Thus, a cluster can be viewed as a critical mass within the network's structure. This critical mass emerges as agents within the network access the same resources from other agents and each other. These resources are therefore public goods, which are consumed collectively. In view of this, the extent of network clustering is a measure of the mutual interest of the agents within the cluster and therefore public good theory (Samuelson, 1954) and critical mass theory (Marwell and Oliver, 1993) can be used to explain the operation of network clusters.

### **3.4.2 Structural Influence**

Structural influences are based on the relationships of an agent within the network's structure. The inter-connections of agents within the network create advantages for some agents and disadvantages for other agents. The strength of ties, centrality and cliques are indications of the level of structural influence within the network's structure and certain theories can be used to explain these characteristics. Homophily and proximity theories explain the strength of network ties. In theory, centrality levels are based on cognitive perspectives of network agents, in particular their cognitive consistency (Rosenberg, 1960) and cliques can be explained by the structural theory of action (Burt, 1982).

### 3.4.2.1 Strength of Ties

A ground-breaking network analysis paper, which has resulted in much empirical work is Granovetter's 'strength of weak ties' (Granovetter, 1973). Stronger ties, those are ties between individuals who meet frequently, can provide knowledge resources. Dissemination of information through stronger ties however, results in inertia since everyone in the social network will know the same information. A weak tie is a bridge between two agents that have less frequency of contact (Granovetter, 1973). Weak ties are more important in providing resource benefits to the network, and by having more weak ties, an agent is in a better network relationship (Granovetter, 1973). The major tenet of Granovetter's argument is that the removal of the average weak tie will do more damage to transmission possibilities in comparison to the removal of the average strong tie. In other words more people can be reached through weak ties. Granovetter's ideas are partially supported by Friedkin (1982) who argued that strong ties are more important than weak ties in promoting information flow within an organisation and the reverse is true for information flow outside of the organisation.

The strength of ties argument is very important to explain the influence of agents within the network. Ties are formed based on homophily and proximity theories and therefore, these theories can be used to understand the emergence of strong and weak ties within the network's structure. Based on social comparison theory, agents with similar traits, which form an in-group, will network with each other and have stronger ties. Those agents in the out-group will emerge as weak ties. In addition, agents will form stronger ties with other similar agents, which they identify with. Similarly, proximity increases the likelihood of the frequency of a tie (Monge and Contractor, 2003) and therefore proximity, whether physical or electronic, influences group behaviour (Borgatti and Foster, 2003). In view of this, the size of an agent's network is the extent of an agent's influence across the network and this size can be explained based on homophily and proximity theories.

### 3.4.2.2 Centrality

Centrality is a structural feature which influences information flow (Rowley, 1997). This is because centrality relates to the relationship of an individual or organisation as compared to another organisation with which it is connected (Wasserman and Faust, 1994; Wasserman and Galaskiewicz, 1994; Rowley, 1997). Central agents are therefore potential brokers, who are capable of sharing information and therefore measures of centrality indicate the level of influence agents have in their networks. As a result, an agent's power in the network may be defined based on the degree, closeness and betweenness centrality measures. Centrality indicates that the focal agent is in a more advantageous relationship to obtain resources from the network. This is because other agents within the network's structure sought to obtain resources from this focal agent and thereby centralising the focal agent. The focal agent now has the capability to capitalise from its connections with other agents.

Centrality improves an agent's ability to obtain resources and this concept can be explained using theories of cognitive consistency and cognitive dissonance. For example, agents seek resources from focal agents that are consistent with their attitudes and beliefs and therefore their cognition of these focal agents result in the formation of network ties. On the other hand, agents will increase dissonance by dissociating themselves from focal agents who they perceive are not similar in attitudes and beliefs. In theory, both cognitive consistency and cognitive dissonance work hand in hand to centralise certain focal agents as compared with other agents in the network's structure.

### 3.4.2.3 Cliques

Groups are cliques which may be viewed as macro-structures within the network (Hanneman and Riddle, 2005). Strong ties in well defined groups are cliques (Granovetter, 1973) and hence clique formation is also linked to theories of homophily and proximity. Weak ties bridge two cliques and affect the diffusion capability of the network (Rogers, 2003). As such a clique forms when the maximum numbers of agents have all possible ties present between themselves (Hanneman and Riddle, 2005). Cliques therefore enhance the cohesiveness of the network (Liebowitz, 2007) through the bridging of network agents. An understanding of the nature of the group or sub-group, which is the inter-relationships of the group members, is important to understand the coherence of the roles played by group members. Thus, clique membership relates to the performance of a role and these roles influence resources available to other agents within the network's structure. Thus the formation of cliques within a network can be explained by the structural theory of action (Burt, 1982).

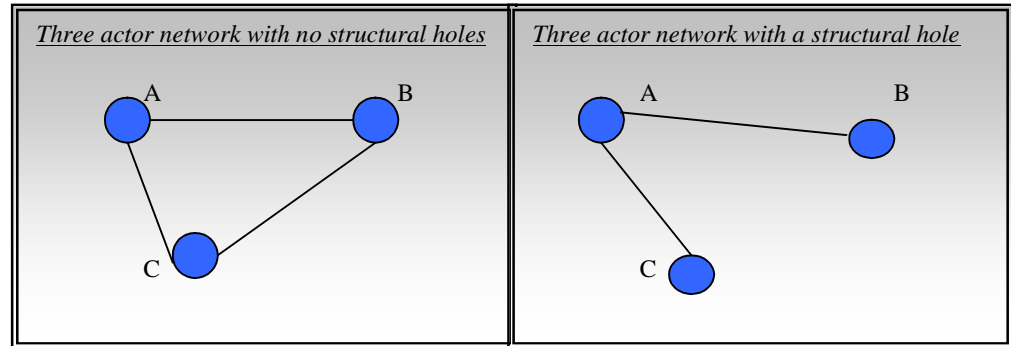
### **3.4.3 Innovation**

Innovation is the ability of the network to apply knowledge based on structural holes and brokerage roles. Innovation is therefore an outcome of the network's structure. Knowledge resources are needed to innovate and are a form of social capital. Social capital is about the value of connections (Borgatti and Foster, 2003) and connections either direct or indirect determine the flow of network resources. In view of this, obtaining social capital through the network depends on (1) the level of structural holes; and (2) the number and type of brokerage roles.

### 3.4.3.1 Structural Holes

**Figure 3-3** Structural Hole Diagrams

Source: Hanneman and Riddle (2005)



Structural holes provide a strategic advantage since individuals in structural holes have ties (weak ones) into multiple networks that are largely separated from one another (Burt, 1992b). As such, structural holes are connections between non-redundant contacts (Burt, 1992b). As shown in Figure 3-3 above, the diagram on the right shows a structural hole since B is not connected to C their information sources are in theory different (non-redundant) and therefore A will theoretically receive different information from both B and C. Whereas the diagram on the left shows no structural holes and all three agents A, B, and C have potentially redundant information flowing between them. Structural hole theory (Burt, 1992b) explains outcomes of being unconnected in a network of social agents. A structural hole provides an information advantage since the separation between non-redundant contacts, means that these contacts are in turn otherwise connected in the network and therefore have other potential sources of information. In theory, structural holes provide beneficial social capital.

### 3.4.3.2 Brokerage

Structural hole theory, weak ties and brokerage roles are inter-related. A structural hole between two contacts provides network benefits that are additive rather than overlapping (Burt, 1992b). This is because structural holes are created through weak ties. Granovetter's (1973) strength of weak ties theory relates to Burt's (1992b) structural hole theory. People who have weak ties are likely to be in structural holes, which allow them to be more efficient in obtaining information since based on Granovetter's weak tie theory, weak ties provide non-redundant information. When structural holes are filled the network agent acts as a broker providing network resources (Burt, 1997). This is because structural holes provide brokerage opportunities in the network (Burt, 1992; Kadushin, 2004) since a broker, bridging the structural hole, has the capability to share the social capital between groups. As a result, senior managers' with exclusive exchange relations (structural holes) to disconnected partners (weak ties) earn higher profits (brokerage) (Burt, 1997a). Specific brokerage roles are explained in the methodology chapter (Figure 6-9).

## 3.5 Conclusion

This chapter reviewed social network characteristics, social network theory and application. The interactions that people have form a social network pattern which may be studied as a social structure. Social structure is formed through inter-dependent network ties. Particular aspects of social structure which may be studied include embeddedness, structural influence and innovation. A body of theories relating to social networks were reviewed to understand how networks are formed and maintained. These theories were reviewed and applied to understand social network characteristics. Inter-organisational relationships are formed based on a body of social network related theories and these theories in-turn explain the embeddedness, structural influence and innovative capability of inter-organisational networks.



The next chapter will critically discuss the reasons for inter-organisational knowledge sharing. The systemic features of inter-organisational knowledge sharing activities are explained using systems, social systems and structuration theories. An understanding of reasons for social networking and knowledge sharing in the tourism sector is needed since there is an existing gap about applications of knowledge management principles within the tourism sector. Particularly, there are no known examples of empirical evidence of information sharing within a social network and inter-organisational context for the tourism sector (Cooper, 2006). The chapter then proposes to examine the facilitating conditions of inter-organisational knowledge sharing which are then used to consider two knowledge sharing systems.

## **CHAPTER 4 INTER-ORGANISATIONAL KNOWLEDGE SHARING**

### **4.1 Introduction**

A theoretical basis for analysing and understanding inter-organisational knowledge sharing can be formulated by combining concepts and theories from knowledge management and social networks literature. These concepts and theories provide a theoretical foundation that is built upon the premise that social networking activities facilitate knowledge sharing practices through what may be termed an inter-organisational knowledge sharing system. Such a system may exist within an organisation and between organisations.

The focus of this research is inter-organisational knowledge sharing practices. These practices have been examined through concepts and theories relating to systems, social systems and structuration, which this chapter seeks to identify and discuss. This chapter has two sections covering social science theories and inter-organisational knowledge sharing. The final section concludes how and why social networking facilitates inter-organisational knowledge sharing.

### **4.2 Social Science Theories**

Social science theories seek to explain the motives and behaviour of people. One such behaviour is knowledge sharing. Knowledge may be shared through inter-organisational networks of business people and takes place as a result of certain factors and structures that exist which can be explained through certain concepts and theories. The theories discussed in this section relate to: systems, social systems and structuration which between them provide an explanation for the occurrence of knowledge sharing through inter-organisational networks.

### **4.2.1 Systems Theories**

Facets of systems theory have been linked to organisational theory to understand the operation of an organisation (Kast and Rosenzweig, 1975). A system may be described as having several interacting components: inputs, flows, processes, and outputs, from which the interaction of these components forms the system. A system may also be described based on its systemic features which are the consequences or outcomes of a system. As a result, to fully examine an inter-organisational knowledge sharing system there is need to recognise two levels of analysis: (1) the components, which are the agents, knowledge sharing processes and outputs; and (2) the features, which are the relational exchanges within the network (Spender, 1996). Relational exchanges occur between system components and form certain patterns (Wortman and Luthans, 1975; Moller and Wilson, 1995). These patterns are invisible and therefore a system is bound together by invisible patterns which play out within a time period (Senge, 2006).

In view of this, systems theory can provide an overarching framework for understanding the operation of social networks and has been used to explain the formation of network organisations (Palmer, 1996). Three branches of systems theory exist: structural-functionalism, cybernetics and general systems theory (Monge and Contractor, 2003).

First, the structural-functionalist perspective may be viewed as the traditional perspective comprising of identified components which must be ordered to show how the system works. The main advantage of the functionalist view is that the parts, inter-relationships and outcomes of the system are identified. On the other hand, structural functionalism does not necessarily explain how the system grows and adjusts (Monge and Contractor, 2003).

Second, a cybernetic perspective identifies the system and its environment, selects a controlling attribute of that system, allows this controlling attribute to influence the system and then monitors the system. This type of system perspective has been criticised as being too control oriented and allowing little flexibility in terms of studying several dynamics at once.

Third, a general systems perspective identifies the inter-dependent relationships of the system (Schneider and Somers, 2006). The general theory of action systems can be used to explain the emergence and function of social structures (Parsons, 1951). System actions can be described as consistent patterns of integration which arise from situational and motivational elements (Parsons, 1951). Consistent patterns of integration suggest that social practices are repetitive and therefore form a structure (Nadel and Fortes, 1957). These structures respond to changes in the system. Thus, the focus of general systems theory is the systems' response to environmental changes which is similar to a complex adaptive system environment (CASE).

The identification of a complex adaptive system results from adopting a general systems perspective. A complex adaptive system is defined as "*complex systems where agents follow rules that explicitly and sometimes consciously seek to improve their fitness in terms of performance, adaptability, or survival*" (Monge and Contractor, 2003:87). A complex adaptive system framework further advances understanding of systems theory since it attempts to explain how the system adjusts itself based on certain attributes and relations within the system. These attributes and relations are those of business people and therefore a network of business people may be viewed as operating as a Complex Adaptive System (CAS) (Schneider and Somers, 2006).

### **4.2.2 Social Systems Theories**

Social systems theories focus on the motivation and behaviour of people which result in the functioning of structures in society (Parsons, 1951). There is a paradox as to whether it is the motivational dynamics or the structural patterns that explain behaviour and this paradox has been called the Nadel's paradox (Nadel and Fortes, 1957). Motivation is a foundational concept in understanding why systems operate the way they do. People's motives are derived from their role-orientation, value-orientation and personality and the structural mechanisms of the social system (Parsons, 1951). These motivational dynamics account for the operation and sustainability of structural patterns (Parsons, 1951) and result in behaviour.

Structural patterns also influence behaviour. Social systems theories suggest that structural patterns are important to the understanding of the operation of a social system (Nadel and Fortes, 1957). Structural patterns are formed through dyadic (two agents) and triadic (dyad plus one agent) ties. These interactional ties also perform a particular role in the network pattern and each role has a behavioural attribute which can be the performance of a particular task. Thus, there is a question as to whether it is the attribute of the role or the structural pattern which drives the functioning of the system. This question, often referred to as Nadel's paradox (Nadel and Fortes, 1957) was re-visited by DiMaggio (1992) and it was suggested that behaviour cannot be purely structural and that there are cultural and subjective aspects of action. As such, although structural patterns influence behaviour, attributes are also important. Attributes of network agents are typifications that shape the evolution of structural patterns and as such attributes are used by people when deciding to start or maintain relationships (DiMaggio, 1992).

### 4.2.3 Structuration Theory

Structuration theory is based on an objectivist, naturalistic point of view that social systems can be analysed in ways similar to that adopted for biological systems (Giddens, 1984). The theory of structuration is based on the idea that social practices re-occur through time and space and are based on the reflexive action of knowledgeable agents. This reflexive action can be explained as a notion that human conduct has an unconscious motivation. A motive is a prompt to fulfil a want and reflexivity is the unconscious motive to act (Giddens, 1984). Within structuration theory people are considered to be role-taking, norm-forming beings who behave according to their perception of reality and thereby their social practices become structures (Nonaka and Toyama, 2003). However, there is also the aspect of agency which is founded on the premise that an individual has the power to act differently. Action is therefore conscious and not unconscious. The debate (Nadel and Fortes, 1957; DiMaggio, 1992) continues as to whether it is the structural patterns or agents' attributes that result in behaviours.

The core concepts of structuration theory are: structure, system and duality of structure. **Structure** means the patterning of social relations. Patterning is a network of connections and hence structuration theory is connected to social network analysis. A **system** is operated through rules and resources and rules set out routine practices that operate a system whereas resources are a form of social capital and a system is the result of these rules and resources. A 'systemness' of action is created through recursive ordering of social practices. For instance, a driver reflexively monitors his or her driving practices and as a result, a systemness of driving action happens. **Duality of structure** is created as agents and structures become both medium and outcome and the agents are the allocators of system resources while the structures are the patterns of relationships which directly or indirectly link social positions (Cohen, 1989). The result is a system of relations between agents which results in outcomes and these outcomes in turn influence agents. This is the duality of structures. Duality in structure reconciles action with structure and forms the basis of structuration theory since there is a patterning of relations through time and space (Cohen, 1989).

An important aspect of structuration theory is the idea of unconscious motivation. An agent may not be conscious of their motives as to why they acted a particular way. Structures can constrain motivation and a constraint is for instance a limitation of face-to-face interaction in time and space (Cohen, 1989). A constraint for one agent may be an opportunity for another agent since it depends on the agent's position within the structural pattern. Giddens (1984) suggests that there are three constraints: material constraints, sanctions and structural constraints.

**Material** constraint refers to human limitations such as there must be time to sleep. Two kinds of material constraint are: coupling and capability. Coupling constraints are conditions of human corporality (relating to the physical capabilities of the human body) that would restrict activities (Cohen, 1989). Capability constraints are physical conditions that shape opportunities for activities (Cohen, 1989).

**Sanctions** are imposed constraints. Sanctions relate to certain norms, rules and laws that people are expected to comply with, for example power relations may be viewed as a sort of sanction since the individual feels inclined to respond in a particular manner and as a result, behavior may be constrained. **Structural** constraint is derived from the inter-dependency of ties and although not a very clear concept, it has been defined as relating to position-practice (Cohen, 1989) which relates to the position of an agent in the network and the implications of that position for the possible actions of the agent.

In summary, structuration theory is about the regularity of interdependent relationships and their reciprocal practices (Cohen, 1989). Reciprocal practices result in integration of action and influence behaviour and action is therefore explained through the patterns of network structures. Specifically, network agents are placed within structures that can influence their behaviour.

### 4.3 Inter-organisational Knowledge Sharing

This section combines literature from both knowledge management in Chapter 2 and social networks in Chapter 3 and reviews knowledge networking literature. This section about inter-organisational knowledge sharing is divided into three parts: the characteristics of inter-organisational knowledge sharing, conceptualising knowledge sharing systems and facilitating conditions of knowledge sharing systems.

Inter-organisational knowledge sharing means that knowledge is shared between business people in different businesses. The earliest writings on 'knowledge networks' argued for relational ties to be used as a means of knowledge sharing (Skyrme, 1999) as networks exist and knowledge may be shared through these structures. The network can therefore become a knowledge sharing mechanism. Structural components of the network are formed through communication links which allow information to flow (Skyrme, 1999; Monge and Contractor, 2003). The importance of inter-organisational knowledge sharing is also discussed in the writings of Lawson and Lorenz (1999) who argued for collective learning of tacit knowledge among regionally clustered businesses to foster innovative capacity.

Shared knowledge helps build up knowledge stocks within people who network socially, these knowledge stocks build up over time and are important for the success of businesses in that industry. A focus on knowledge stocks is important since one of the major problems for businesses is the ongoing creation and dissemination of knowledge (Demarest, 1997). Knowledge can be shared through networking processes as knowledge is diffusible and can therefore be diffused across the network's structure (Skyrme, 1999). Knowledge sharing is an incremental process since it takes time for tacit knowledge explication (draw out) and sharing of embedded knowledge to take place (Halme, 2001). Networks of knowledge sharing therefore emerge as a new knowledge management model (Seufert et al., 1999) and networking processes provide acquisition of knowledge and generate information required for business purposes (Kogut, 2000).



### 4.3.1 The Characteristics of Inter-organisational Knowledge Sharing

This section concerning the characteristics of inter-organisational knowledge sharing is divided into two parts: the ties and nodes that bind and the instrument of knowledge capture. First, the ties and nodes that bind discusses how knowledge is capable of flowing and second, an instrument of knowledge capture argues the need to examine inter-organisational networks as knowledge sharing mechanisms.

#### 4.3.1.1 The Ties and Nodes that Bind

Business people often network and form business and social relationships (Marouf, 2007; Liebowitz, 2007). These relationships can be viewed as inter-organisational networks since relational ties are ongoing and are formed between different businesses. Ties are described as being weak or bridging and nodes are between. **Weak ties**, formed through bridging, are more likely to link members of different small groups than are strong ties (Granovetter, 1973). Indirect relations, or **weak ties**, facilitate search for knowledge, but, impede the transfer of complex knowledge from outside of the organisation (since there is a lesser chance that the knowledge may be shared through a weak tie) (Hansen, 2002). Another aspect of a network's structure, **between-ness** shows the location of a business agent in relation to two network sub-groups within the network (Scott, 2000). Between-ness is an indication of a network's **bridging** characteristics. **Bridging** characteristics relate to inter-connections between networks and can also be termed a tie (Granovetter, 1973). Through bridging network resources can be brokered and thus influence the innovative capability of network agents.

### 4.3.1.2 The Instrument of Knowledge Capture

Networks of knowledge sharing may not serve their purpose for two reasons. First, there is an assumption that knowledge is a resource provided by the network and knowledge is shared within inter-organisational networks (Powell et al., 1996; Osborn and Hagedoorn, 1997). It is argued that knowledge by its very nature is difficult to diffuse whether it is shared within or between organisations (Nonaka, 1998). Second, authors have viewed the reasons for the formation of business networks based on economic and general development realities rather than knowledge exchange needs (Gulati, 1998). As a result, there is need to understand whether a network is indeed an instrument of knowledge capture.

The structural characteristics of the network result in the knowledge transfer capability (Powell et al., 1996; Gulati, 1998; Kogut, 2000; Bell, 2005). A network is an instrument for knowledge capture according to Santaro et al. (2006) while Fadeeva (2004) states that information assembles within networks. Whether or not a network is an instrument of knowledge capture depends on the characteristics of the network (informal network structure, network position, absorptive capacity and related knowledge); the characteristics of the agent (relational embeddedness); and the type of knowledge (tacit or explicit).

Aspects of **informal network structure** formed through social cohesion are argued to affect knowledge transfer (Reagans and McEvily, 2003). Social cohesion includes the willingness and motivation of individuals to invest time, energy and effort in sharing knowledge with others and is often measured using the strength of ties. Although strong ties and social cohesion are correlated the benefits provided by a strong tie do not require social cohesion (Reagans and McEvily, 2003). Accordingly, the characteristic of the network tie whether strong or weak needs to be examined.

In addition, **network position** and **absorptive capacity** affect innovation and performance (Tsai, 2001). A **network position** is based on where an agent is placed within the overall network pattern, such as a central position. According to Tsai (2001) organisational units (intra-organisational) produce more innovations and better performance based on their central network positions since central network positions provide access to new knowledge developed by other units, however innovation and performance are achieved based on those agents' **absorptive capacities** (Tsai, 2001). This means that where an agent is placed determines what this agent gets to know and therefore their position affects their ability to obtain knowledge. In addition, innovation and performance was also impacted by absorptive capacity because it moderates the effect a network position has on innovation and performance. Thus, the extent to which networks operate as instruments of knowledge capture also depends on the absorptive capacities of network agents.

On the other hand, a beneficial network position may not explain how knowledge is shared (Hansen, 2002). Hansen's (2002) intra-organisational work shows that knowledge sharing occurred if the shared knowledge is related. **Related knowledge** means different parts of the business possess the same competencies. Related knowledge therefore increases absorptive capacity and shared knowledge is also affected by whether the relationship is direct or indirect and the cost (Hansen, 2002). Hansen (2002:245) concludes,

*“by incorporating the dual dimension of relatedness in knowledge content and network relations and the issues of indirect ties and cost considerations ... is likely to provide new insights into the question of why knowledge sharing ... leads to performance improvement.”*

**Relational embeddedness** is viewed as affecting knowledge creation and transfer. Relational embeddedness relates to tie strength, trust and shared value systems and these characteristics affect the transfer of both tacit and explicit knowledge (Dhanaraj, Lyles, Steensma and Tihanyi, 2004). Dhanaraj et al. (2004:438) noted that “*relational embeddedness had a stronger impact on tacit knowledge transfer than on explicit knowledge*” transfer. This is because of the trust element. Trust is more important for the transfer of tacit knowledge than for explicit knowledge whereas ties and shared values are important for the transfer of explicit knowledge. Relational embeddedness impacts on the direction and type of knowledge flows and thus the level of trust is important to understand knowledge sharing.

Networks allow the sharing of **tacit knowledge** (Augier and Vendelo, 1999). Networks are therefore mechanisms through which the knowledge of individuals is shared between different businesses. A study of how knowledge is shared between business people operating in networks is therefore needed for two reasons. First, since networks are ever evolving entities and therefore ‘loose’, controlling and directing flows become difficult. Second, the usefulness of shared knowledge is not known in advance, that is, it is not previously known when knowledge will be needed. Consequently, how networks allow sharing of tacit knowledge can usefully be examined.

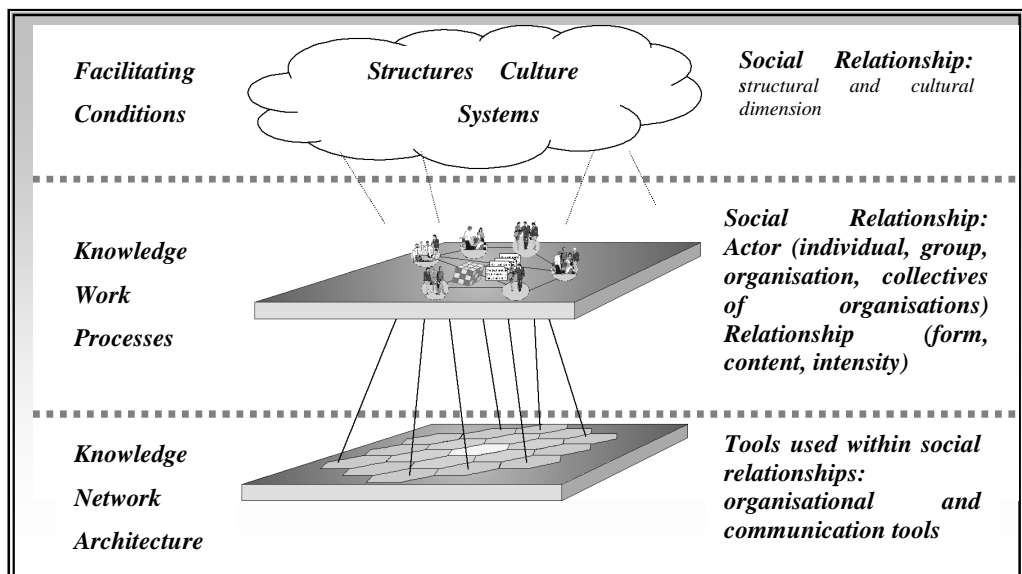
### **4.3.2 Conceptualising Knowledge Sharing Systems**

Inter-organisational knowledge sharing models may be viewed as those that are built up as knowledge networks and those which engage communities of practice (Seufert et al., 1999; Parent, Roy and St-Jacques, 2007). Communities of practice are viewed as groups of people coming together to share knowledge, insights and experiences. Such groups are informal, voluntary gatherings based on shared goals. On the other hand, the knowledge network model presents a new opportunity for knowledge management. Such a model can explain how and why an inter-organisational knowledge sharing system operates.

Knowledge sharing systems are based on interaction and structural dimensions and are the basis for explaining knowledge movements within network structures (Stokowski, 1994). First, a knowledge network framework (KNF) has been conceptualised (Seufert et al., 1999) and the KNF comprise three components: facilitating conditions, knowledge work processes and knowledge network architecture (Figure 4-1). Facilitating conditions enable or inhibit knowledge creation and transfer. As such, facilitating conditions are based on the characteristics of knowledge sharing such as altruism, instrumental needs and having a positive attitude towards sharing knowledge (Choi and Hilton, 2005). Knowledge work processes may be viewed as intra-organisational or inter-organisational. Knowledge network architecture relates to the tools of knowledge sharing, such as sending electronic mail and having social relationships, which are used when communicating through the network. Consequently, knowledge networks are social networks involving knowledge agents sharing knowledge.

**Figure 4-1 Knowledge Network Framework – a micro perspective**

Source: Seufert, von Krogh and Bach (1999)

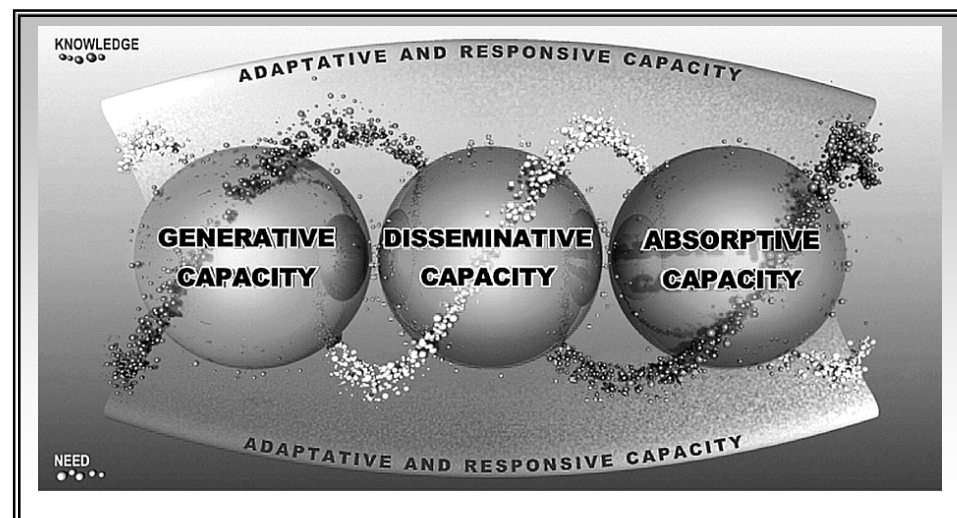


Second, Parent, Roy and St. Jacques (2007) used systems theory to explain a knowledge transfer system. They proposed a new systems-based knowledge transfer model. By way of the model, they showed how the social system generated, disseminated and used knowledge. Thereby, knowledge is viewed as a systemic, socially constructed, context-specific representation of reality (Parent et al., 2007). Their dynamic knowledge transfer capacity (DKTC) model comprises four components and these components are: generative capacity, disseminative capacity, absorptive capacity and adaptive and responsive capacities (Parent et al., 2007).

Generative capacity relates to the intellectual and creative capital. Disseminative capacity relates to the ability to contextualise, format, adapt, translate and diffuse knowledge through a social or technological network. Disseminative capacity is facilitated through information brokers. Absorptive capacity (a concept credited to Cohen and Levinthal, 1990) relates to prior knowledge and readiness to change and such capacity is facilitated by trust. Adaptive and responsive capacities relate to the ability to learn and renew and such ability is built through multiple feedback loops (Figure 4-2).

**Figure 4-2** The dynamic knowledge transfer capacity model (DKTC)

Source: Parent, Roy and St. Jacques (2007)



Elements of both the knowledge network framework (KNF) and dynamic knowledge transfer capacity model (DKTC) are conceptualisations of inter-organisational knowledge sharing systems. The generative capacity in the DKTC (Figure 4-2) and the knowledge network work processes of the KNF (Figure 4-1) can be linked. Work processes involve agents who are engaged in business and social relationships and therefore a network pattern is formed. Social network and social capital theories therefore explain generative capacity. In that, the interdependency of the network pattern (social network theory) and the resources of the network (social capital theory) explain the network's capability to generate knowledge. The social network provides capital, such as knowledge, as part of the network's function (Burt, 1997b; Gulati, 1998; Kogut, 2000).

In addition, the disseminative capacity of the DKTC is related to the knowledge network architecture of the KNF. Dissemination means that knowledge is shared across the network. Knowledge is shared through a communication process. Communication processes are the architecture and this architecture is built through knowledge creation processes (Nonaka and Toyama, 2003). Both generative and disseminative capabilities are moderated by agents' absorptive capacities. As a result, in order to understand how an inter-organisational knowledge sharing system operates, one needs to understand the facilitating conditions which enable knowledge sharing capability. The next section reviews facilitating conditions of knowledge sharing systems.

### **4.3.3 Facilitating Conditions of Knowledge Sharing Systems**

Authors have studied the conditions which enable inter-organisational collaboration including trust, collaboration, attitude and values, network structure, and type of knowledge (Gray, 1985; Skyrme, 1999; Santoro et al., 2006; Yang, 2007). Inter-organisational knowledge sharing systems are viewed as knowledge networks (Swan et al., 2000; Contractor and Monge, 2002; Hansen, 2002; Pena, 2002). The main concept is that networking or rather having relationships between business people fosters knowledge creation (Cross et al., 2001) and knowledge is created as a result of the system.

Facilitating conditions are relational qualities. Relational qualities promote effective knowledge sharing through knowledge, access, engagement and safety (Cross et al., 2001). Knowledge is sought from another person that an individual thinks has the knowledge and so a bond (tie) may be formed. Engagement is the knowledge sharer's ability to understand the problem and share the appropriate knowledge. Arguably, such engagement is developed through prior experiences and trust. Safety promotes learning since the knowledge seeker is comfortable with disclosing their lack of knowledge. Presumably, safety is enhanced through personal rather than business ties and facilitated based on a relationship of trust.



### 4.3.3.1 Trust

Based on the literature, **trust** seems to be the foundational concept for facilitating knowledge sharing (Powell et al., 1996; Bock and Kim, 2002; Abrams, Cross et al., 2003; Choi and Hilton, 2005). Knowledge sharing is a social process (Scott and Laws, 2006) and is motivated based on mutual understanding and trust (Bock and Kim, 2002; Abrams et al., 2003). Network ties form a network configuration which becomes stable through the shared goals, culture and trust of network agents (Inkpen and Tsang, 2005). Trust facilitates both asking for and the giving of resources (Kadushin, 2004) and plays a key role in the willingness to share knowledge (Inkpen and Tsang, 2005). Trust must be nurtured for information sharing to take place through networks (Wilson and Moller, 1995; Kalafatis and Miller, 1997; Davenport and Prusak, 1998; Abrams et al., 2003; Monge and Contractor, 2003; Rogers, 2003).

There are ten (10) ways to promote trust and determine trustworthiness (Abrams et al., 2003). These are: internal, organisational and externally based. Internal factors relate to people who were trustworthy and who tend to: (1) act with discretion; (2) be consistent between word and deed, (3) ensure frequent and rich communication, (4) engage in collaborative communication and (5) ensure that decisions are fair and transparent. Interpersonal trust is promoted through organisational factors such as: (6) establish and ensure shared vision and language; and (7) hold people accountable for trust. Finally, trust is obtained through external factors of: (8) create personal connections, (9) give away something of value and (10) disclose expertise and limitations.

Trust is formulated through a number of other factors. Trust can play a mediating role in effective knowledge transfer since trust determines whether knowledge is transferred through stronger or weaker ties (Levin and Cross, 2004). Trustworthiness can be perceived either as benevolence-based or competency-based (Levin and Cross, 2004). Benevolence-based trust is viewed as a considerate act of caring about sharing information and may be built up through among other things emotional bonds. Competency-based trust is based on the perceived knowledge of the knowledge sharer and is built up through stronger ties. Stronger ties result in greater knowledge of someone's skills and abilities and common ways of thinking. Results show that benevolence-based trust consistently mattered in knowledge sharing and that competence-based trust matters for tacit knowledge sharing (Levin and Cross, 2004). Consequently, tacit knowledge is shared through stronger ties.

#### 4.3.3.2 Collaboration

Another condition is **collaboration**. Gray (1985) in proposing optimum conditions for collaboration developed a process model of collaboration which included problem-setting, direction-setting and structuring. Collaboration is required when a problem emerges and then a certain direction is taken and certain actions are necessary to solve the problem. Conditions facilitating **problem-setting** include: identification of stakeholders and their expectations about outcomes; recognition of the degree of interdependence; legitimacy of stakeholders; and convenor characteristics. Problem setting is therefore attributed to the characteristics of agents. Conditions facilitating **direction-setting** comprise: coincidence in values among stakeholders and dispersion of power among stakeholders. Direction setting depends on the motives of agents. Lastly conditions facilitating **structuring** include: degree of ongoing interdependence, external mandates, redistribution of power and geographic factors. Structuring involves actions taken to adjust to changes in the environment. The conditions which facilitate structuring are particularly important to understand how informal networking in particular emerges.

Knowledge sharing activities involve dialogue and collaboration through network structures of individuals and processes which capture knowledge. Dialogue and collaboration between organizations are often viewed as strategic needs (Beeby and Booth, 2000; Inkpen and Tsang, 2005; Santoro et al., 2006) which are met when businesses form relationships based on their perceived knowledge exchange benefit (Powell et al., 1996; Osborn and Hagedoorn, 1997; Gulati, 1998; Kogut, 2000). For instance, based on the strategic need business people may form relationships with competitors. Knowledge sharing, even with competitors, is beneficial to the organization and more so to the community as a whole (Skyrme, 1999; Ingram & Roberts, 2000).

Understanding and knowledge are created through **human interaction** (Stokowski, 1994). According to Kreiner and Schultz (1993), human interaction results in the discovery, exploration and crystallisation of social networks. Discovery is the initial opportunity to network and is the beginnings of a collaborative process, exploration is an exchange of ideas and involves the actual collaborative process and crystallisation is the ongoing collaborative process wherein relationships become inter-dependent. The cycle of discovery, exploration and crystallisation emerges with each initial human interaction.

### 4.3.3.3 Knowledge Sharing Attitudes and Values

**Attitudes and values** towards knowledge sharing are other facilitating conditions (Abrams et al., 2003; Yang, 2008). A positive attitude towards knowledge sharing resulted in a positive intention and actual knowledge sharing behaviours (Bock and Kim, 2002). Achieving organisational goals is a value and therefore a reason for inter-organisational knowledge sharing (Bock and Kim, 2002; Abrams et al., 2003; Hansen, Mors and Lovas, 2005). Attitudes and values develop based on certain conditions within different social networks and therefore provide an explanation as to why knowledge is shared (Hansen et al., 2005). These conditions are: the decision to seek knowledge, search costs and costs of transfers. Evidence suggests that more frequent interactions reduce negative perceptions of others and increase knowledge seeking (intra-organisational) (Hansen et al., 2005). Additionally, weak ties benefit search for knowledge by reducing costs, while strong ties help transfer of knowledge by reducing transfer costs (Hansen et al., 2005).

### 4.3.3.4 Stickiness

Stickiness relates to the context specificity of shared knowledge. Liebowitz (2007) proposed the concept of syrupy shared knowledge which he suggests is a mixture of stickiness and fluidity, syrupy means that knowledge is sticky but still flows. The particularly difficult aspect of sharing knowledge relates to the fact that knowledge is sticky. **Stickiness** in relation to knowledge sharing refers to knowledge remaining within the context in which it was developed (Davenport and Prusak, 1998). Thus, knowledge becomes sticky when it is embedded in a particular context which may mean that it cannot be adapted to another context. The sticky nature of knowledge impedes knowledge dissemination (Szulanski, 1996; Szulanski, 2000; Liebowitz, 2007). Therefore, sticky knowledge remains with an individual. If knowledge cannot be shared as a result of stickiness, inter-organisational collaboration which allows innovation is limited (Powell et al., 1996).

Knowledge stickiness means that knowledge is not released and therefore not shared. With 'sticky' knowledge the transfer process will not be initiated and implemented. Factors that affect an opportunity to transfer knowledge are more likely to predict difficulty at initiation and factors that affect the execution of knowledge transfer are more likely to predict difficulty at implementation (Szulanski, 2000). Initiation starts when a decision is made to share knowledge. Implementation involves putting the knowledge to use. Elements of stickiness are: source, channel, message, recipient and context and based on these elements, the predictors of stickiness are strength of tie, personality (dispositions and abilities of the source and recipient), trust, absorptive capacity and organisational context (Szulanski, 2000). Implementation facilitators include fertility (facilitates the inception and development of transfers) or barrenness (hinders the gestation and evolution of transfers) (Szulanski, 2000).

It therefore becomes necessary to understand the circumstances by which thick and sticky knowledge are shared. Knowledge networking is one mechanism by which knowledge can be 'unstuck'. Knowledge networks are informal emergent entities that are ongoing through space (localities) and time (Davenport and Prusak, 1998). A knowledge network may also be described as the information connections between people, in various businesses within an industry (Skyrme, 1999; Liebowitz, 2007). Through the network, knowledge is transformed by taking on various characteristics: "*expandable, compressible, substitutable, transportable, diffusive and sharable*" (Skyrme, 1999:48-49). These characteristics are transformation processes which improve the flow of shared knowledge. The network facilitates knowledge sharing by providing a mechanism to transform knowledge. As a result, sticky knowledge becomes virtualised and therefore is shared beyond organisational boundaries. Virtualisation is enabled by reconfiguring space, time and structure boundaries through the knowledge network (Skyrme, 1999).

#### 4.4 Conclusion

Systems, social systems and structuration theories provide the theoretical foundation for understanding the workings of inter-organisational knowledge sharing networks. Businesses within networks of shared knowledge benefit from the social capital of the network resources (van Der Gaag and Snijders, 2005) and thus a knowledge networking conceptualisation is supported by systems theory (Diakoulakis et al., 2004; Jackson, 2005). The proposition is that information sharing is a mutual ongoing activity which is based on certain communication patterns formed through people in businesses having personal and business relationships which is supported by structuration theory (Giddens, 1984).

Consequently, there is an association of social networking and knowledge sharing being argued in the literature. Social networking and knowledge sharing are related activities which can be examined as an inter-organisational knowledge sharing system within the same piece of work. An inter-organisational knowledge sharing system was conceptualised and the facilitating conditions of the system discussed. The business's search for information outside the organisation (Choo, 1998) potentially makes social networking particularly important (Zander and Kogut, 1995; Powell et al., 1996; Kogut, 2000). An inter-organisational knowledge sharing system may be summarised based on: motives to share knowledge, knowledge exchange (Swan et al., 2000; Carlsson, 2003), competitive clusters (Hawkins, 2004; Novelli et al., 2006), which benefit from [cross-institutional] knowledge spirals (Nonaka, 1998) and thereby a complex adaptive system is formed (Farrell & Twining-Ward, 2004; Sherif & Xing, 2006).

The next chapter outlines the importance of social networks and information sharing for people in tourism and hospitality businesses. Evidence in the literature shows that social networking facilitates knowledge sharing (Marouf, 2007; Liebowitz, 2007), but there has been limited application of these concepts to the tourism sector. It is important to understand the how and why inter-organisational knowledge sharing works for the benefit of the tourism and hospitality agents whose operations contribute to building a competitive tourism destination.

## CHAPTER 5 TOURISM

### 5.1 Introduction

Knowledge is needed by the businesses within the tourism sector, not least to improve their competitive position and social networking is one of the mechanisms by which knowledge is obtained. Given this then an understanding of the inter-organisational dynamics of tourism sector businesses that relate to knowledge sharing is clearly of value. Additionally, if tourism sector businesses are to acquire and sustain competitive advantage, there is need to consider the knowledge that is required to compete in a global context. In order to undertake an analysis of the tourism sector in the chosen location, a three-dimensional view which allows an examination of the importance of relational ties was adopted.

A study of networks and knowledge management in tourism is important to understand business success in the tourism sector. The inherent characteristics of the tourism sector, particularly its seasonality, which results in high staff turnover, and the dominance of small and medium sized enterprises (Hjalager, 2002; Cooper, 2006), result in an examination of the transfer of knowledge being particularly challenging (Sparrow, 2001). Continuing the arguments advanced above (Chapters 2 to 4), it is argued that understanding social networks is relevant to our attempts to understand and potentially manage knowledge sharing between business people in the tourism sector. The importance of relational ties in the tourism sector is examined since it is proposed that knowledge sharing is facilitated through social networking. To begin that process, tourism literature, as well as more general literature on the subject, was reviewed to determine the current assessment of the relevance of social networks and knowledge sharing to the tourism sector.



This chapter begins with an examination of the tourism system, including agents, boundaries and resources. These characteristics can be used to understand the operation of a system in general and the tourism system in particular. Knowledge management and social network ideas within the tourism literature are critically discussed and in particular knowledge sharing within the sector. This discussion has been labelled tourism knowledge networks and the label characterises the functioning of knowledge being shared through social networks in the tourism sector. The chapter is then concluded.

## 5.2 The Tourism System

Tourism involves temporary travel and stays for leisure purposes (Pearce, 1989) and as such is a core component of the research and must be clearly defined and delineated. Tourism activity is largely interdependent since a range of products and services come together to form a tourism sector. Selin (1993:217) argues that, *“Rapid economic, social, and political change is providing powerful incentives for tourism interests to recognize their interdependences and to engage in joint decision-making.”* In order to understand the tourism system, a framework must be devised to map the inter-relationships among business people in the tourism sector. The tourism system is not easily defined since as Poon (1993) suggested ‘new’ tourists are spontaneous and unpredictable. Poon (1993) therefore saw this ‘new tourism’ as an extremely information-intensive industry. Quoting from Poon (1993:11) *“the rapid development of information technologies facilitates the speed and efficiency with which the industry's information is processed, stored, retrieved, distributed and otherwise manipulated.”* Since, tourism is a complex amalgam of activities to provide services for the tourist; one may clearly determine it is not only the activities within a particular boundary that are involved. Poon (1993) noted that ‘new tourism’ will change the boundaries of the tourism sector. The new tourism is seen by players crossing national boundaries supported by new technologies. As a result, tourism is largely taking on a more ‘system-like nature’ (Poon, 1993).

This research recognises a Tourism system comprising three parts: system agents, system boundaries and system resources. The system agents are the people who have inter-acting relationships. System boundaries may be set based on physical and social criteria, while the system resources are the items exchanged within the system.

### 5.2.1 System Agents

To identify system agents, activities in the tourism sector and who produces these have to be identified. The tourism sector comprises a web of relationships between various agents: tourists, business suppliers, governments, communities, and environments. Tourism businesses comprise a wide range of accommodation establishments (for example hotels, guesthouses and bed and breakfast properties), restaurants and visitor attractions (Holloway, 2002) and therefore the tourism sector involves interacting relationships (Tribe, 1997; Goeldner and Ritchie, 2006).

**Figure 5-1 Relationships in the tourism sector**

Source: Tribe (1997); Goeldner and Ritchie (2006)

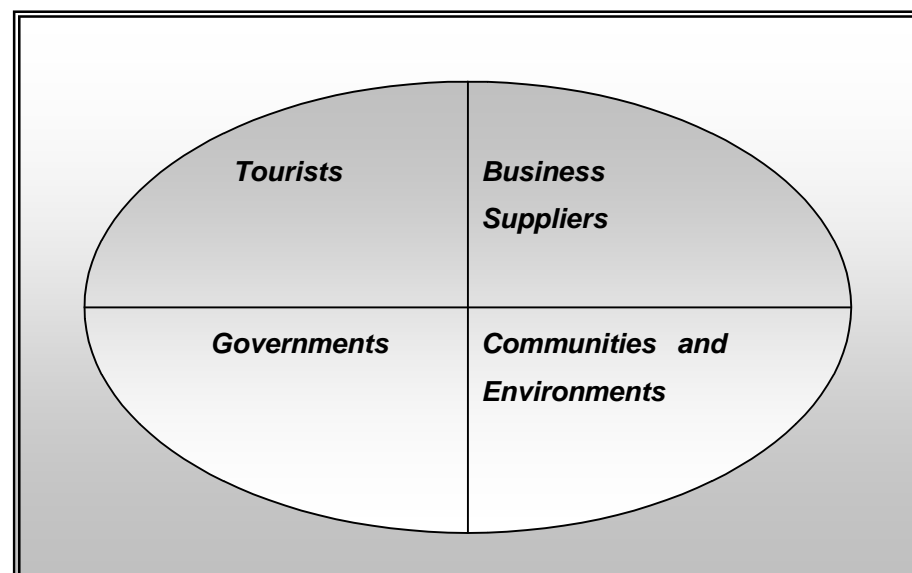


Figure 5-1 is the traditional view of the tourism sector, one that is two-dimensional, that is agents and their attributes. From another perspective, tourism is viewed as three-dimensional involving agents, their attributes and their influencing relationships. A three-dimensional tourism perspective emphasises:

*“the coordination of changing technological and marketing competencies through **network relationships** is believed to be particularly suitable to represent the **tourism learning system** and to provide **an alternative outlook on tourism industry, coordination and organisational structure**”*  
(Tremblay, 1998:837) (Author’s emphasis).

In view of this network, relationships are an important aspect of the tourism sector and such relationships can explain how the tourism system learns. If knowledge is required to transform the tourism sector to make it adapt to changes in its dynamic environment, then the entirety of what constitutes tourism must be represented. This representation is the three-dimensional view of tourism. Consideration of the boundaries of two-dimensional tourism, and the boundaries of three-dimensional tourism, provides the beginnings of a tourism system. Tourism is not only influenced by the attributes of agents but is also influenced by the patterns of relationships between these agents and in turn these patterns influence the behaviour of agents. An understanding of agents’ inter-relationships will give a more complete picture of the nature of tourism.

A three-dimensional view of tourism can be mapped. Stokowski (1994) noted that multiple, simultaneous, extended interpersonal relationships of a set of agents may be mapped using social network analysis and that by mapping such relationships patterns may be determined. Stokowski (1994) suggested that these interrelationships form structural patterns which may be analysed based on positional or relational approaches to understand how these structures influence behaviour. Relational approaches analyse largely the strength of relationships whereas positional approaches focus on aggregating similar patterns of relationships and grouping these agents (Stokowski, 1994).

A relational approach has been adopted by a number of authors with interests in tourism (Halme, 2001; Saxena, 2005; Pforr, 2006). Six tourism networks in four European countries (Halme, 2001), tourism networks within the Peak District (Saxena, 2005) and an Australian tourism network which comprised a vast variety of agents and interactions in the tourism sector (Pforr, 2006) have been studied. Halme (2001) suggested that the network's ability to become adept at explicating tacit knowledge and creating sustainability outcomes is based on cooperation among agents. Saxena (2005) argued that embedded social networks of actors are the basis of a sustainable tourism product. The Saxena (2005) paper suggested that the complex web of relations within tourism social networks provide relational capital for different agents to enable greater learning and co-operation.

Pforr (2006) selected a sub-set of fifty-four (54) organisations in the tourism sector and analysed their interactions in the context of developing a tourism master plan. Within that paper information exchange relationships were analysed for the process of developing a tourism master plan. Based on these interactions he was able to show how public, private and non-profit agents shape policy-making processes and outputs. One of the main conclusions was that policymaking was subordinated to political and tourism sector priorities. Derived conclusions are based on the relationships of tourism agents rather than their individual attributes.

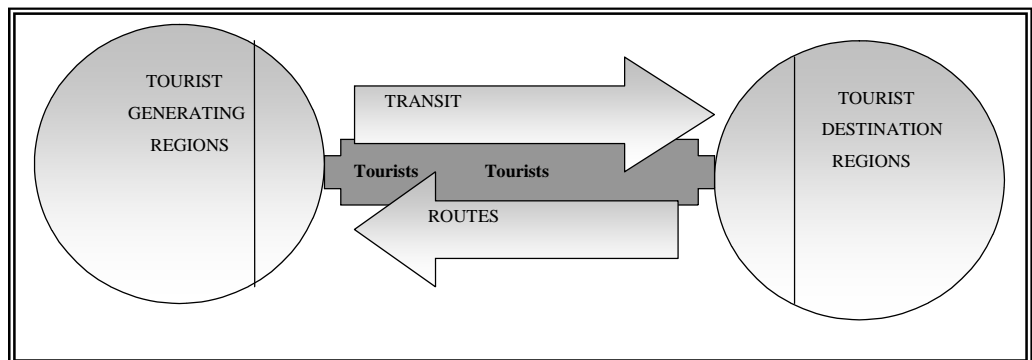
### **5.2.2 System Boundaries**

Leiper (1979) was one of the first authors to suggest that tourism may be viewed as a system and his systems view of tourism is an important one. To some extent Leiper's (1979) tourism system is a three-dimensional view of tourism, since it specifies that interacting relationships between boundaries (Figure 5-2). For some reason though, Leiper's (1979) tourism system and his scientific term for tourism 'tourology' has not been developed in the tourism literature (Tribe, 1997).

Nonetheless, tourism is a system of interacting relationships between two geographic zones, the tourist generating regions and tourist destination regions (Leiper, 1979). Viewing the tourism sector as a system with several agents that interact in the tourist destination and also the tourist generating regions means that there is system stability and instability (Farrell and Twinning-Ward, 2004). There are however issues with identifying a tourism system: (1) difficulty of identifying the boundaries of a tourist segment; (2) problem of bisecting ‘tourismic’ resources into industrial and non-industrial elements (for example, a hotel is industrial but some attractions are not); and (3) problem of specifying the number of industries inherently connected with tourism (Leiper, 1979). Boundary identification is the beginnings of identifying a tourism system and then there is need for delineating resources.

**Figure 5-2 The Tourism System**

Source: Leiper (1979)



Boundaries are based on the physical and social attributes of the people within the tourism system. For instance, a web of relationships exists in a firm’s external environment and these relationships create opportunities and constraints (Green and McNaughton, 2000). Thus it may be argued that, since an analysis of inter-organisational networks may be based on the location of businesses it is rather important that the inter-organisational boundaries be clearly defined based on specified criteria. Green and McNaughton (2000) suggest that boundaries be based on physical proximity which is a geographical criterion.

### **5.2.3 System Resources**

In theory, knowledge is a stimulating resource that can transform the tourism system. Thereby, tourism specific knowledge flows and creates knowledgeable agents who can engage in adaptive processes, which results in the tourism sector re-inventing itself (Farrell and Twinning-Ward, 2004). Knowledge resources are used to build up knowledge stocks and thus 'know how' is developed within the tourism destination. In terms of developing 'know how', Cooper (2006) advocated inter-organisational networks where knowledge is shared across organisational boundaries.

Knowledge flows between agents (people) within an inter-organisational network of firms at various locations. Knowledge of tourism is required by businesses, visitors, suppliers of tourism services and organisations within the tourism sector. In view of this, knowledge maps are needed to identify knowledge domains within the tourism destination (Pyo, 2005). Pyo (2005) suggested that a knowledge map may be developed for a tourism destination and be used as a blueprint to find knowledge. The map is prepared based on criteria of origin, structure and usefulness of knowledge. Pyo's (2005) maps were segmented using destination management, information, products, transportation, industry and support attributes of tourism knowledge. Based on his study, four distinct knowledge maps emerge for the four different types of destinations namely, city tourism, mountain tourism, historical tourism and resort island tourism. Knowledge mapping is a concept relevant to knowledge management research of a tourism destination since it provides a framework of what types of knowledge is required and the types of knowledge that may be used for tourism planning and development purposes. As a result, key knowledge assets may be capitalised for the further advancement and development of the tourism destination.

### 5.3 Tourism Knowledge Networks

This section concerning tourism knowledge networks is divided into three parts: tourism networks, tourism knowledge management and tourism knowledge sharing. The sub-section regarding tourism networks reviews the characteristics and purpose of these networks. The sub-section on the subject of tourism knowledge management reviews processes of knowledge capture and dissemination and the sub-section concerning tourism knowledge sharing discusses strategies used in the tourism sector to share information.

Complex webs of communication and information flow through networking practices (Tremblay, 1998). As a result, inter-organisational social networks are known to exist within tourism destinations (Pavlovich, 2003). In order to meet common goals in the development and administration of tourism, businesses often form themselves into associations to ensure that their interests are considered, and ideally met (Dredge, 2006). The local tourism business association may comprise the main businesses in the area and therefore may be a powerful voice within the tourism destination. These stakeholders organise regular meetings and may fund marketing related activities, which support the management of the destination. Such exchanges within the association provide a platform for knowledge gathering and sharing (Halme and Fadeeva, 2000).

By so doing associations and collaborative ventures become a form of network organisation. A 'network organization' is organic, using people as the agents of learning (Senge, 2001). In the tourism sector these relationships may be formed through private and public sector interaction (Dredge, 2006). These relationships are usually repetitive, persistent and not random and therefore there is a social network pattern of relationships across social space (Stokowski, 1994). The importance of studying social networks according to Stokowski (1994) relates to the fact that though these networks are invisible, it is believed that relationships between network members influence their behaviour.

### 5.3.1 Tourism Networks

Generally, people engage in tourism networks based on their attitudes and values relating to prior social networking experiences (Gibson et al., 2005). Experiences relate to the type of network and the benefits to be derived from networking. As a result, an understanding of attitudes and values to networking (Gibson et al., 2005), resulting in the achievement of organisational goals, is an important consideration to facilitate knowledge networks. Networks are a form of coordination comprising like-minded individuals seeking to achieve a common aim (Tyler and Dinan, 2001). Morrison et al. (2004) suggest that networks be classified based on certain characteristics, namely membership, nature of linkages, type of exchange or attraction, function or role and the geographical distribution of the network (Morrison et al., 2004). It is also possible to have cross-sectoral networks (Fadeeva, 2004; Fadeeva, 2005). Networks may not be sustainable though, unless some kind of incentive is given or tangible results are achieved (Morrison et al., 2004; Gibson et al., 2005).

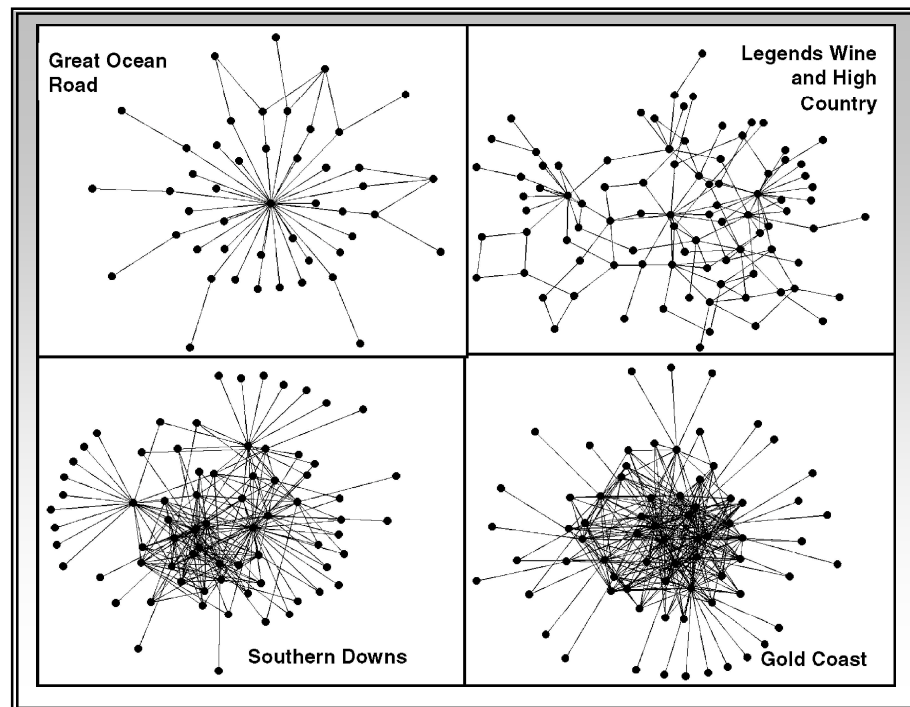
One benefit of networking is tourism development. A link demonstrated between networks and tourism development at Waitomo Caves, New Zealand provided a clear indication of the need to look closely at network structures and the advantages provided by networks to the tourism sector (Pavlovich, 2003). This paper analysed social network measures of density and centrality using data from 1887 to 2000. A rationale for using network theory was that, “... *network theory offers a causal explanation of organising through examining the architectural patterns of relational systems*” (Pavlovich, 2003:215). The argument for network theory is strengthened since tourism involves a complex system of supplier activities crossing many types of businesses and sectors and therefore it was recommended that research be conducted to understand how connectivity and information exchange assist in building organisations (Pavlovich, 2003).



Another link between networks and tourism development was made in an Australian study (Scott, Cooper and Baggio, 2008). The study examined the structural properties of inter-organisational networks within destinations (Figure 5-3). Agents, resources and relationships within inter-organisational networks were considered in order to understand the structural properties of tourism destinations. Results showed that each destination had a distinctive structure with different levels of cohesion. For instance, the different clustering patterns (Figure 5-3) evidently related to geography as well as the main markets for organisations. As a result of the clustering patterns, weaknesses in destination structures can be identified. These weaknesses emphasise the importance of collaboration and confirm that industrialisation (growth of goods and services within an area) of a destination creates a cohesive inter-organisational destination network.

**Figure 5-3 Four Australian Tourism Destinations Networks**

Source: Scott, Cooper and Baggio (2008)



While there are several pieces of literature on formal tourism networks, the literature on informal tourism networks is limited and as a result, this research study has contributed to building the literature on informal networking practices. One paper concerning informal networking practices was reviewed to understand these practices (Ingram and Roberts, 2000). Evidence suggests that friendships with competitors can improve performance of organisations (Ingram and Roberts, 2000). A friendship-network structure within the Sydney hotel industry enhanced collaboration and better information exchange. As a result of competitive-collaboration there were dramatic improvements in hotel yields. A benefit of improved performance can therefore be achieved through an embedded cohesive network of friendships facilitated through trust, empathy and reciprocity (Ingram and Roberts, 2000). An example was given where a tour operator was able to negotiate a substantially lower room rate between two hotels where one manager did not enjoy a friendship tie with the other manager.

Although there is evidence of networking from the 19<sup>th</sup> century, tourism networks have been described as being emerging. A study of the tourism policy network in England observed that a tri-axial network comprising three sub-networks was in place at that time (Tyler and Dinan, 2001). They described the network as immature since relationships were still being established and structure was now being formed. Nonetheless, the main body of evidence regarding inter-organisational learning comes from business network settings and networks are a mechanism for acquiring knowledge and skills (Halme, 2001). Although learning may take place, there are other dynamics that may impact on network learning. Tyler and Dinan (2001) suggest that ideas of trust, bargaining, resource based power arrangements, communication instruments, regulations and institutional arrangements are needed to help examine network dynamics.

### **5.3.2 Tourism Knowledge Management**

Practitioners in the tourism sector have found networking advantageous for inter-organisational learning, which enhances performance, since an extra-institutional space is created for innovation (Fadeeva, 2004). In fact, Morrison, Lynch & Johns (2004) argue that the core function of a network is learning and exchange of knowledge. Additionally, several tourism focused authors argue that the basis of the networking strategy is to develop organisational learning (Halme, 2001; Morrison et al., 2004; Gibson, Lynch and Morrison, 2005; Saxena, 2005; Dredge, 2006). The network then becomes a mechanism for explicating tacit knowledge among actors since organisations are filled with ideas (Halme, 2001; Fadeeva, 2004). Pavlovich (2003) suggested that networking builds tacit knowledge, which is a significant source of competitive advantage within the tourism destination.

Nonetheless, one of the challenges of a tourism destination is to capture and use knowledge that will facilitate innovation within tourism destinations and thus competitiveness. In some instances, tourism destinations have adopted a technological approach to managing destination information and issues, however, despite the use of technology to facilitate knowledge sharing, there are other factors that will influence the type of knowledge shared, and one is embeddedness. Halme (2001) argues that knowledge is embedded in structures, roles, and procedures of individual members of the group and therefore the embeddedness of knowledge in group structures requires examination to understand the processes involved to release knowledge.

The concept of social networks is of value in reviewing the transfer of knowledge between people in tourism sector businesses. A social network can be viewed as a social form, which links people and/or organizations together. Several tourism authors suggest that such a network provides a major benefit, namely knowledge exchange (Morrison et al., 2004; Saxena, 2005). Network members exchange knowledge based on trust (Tyler & Dinan, 2001; Morrison et al., 2004; Saxena, 2005; Novelli et al., 2006). There is also a basis of reciprocity in which knowledge is mutually shared (Stokowski, 1994). In addition, applying social network analysis to the tourism sector allows assessment of the whole sector as a system. Morrison et al. (2004) and Saxena (2005) also argued for the formation of formal networks for the benefit of learning and note that formal tourism networks differ in terms of their mechanisms for knowledge creation, dissemination, sharing and transfer. Saxena (2005) expounded and suggested that mechanisms for knowledge transfer are social, based on shared rules and norms and argued that a sustainable tourism product is territorially embedded in relationships of social networks.

There is a synergy that networks create, which results in knowledge transfer that will benefit a sector such as tourism. Firstly, the tourism sector requires knowledge and tacit knowledge in particular for innovation (Powell et al., 1996) and such knowledge is then utilised to facilitate organisational goals (Cooper, 2006). Secondly, explicit knowledge is required and is linked to strategic drivers, core competencies and market intelligence (Pyo, 2005). Thus, processes that facilitate the capture and use of explicit knowledge such as knowledge mapping, knowledge domain, and knowledge repositories are also important.

The popularising works, all written within the last few years, for the adoption of knowledge management in the tourism sector are those of Cooper and Xiao (Cooper, 2006; Xiao, 2006). Cooper (2006) argued for the rapid adoption of a knowledge management framework in the tourism sector by use of the framework of absorptive capability. Xiao (2006) suggests that different types of knowledge in the tourism sector should be distinguished.

Cooper (2006) suggests that a knowledge management framework of absorptive capability can be adopted in the tourism sector. Absorptive capability is built by increasing knowledge stocks through knowledge articulation within networks of organisations (Cooper, 2006). Thereby, the more knowledge is shared, the greater the chances that shared knowledge will be absorbed which in turn can improve the competitive position of tourism sector businesses. An absorptive capability framework is relevant to the tourism sector since the dominance of small and medium sized enterprises (SMEs) in the sector can act as a barrier to knowledge creation and sharing. The consequences of the predominance of SMEs include activity fragmentation and poor human resource practices (Cooper, 2006). There is therefore a need to determine the extent of fragmentation within the tourism sector.

Xiao (2006) suggests that there is a growing enthusiasm to capitalise on knowledge management ideas and apply these to the tourism sector. Applying knowledge management to tourism, tourism destinations and businesses will improve their sustainability and competitiveness. To accomplish goals within tourism agencies a distinction between tourism and non-tourism knowledge, scientific and non-scientific knowledge is useful (Xiao 2006). Hence, Xiao (2006) claims that such a distinction would provide a rationale to probe whether tourism entities rely proportionally more on tourism knowledge than on other knowledge assets for planning and development and that such a probe will assist in identifying knowledge gaps.

### **5.3.3 Tourism Knowledge Sharing**

Hjalager (2002) suggests that knowledge is a source of innovation for tourism and hospitality businesses and that knowledge in the tourism sector is needed for product, process, management, logistics and institutional innovations. The question then becomes how knowledge should be provided? Belin (2002) argues for the formation of knowledge networks in the tourism sector to enable high-quality, non-hierarchical exchanges of tourism knowledge. Such knowledge exchanges will she believes overcome the challenge of explicating tacit knowledge. The knowledge network, if supported financially by member fees, provides specific expert knowledge on a request basis.

The question then becomes are there other ways of tourism knowledge creation and dissemination? Some tourism academics suggest that organisations may form a network to exchange knowledge and share ideas (Pavlovich, 2003; Gibson et al., 2005; Morrison et al., 2004; Novelli et al., 2006). Other authors argue that the very nature of the tourism sector warrants that non-people agents of knowledge are utilised (Hjalager, 2002). Hjalager (2002) questions using people as the repositories of knowledge, particularly since the tourism sector suffers from a lack of staff training, high turn-over, and tourism is not really a wide-spread career. In order to counteract this, she suggests that codified knowledge through trade, technology, infrastructure and regulatory systems as being more feasible. These modes of codified knowledge then remain within the tourism sector. Cooper (2006) concurs with Hjalager's (2002) idea that the tourism sector creates a problematic environment for knowledge sharing consequently the challenges that the tourism sector brings may require new knowledge creation and dissemination strategies.

Another example of a tourism knowledge sharing mechanism is that of the cluster which may be viewed as the co-location of complementary businesses (Porter, 1998). There is limited discussion about whether clusters in themselves facilitate innovative processes in tourism and hospitality businesses (Novelli et al., 2006). Within a cluster, complementary businesses compete with each other and therefore these businesses improve their services and products through inter-firm linkages and innovation, the inter-firm linkages result in network formation. The network then becomes an innovation network facilitated through the sharing of ideas using methods such as brainstorming sessions; knowledge transfer through expertise; and resources exchange between local businesses, education/research institutions and local authorities (Novelli et al., 2006). Innovation results in an improved quality of service, business referral, enhanced visibility, cross-marketing activities with other cluster members and involvement in local events (Novelli et al., 2006).

Yang (2007) argues that knowledge sharing is based on the effects of roles. Intra-organisational research was conducted to determine how collaboration affected knowledge sharing within leadership roles (Yang 2007). The leadership roles were monitoring, coordinating, directing, producing, innovating, brokering, facilitating and mentoring. The main finding drawn from analysing 499 questionnaires was a strong positive relationship between collaborative culture and the effectiveness of knowledge sharing. The roles of facilitator, mentor, and innovator were positively correlated with knowledge sharing effectiveness. Facilitators invigorate interpersonal relationships, mentors assist subordinates to develop job-related skills and innovators scan the external environment to absorb information and knowledge. A negative relationship existed between a monitor role and knowledge sharing as monitors govern subordinates. Yang's (2007) work suggests there is a correlation between collaborative type roles and knowledge sharing.

## 5.4 Conclusion

By integrating the suppliers of tourism goods and services a tourism system is formed and such a system may function as a network which may share information. Hence tourism knowledge networks may operate within tourism destinations and provide some kinds of benefits to those businesses involved, one such benefit is information sharing. In particular reference to the dynamics of social networking and knowledge sharing, tourism is considered to be three-dimensional and can be defined as a system (Leiper, 1979). A three-dimensional view of the tourism sector is most appropriate for a research study examining knowledge sharing processes as influencing relationships because knowledge is required by organisations within the tourism sector if they are to be successful (Pyo, 2005; Cooper, 2006). Even though, there is value obtained from the manipulation of explicit knowledge (Ritchie and Ritchie 2002), there is also need for an in-depth examination of other knowledge manipulation processes which are particularly organic in nature, the tacit type.

Knowledge networks are known to operate within tourism destinations however, empirical work to examine the how and why of tourism knowledge networks is minimal. This study regarding inter-organisational knowledge sharing within the tourism sector therefore contributes to closing an existing gap about applications of knowledge management principles within tourism. The next chapter outlines the methodological choices made to examine the subject matter of inter-organisational knowledge sharing including the research process, data collection and analytical methods.



## CHAPTER 6 METHODOLOGY

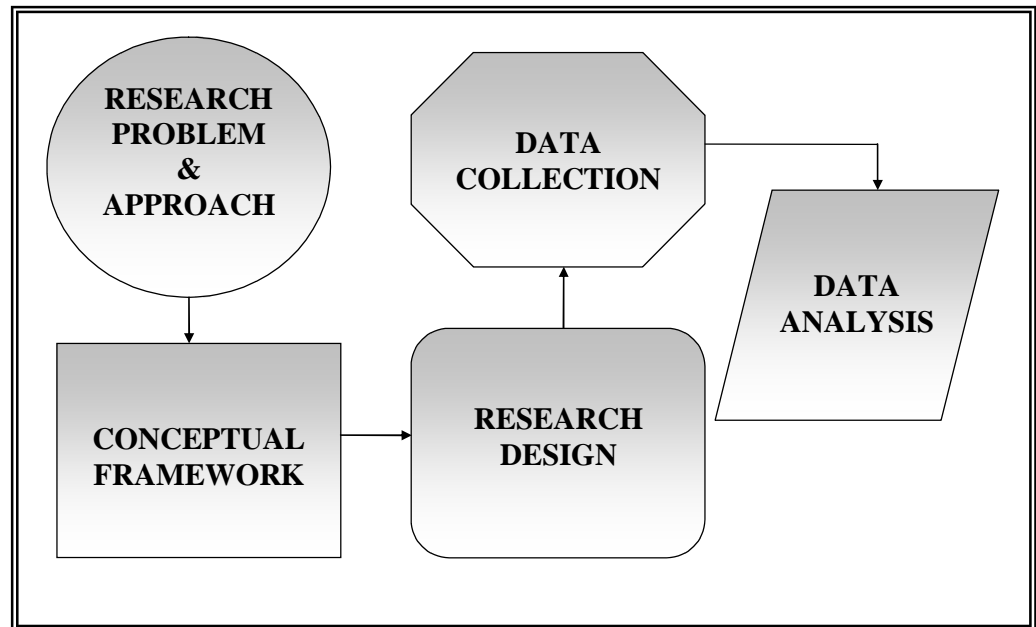
### 6.1 Introduction

Previous research studies have pointed out the need to understand the relationship between social networks and knowledge sharing (Liebowitz, 2007; Marouf, 2007; Valkokari and Helander, 2007; Yang, 2007; Yang, 2008). However, more research is needed on the subject of social networks which allow knowledge transfer (Argote and Ingram, 2000). Inter-organisational knowledge sharing research is important to tourism and hospitality businesses, since these businesses are challenged to obtain new knowledge (Cooper, 2006). As a result, this research study sought to understand inter-organisational knowledge sharing through the medium of social networks in the tourism sector.

The research process involved defining the research problem and approach, proposing a conceptual framework, designing a research plan and collecting and analysing data (Figure 6-1). The research problem concerns inter-organisational knowledge sharing in the tourism sector. The approach adopted was positivism, which is an ontological position of finding facts and involves quantitative methods of measurement and deduction. The main variables that define the research problem are based in the sociology and knowledge management literature. A social network construct is divided into two parts: network characteristics and a relationships' construct. A knowledge sharing construct is based on the types of information shared: technical, managerial, strategic and local information; and the creation of tacit and explicit knowledge through different communication methods (Nonaka and Takeuchi, 1995; Chua, 2001; Nonaka and Toyama, 2003). In summary therefore the research problem relates to: why, how and what knowledge is shared through individual and group and business and personal social networks in the tourism sector?

**Figure 6-1 The Research Process**

Source: Author



The academic reason for studying the inter-organisational knowledge sharing practices of business people (owners and managers) in the tourism sector is based on the literature. In Chapter 2: Knowledge Management (Sub-section 2.2.3), it was suggested that managers preferred to use personal contacts to solve unclear problems and written documents for routine matters (Daft and Lengel, 1984). In Chapter 3: Social Networks, business networking was suggested as being an important activity for entrepreneurs and managers (Birley et al., 1991). Also in Chapter 3, it was noted by Burt (1997a) that those managers with exclusive relations (relations from one source) earn higher profits. In Chapter 3, evidence also suggests that the centrality of managers' networks impacted the development of small firms (Sparrowe et al., 2001) and the main argument is that information content is related to the position of the business leader (owner or manager), their networking practices (informal) and also their structural position (centrality). Information content is then used to improve business performance. In Chapter 5 it was noted that in a tourism context, friendship ties among managers improved hotel yields (Ingram and Roberts, 2000).

After defining the research problem and approach, concepts and theories relating to inter-organisational knowledge sharing were used to propose a conceptual framework. The conceptual framework was built around the idea that people in tourism and hospitality businesses have individual and group relationships of information sharing. After the conceptual framework was developed, the research study was designed and thereafter data collection and data analysis techniques were implemented (Section 6.6 and 6.7). The design includes consideration of location selection, survey methods, sampling frame, questionnaire design and pilot study.

## 6.2 Research Aim and Consequent Objectives

The aim of this research study was: *to examine inter-organisational knowledge sharing, by considering the individual and group relationships of business people in different tourism and hospitality businesses and focusing on the contribution of social networks to this knowledge sharing* (Section 1.3). The objectives of the research study were:

1. To identify gaps in the literature by a selective review and systematic synthesis of the literature concerning knowledge management, knowledge sharing and social networks, and the relationship of these theories and concepts to the tourism sector.
2. To examine concepts and their relationships in regard to why, why not, how and what inter-organisational knowledge sharing practices take place within the tourism sector.
3. A critical examination of inter-organisational knowledge sharing within a tourist destination using both attribute and relational data.
4. To make a contribution towards building an awareness and understanding of the mechanisms of inter-organisational knowledge sharing within the tourism sector.

### 6.3 Research Problem and Approach

To date, there is limited work on knowledge sharing between people in different businesses, regardless of whether that sharing is classified as information or knowledge, and as a result this research study examined knowledge sharing in an inter-organisational context. This research study sought to establish whether information was shared between business people who work in different tourism and hospitality businesses. Within this the focus was on information received. If information was received, the questions were what information was received, how that information was received and the perceived effect on the business. Knowledge sharing is a complex process involving several motivational aspects including status of the knower, trust, gift giving principles and prior experience of the recipient of the information, among other aspects.

As a result of the motives to social network, different types of networking practices occur, different types of knowledge are shared and there are resulting outcomes. The benefit of using a systems approach for an inter-organisational knowledge sharing study is that this approach breaks down activities into different parts and therefore a systems approach allows flexibility and focus in examining and in explaining complex dynamics. Such an examination provides useful information to change the system and so an inter-organisational knowledge sharing system may be viewed as a complex adaptive system (Sub-section 4.2.1).

The research approach was positivistic in nature and utilised systems approach to understand inter-organisational knowledge sharing.

*“The ontological position of positivism presumes there is a world of reality out there waiting to be discovered or known and the aim of positivist research is to reveal the truth about the world, and in so doing, learn how to measure, control and predict it” (Blackshaw and Long, 1998:240).*

Empirical evidence was sought about how, what and why knowledge was shared using a framework of individual and group and formal and informal relationships. Kim (2003) argues that positivism meets the ends of building theory through sound and rigorous examination of data. This argument is supported by the empirical value of positivism in which several variables can be examined at the same time and the empirical findings can be used to explain social events (Kim, 2003). The main assumptions of positivism are: theory is built through universal sets of principles; value-free objectivity; variables are operationally distinct and can be studied separately; and knowledge is obtained through hypotheses testing of conceptual models (Wardlow, 1989). The main principle is that social events can be examined using deductive reasoning and logic.

#### **6.4 Conceptual Framework**

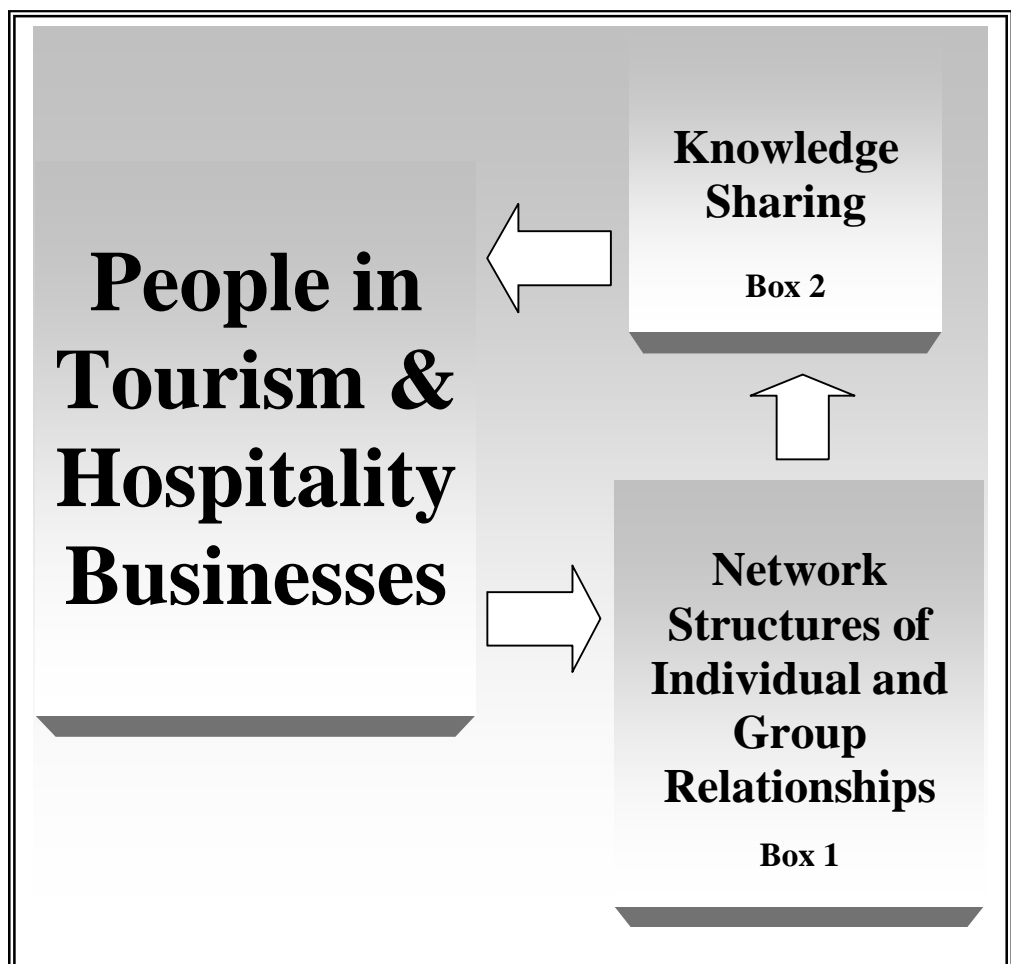
The main factors, constructs or variables are set out using a conceptual framework (Miles and Huberman, 1994). The conceptual framework illustrates the concepts and theories to be operationalised for the research study. The main constructs operationalised were business people, network structures and knowledge sharing (Figure 6-2). The main tenet of the conceptual framework is that people in tourism and hospitality businesses are the agents of information and knowledge and thus inter-relationships between people in these businesses can be examined to understand what, how, why and why not information and knowledge are shared. People in tourism and hospitality businesses are the holders, conveyors and recipients of information used to build up knowledge. This section regarding the conceptual framework discusses the theoretical construct, the relationships construct and based on these, several research questions are made.

### 6.4.1 Conceptual Construct

The conceptual construct has three main parts: business people, networking and knowledge sharing. These three parts are used to explain inter-organisational knowledge sharing. Knowledge is shared between business people in different businesses through individual or group and business (formal) or personal (informal) relationships. This section highlights the constructs and explains the variables within the constructs.

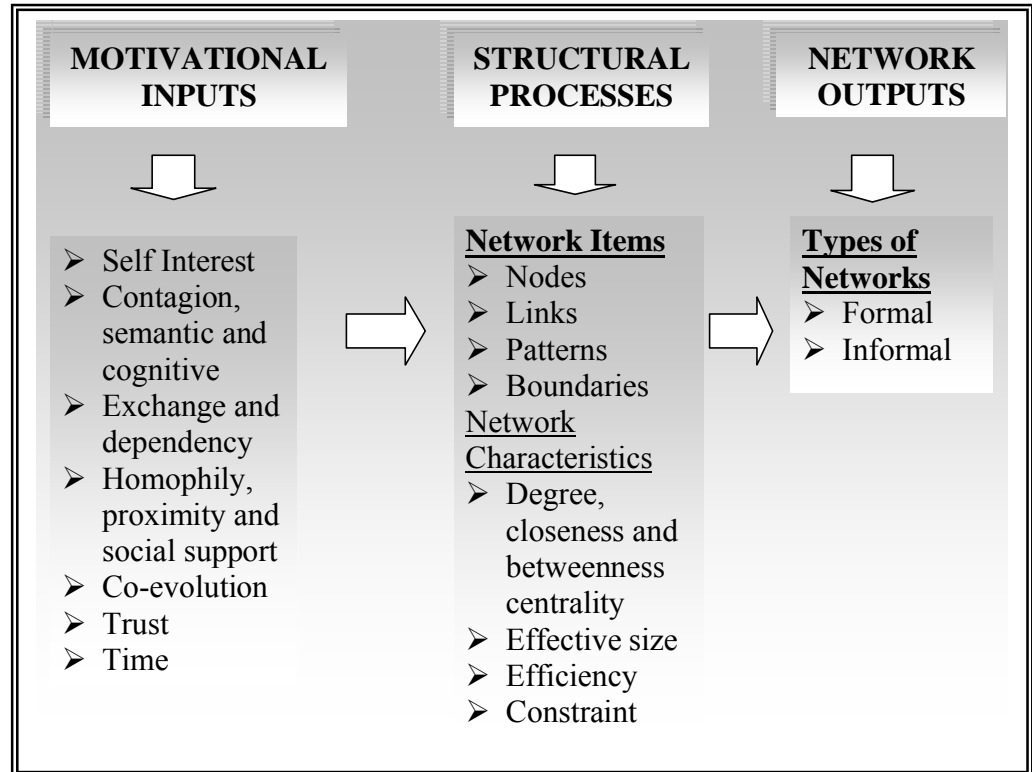
**Figure 6-2** Initial Conceptual framework of inter-organisational knowledge sharing

Source: Author



**Figure 6-3 Conceptual framework breakdown of Box 1 – Network structures of individual and group relationships**

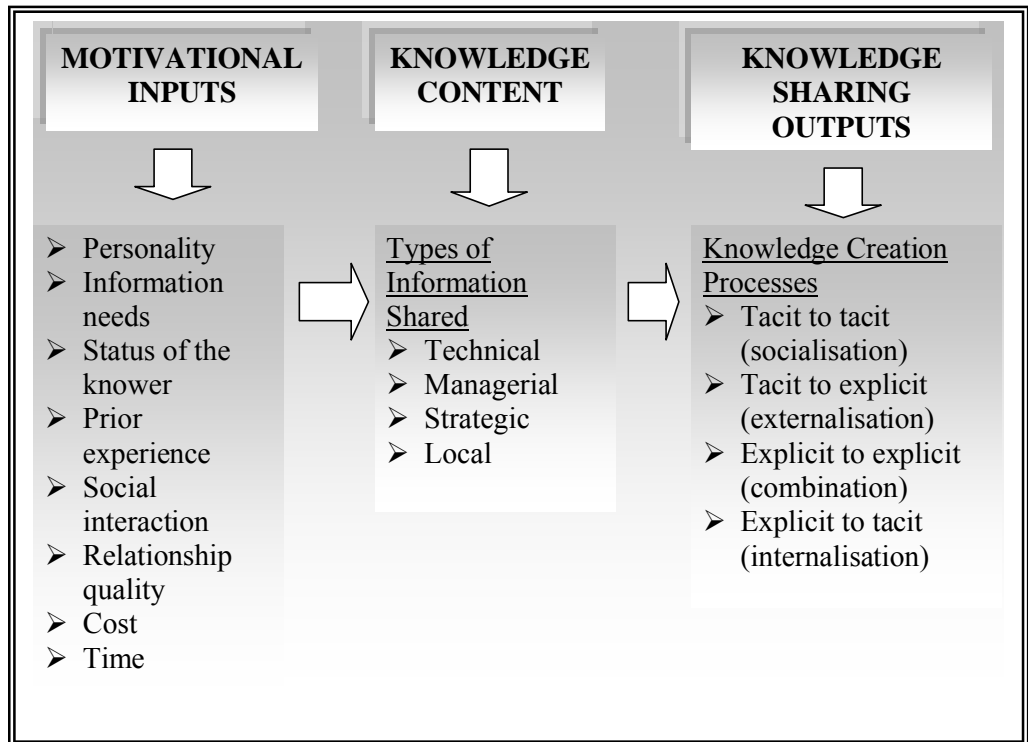
Source: Author



The networking aspect of the conceptual framework has three parts: motivational inputs; structural processes (network characteristics); and network outputs (relationships' construct) (Figures 6-3 and 6-5). The motivational inputs to networking are based on the multi-theoretical framework (Monge and Contractor, 2003) and other related theories, which were discussed in Chapter 3: Social Networks. The Monge and Contractor (2003) framework was modified to include specific trust and time variables (Figure 6-3). Social networks are defined as a relationships' construct and are based on formal (business) and informal (personal) relationships (Marouf, 2007) and individual and group relationships (Choo, 1998). Details of a relationships' construct are provided below (Sub-section 6.4.2).

**Figure 6-4** Conceptual framework breakdown of Box 2 – Knowledge sharing

Source: Author



The knowledge sharing theoretical construct also has three parts (Figure 6-4). The first part is motivational inputs of knowledge sharing, namely the social psychological and constraining factors, which form certain attitudes and values of knowledge sharing. Dispositions and attitudes towards knowledge sharing were operationalised by theories outlined in the conceptual framework such as status of the knower, prior experience and trust (Bock and Kim, 2002; Awad and Ghaziri, 2004).



The second part is knowledge content and is based on specific types of information. There are four types of information: technical, managerial, strategic and local (Choo, 1998; Argote & Ingram, 2000; Boland, Singh, Salipante, Aram, Fay and Kanawattanachai, 2001; Hansen, 2002; Haas & Hansen, 2007) and six types of communication methods: face to face, telephone, written, electronic mail and discussion and video conferencing (Daft and Lengel, 1984; Badaracco, 1991; Bennet, 1998; Boisot, 1998; Chua, 2001).

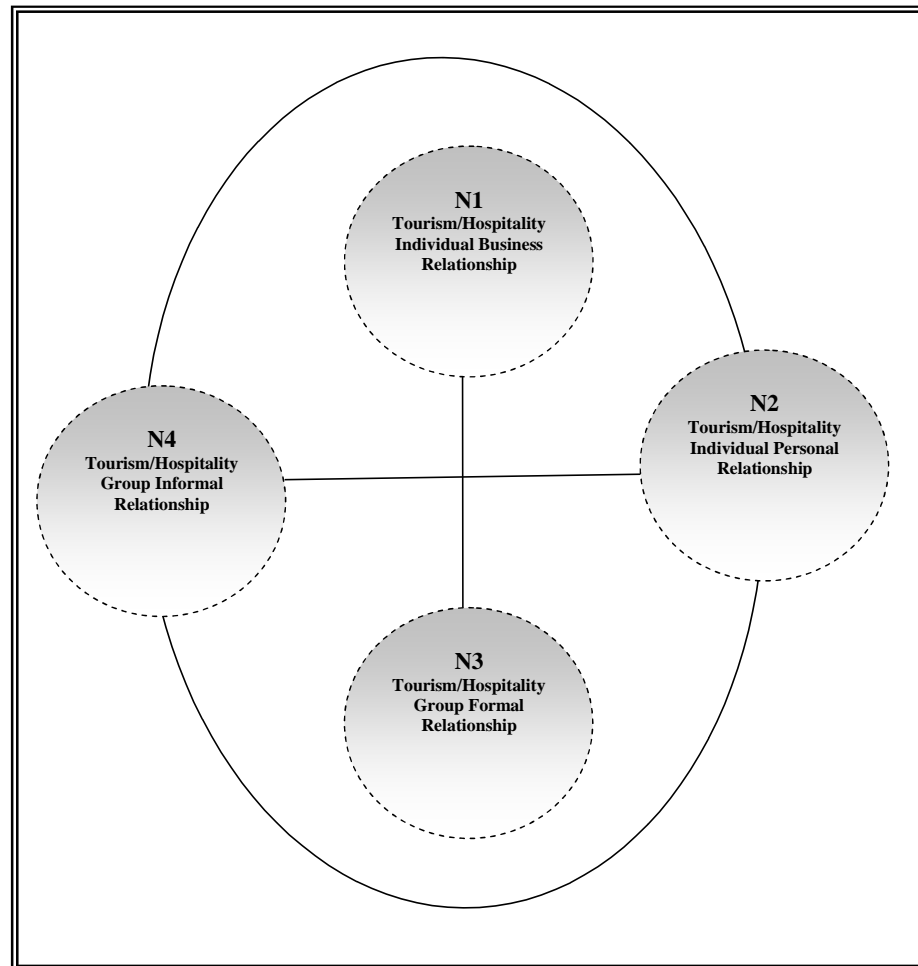
Both the type of information and communication method form part of the knowledge creation processes and these are basically in two forms either tacit-based or explicit-based (Sub-section 2.3.2). The tacit-based methods are face to face conversation, telephone and video conferencing and the explicit-based methods are written documents, electronic mail and electronic discussion. Knowledge sharing outputs are derived from certain processes: socialisation, externalisation, combination and internalisation (Nonaka and Toyama, 2003). These knowledge creation processes were examined by the use of certain means of communication. This research study was therefore designed to show knowledge creation processes in an inter-organisational context using the type of information shared and the communication method used.

#### **6.4.2 Relationships' Construct**

The four network relationship types (Figure 6-5 and Sub-section 3.2.1) are as follows: N1 is the one to one business relationship based on a relationship that would have emerged through performing some common business task such as promoting their business. N2 is an individual personal relationship that is one to one with a friend who also works in hospitality or tourism business, but not the one the respondent works in. N3, the group formal relationship, is based on membership in a trade association. N4 is the group informal relationship is based on less formal friendships with group members in a trade association.

**Figure 6-5 Four Network Types**

Source: Author

**6.4.3 Research Questions**

Based on the conceptual framework the research questions are:

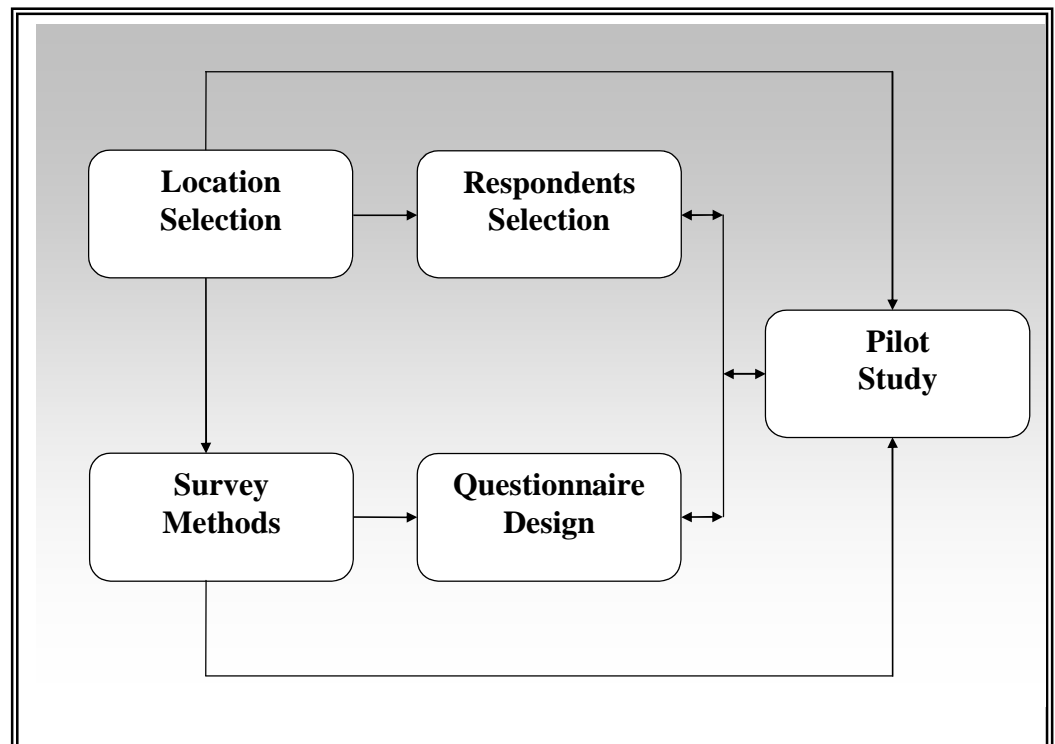
- Q1- To what extent does a position of owner or manager affect dispositions and attitudes towards inter-organisational knowledge sharing?
- Q2 - To what extent does a position of owner or manager affect the information content shared, dissemination means and networking practices?
- Q3- To what extent does network type affect information content shared, dissemination means and networking practices?

## 6.5 Research Design

The main steps in a quantitative enquiry are: develop research questions, choose variables (based on a conceptual framework), determine limitations, prepare a detailed design of method, collect data, analyse data and write-up research (Simon, 1969). The research design is the stage before the actual implementation of the study and involves preparing a detailed design of method. A quantitative study was designed for the research process since the research study aimed to produce empirical evidence (Popper, 1959; Alexander, 1982; Easton, 1995; Potter, 2006) of the association of social networking with knowledge sharing. A survey is the usual means of collecting quantitative data (Finn, Elliott-White and Walton, 2000). A structured questionnaire was therefore administered to respondents in tourism and hospitality businesses within the Bournemouth, Poole and Christchurch conurbation.

**Figure 6-6 Research Design**

Source: Adapted from Bryman (2008)



The research design comprised five stages: location selection, survey methods, respondents' selection, questionnaire design, pilot study (Figure 6-6). The questionnaire design was based on the conceptual framework (Figure 6-2; Appendix I). Two important considerations for the selection of location and respondents were: (1) an appropriate area where the research propositions could be tested and; (2) a respondent population where an appropriate sample could be derived (Bryman, 2008). These considerations were taken into account (Sub-section 6.5.1). A pilot study was important since the questionnaire was implemented using the self completion method (Bryman, 2008).

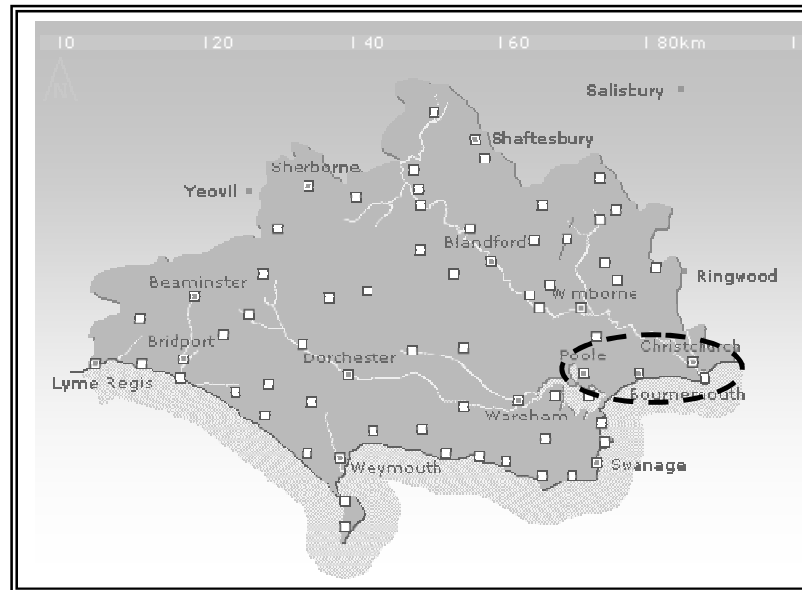
### **6.5.1 Location Selection**


Of great importance to the research topic was to identify an area to locate the study. The selection was based on three criteria. First the area should be substantial in tourism terms in order that there were a sufficient number and range of tourism sector businesses to increase the opportunity for there to be different types of networks and information sharing and behaviours and motivations. The area had to contain sufficient number of businesses to allow the proposed analysis to take place. Second, the area should be one where social networking and information sharing is a possibility. Thus the area should be geographically identifiable and contiguous. This would increase the possibility of networks being formed because the geographical distance between businesses would be small, in relative terms. Third, there should be evidence of tourism networks being in place so that they could be investigated and their potential for the facilitation of information sharing examined. Given the focus of the study it would not be sensible to use areas that displayed no obvious signs of network existence.

The initial plan was to conduct the study throughout the county to Dorset. There are over 3,000 establishments in Dorset and based on the available resources and for the purposes of a doctoral study which is completed in three years full time, this plan was abandoned. Thereafter, it was decided to scan the area and look for cost-effective areas to locate the study within the county. Based on the evidence, the Bournemouth, Poole and Christchurch conurbation (Map 6-1) was selected as the main research location based on the potential for social networking and the importance of the tourism sector. More information on the area is provided at link: <http://www.imagesofdorset.org.uk/countymap.htm>. The specific areas are identified by a dashed circle (Map 6-1).

**Map 6-1** Map of Dorset showing main towns

Source: Allen and Allen (2001)



Key: Research study area (approximate boundaries) - 

The conurbation chosen is one of the premier tourism destinations within the UK with a large number of different types of tourism and hospitality businesses. The area is recognised and coherent with evidence of both, networks and cross area networks. Examples of networks include: the Bournemouth Area Hospitality Association, the Poole Tourism Partnership, and the Chamber of Trade and Commerce. In addition there is the Dorset Coast Forum and the Dorset New Forest Tourism Partnership. The Dorset Coast Forum is a group established in 1995 to address the long term issues of the Dorset Coastline. Additionally, the Dorset New Forest Tourism Partnership is a specific example of the persons in the tourism sector networking. The network shares information with consumers and tourism businesses. These associations forge individual and group networking activity which will form part of the basis for the research study.

### **6.5.2 Survey Methods**

The most widely used methods of data collection comprise face to face interviews or surveys (web-based, postal, telephone). According to Jennings (2001) the main advantages of interviews are: the sample coverage, interview control, the ability to ask sensitive questions, the ability to ask complex questions, the ability to clarify questions and use of open ended questions. The disadvantages of interviews are: the high cost, the time for implementation, non-accessibility to interviewees, obtaining socially desirable responses and confidentiality.

While the face to face interview method may have the advantage of increasing completion rates, the number of respondents to be included does not make this method efficient in terms of cost or effectiveness in terms of network reach (Jennings, 2001). In addition, a face to face survey may introduce interviewer bias and because such an interview is conducted usually within an hour it may not give the respondent sufficient time to recall business and personal relationships.

Consequently, based on cost, time and confidentiality issues, it was decided that the research study would not be conducted using interviews. As a result, a survey employing a self completion instrument was considered. Employing a self completion instrument, a questionnaire, requires a decision as to how the questionnaire will be administered and the two alternatives considered were a mail-based survey and a drop and collect survey. The advantages of a mail survey are lower cost, completion at respondents' convenience, offer anonymity and removal of interviewer bias (Jennings, 2001). The disadvantages of mail survey are non completion, return of questionnaires can take some time and therefore greater persistence is needed and respondents are unable to seek clarification (Jennings, 2001). The drop and collect method, although more time consuming and demanding, overcomes to some extent the low response rate of postal surveys.

In order to address the frequently encountered low response rates to postal questionnaires, the drop and collect method has been recommended by several authors (Stover and Stone, 1974; Lovelock, Stiff, Cullwick and Kaufman, 1976; Brown, 1987; Ibeh, Brock and Zhou, 2004). A major advantage of the method is the high contact rate and the response pressure on participants (Brown, 1987). Consideration must also be given to the fact that the drop and collect method is dependant on highly clustered samples and there is also concern for the welfare of the field agent (Brown, 1987).

The idea of hand delivery has been considered as a technique to increase mail survey response rates since social presence is viewed as an influencing factor to obtain agreement to respond (Ibeh et al., 2004). The response rate of the Dillman's Total Design Method can be improved by sending a personal reminder letter, telephoning and hand delivering the research instrument (Keegan and Lucas, 2005). These techniques used by Keegan and Lucas (2005) were adopted for this research survey (Sub-section 6.6.2). In addition, larger firms should be pre-notified before dropping off the questionnaire (Ibeh et al., 2004).

### **6.5.3 Questionnaire Design**

The overall presentation of a self completed questionnaire is important. Aspects of presentation include: length, number of questions, colour, user friendliness, ticking versus circling, name of the researcher, anonymity, deadlines, type of outgoing postage, type of return envelop, pre-contacts, follow-ups, offer of results, personalisation, topic interest, auspices of survey, numerous types of incentives, colour of signature on a covering letter and so on (Harzing, 1997). These techniques were built into the design of this research study's questionnaire. The colour of the questionnaire was bunting yellow, respondents were asked to tick responses, cover letters were addressed to a person, a paid return envelop was enclosed, and a Bournemouth University branded-pen was included in the package. Authors have argued that inserting a pen will increase response rates, 7% for the Sharp et al. study and 6% for the White et al. study (White, Carney and Kolar, 2005; Sharp, Cochran, Cotton, Gray and Gallagher, 2006).

Dillman's (1978) Total Design Method (TDM) was used to design a self completed instrument. Dillman's (1978) approach to conducting a survey is an holistic one designed to maximise response rates. The TDM provides considerable guidance for conducting surveys: from structuring of the questionnaire to the wording and timing of the cover and follow-up letters. The layout is very important to the feel of the questionnaire as it can encourage response. The principal considerations regarding the layout of the questionnaire are format, ordering of questions, choice of first question, page design, front and back covers (Dillman, 1978). Numbering, format and ordering help with the flow of the questions and aid a response. Choice of first question is also important and this question must be clearly related to the topic (Dillman, 1978).



### 6.5.3.1 Numbering, Formatting and Ordering

Numbering, formatting and ordering were important considerations to facilitate completion of the questionnaire. To begin with, each questionnaire was pre-assigned a separate identification number for send-out, follow-up and network mapping purposes. The piloted version of the questionnaire (Appendix II) was re-designed into a booklet format (Appendices II and IV). A booklet format was selected since it provides an attractive, well-organised questionnaire that aids completion (Dillman, 1978). The booklet was numbered and formatted to ensure a vertical flow and also to ensure that the same question fitted on the same page (Dillman, 1978). The booklet gave the impression that the questionnaire was concise and thus encouraged respondents to complete the questionnaire.

The format also guided respondents with directions placed in boxes throughout the questionnaire. There was need for clear precise directions particularly when the questionnaire was being self completed. Additionally, questions were ordered based on their importance to the study. The first set of questions related to networking and the second set of questions related to dispositions and attitudes. This was done because respondents were first asked about their networking behaviour and then they were asked to focus on why they networked and shared information. In the various sections, to clarify the topic being examined, similar questions were grouped together. For instance in the section in regard to dispositions and attitudes to networking and knowledge sharing, those statements relating to outcomes of networking practices were grouped together in a separate section. Demographic questions were placed in the last section of the questionnaire.

### 6.5.3.2 Choice of First Question

The first question will likely be the first one the respondent will read. It is important that the respondent feel that they can answer this question before they continue to answer the rest of the questionnaire. It is suggested that the first question be related to the survey topic and be important to the respondent (Dillman, 1978). The first question should also be easily understood and therefore it is recommended that the first question be closed ended (Dillman, 1978). This research study's first question asked whether in the past twelve months the respondent worked with people from other tourism businesses within the conurbation for business reasons. The question was specific and comes to the point. In addition, a 12 month period is practical for the respondent to remember (Moser and Kalton, 1971).

### **6.5.4 Respondents' Selection**

The respondent population was derived from a list of the tourism and hospitality businesses supplied by South West Tourism. General hotel guides and tourism guide books from tourism departments within the conurbation were used to update and add to the list from South West Tourism (VisitBritain, 2007; AA, 2008a; AA, 2008b; Balmer and Raphael, 2008). The selection approach was stratified sampling since the accommodation businesses within the conurbation vary in terms of level of service, size and type of product and, it may be hypothesised, certain types may be more likely to network and/or share information. Thus, as a result, the hotel category was classified into small and large hotels. After business selection the next stage was to identify the actual respondent. In this case one person, either the owner or manager was required to complete the questionnaire.

**Table 6-1 Planned Stratified Sampling framework for tourism sector businesses in Bournemouth, Poole and Christchurch conurbation**

Source: Author

<i>PRODUCT TYPE</i>	<i>POPULATION OF BUSINESSES IN TOURISM SECTOR</i>	<i>STRATIFIED SAMPLING</i>	<i>PLANNED RESPONDENT SAMPLE (50% RESPONSE RATE)</i>
<b>Bed &amp; Breakfast</b>	75	75	37
<b>Guesthouse</b>	55	55	27
<b>Small Hotel</b>	58	58	29
<b>Large Hotel</b>	65	65	33
<b>Self-catering</b>	211	100	50
<b>Campsite and other</b>	22	22	11
<b>Attractions</b>	21	21	11
<b>Total</b>	<b>507</b>	<b>396</b>	<b>198</b>

The last column in Table 6-1 above shows the estimated number of people in tourism businesses that may respond to the questionnaire, if a 50% response rate is achieved. By using stratified sampling the collection of data was made both more efficient and effective. It was more efficient because the numbers that would result from a simple random sample would be reduced for the types that have large numbers in the population. It was more effective because the types of businesses that only have small numbers in the population, but which are required to produce an analysis were made to appear in larger numbers than would arise through simple random sampling.

This approach therefore should give a sufficiently large sample of respondents for each type of business. Thereby, the research objectives of understanding how tourism knowledge sharing networks are formed and therefore how these businesses link up, and what information is shared and why could be achieved. A stratified sample of 396 with a target of 198 respondents (at least 50% of the population) was deemed to be appropriate to map social networks of individual or group and formal and informal relationships of inter-organisational knowledge sharing.

### **6.5.5 Questionnaire Content**

Content considerations are focus, relevance, specificity and language (Sarantakos, 2005). This section is a discussion of the implementation of content in the design of the research questionnaire. The content of the study is an important factor that will determine responses (Greer, Chuchinprakarn and Seshadri, 2000). Focus, relevance and specificity of the questionnaire relate to its validity and reliability. Validity ensures that the correct concept is being measured whereas reliability indicates the extent to which the instrument is without bias and therefore error free. Reliability therefore ensures that responses are consistent over time and space.

#### **6.5.5.1 Validity**

Types of validity are: face, concurrent and construct (Sekaran, 2003; Bryman, 2008). Main validity measures of face, concurrent and construct are reviewed in this section. Face validity ensures that the questions on the research instrument relate to the topic under study. Face validity can be evaluated based on the aim and consequent objectives of the research study. Concurrent validity entails relating a measure to a criterion on which respondents are known to differ (Bryman, 2008). Construct validity ensures that items are measured as theorised (Sekaran, 2003). Construct validity is built into the conceptual framework and is established by a pilot test of the research instrument.

A questionnaire was designed which contained seven sections. Links were made between each question in the research instrument and the conceptual framework (Appendix I). The first three sections were designed based on the relationships' construct of the conceptual framework (Figure 6-2) while the fourth and fifth sections concerned dispositions and attitudes towards networking and knowledge sharing. The sixth section concerned personality and identity traits and the seventh section was the classification categories and classification categories included type of tourism/hospitality business, organisation membership, post code, number of years in area and tourism/hospitality business, gender, position in business and highest level of education. Comments were also requested.

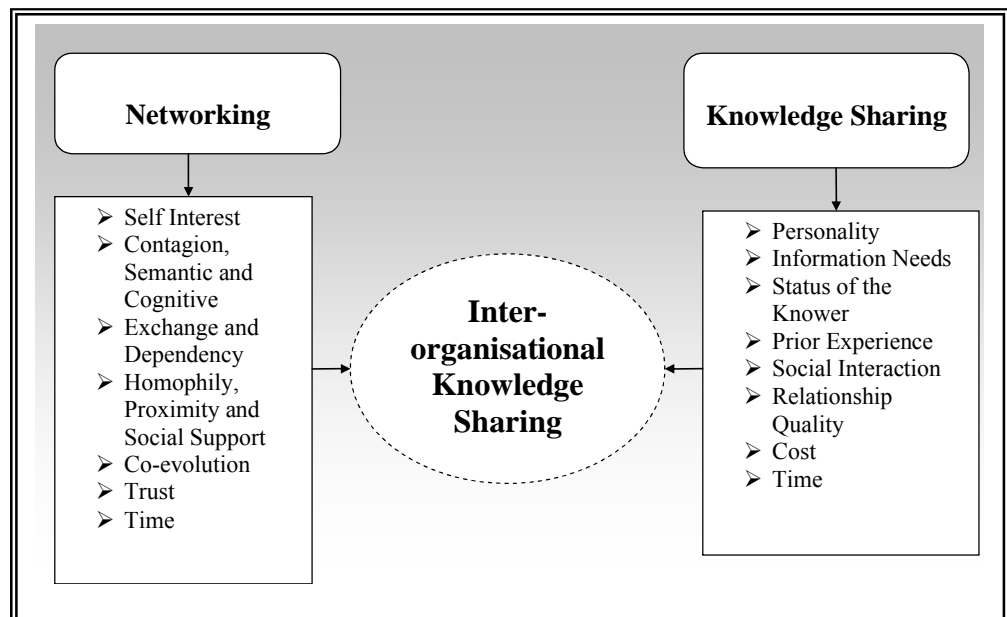
In sections one to three, a relationships' construct comprised four types of networks: individual business, individual personal, group formal and group informal. These group formal and informal networks were combined into one section three to reduce the length of the questionnaire. In relation to their networking practices respondents were asked about their reasons for networking. In order to determine the instrumental reasons for inter-organisational networking.

Within sections one to three, after the networking activity was defined, the next step was to define the information content of the networks. First, respondents were asked to state the sources (defined in terms of the business in which the person who provided the information to the respondent worked) from which they received information (information that was, or would be, useful in operating their businesses). Second, respondents were asked about the type of information: technical, managerial, strategic and local and also the type of communication method: face to face conversation, written documents, telephone, electronic mail, electronic discussion and video conferencing. Thereafter, within sections one to three, respondents were asked to name the business in the tourism sector from which information was received. The question was designed as a name generator question (Burt, 1997a). This was used to produce the network diagrams (Sub-section 6.7.2). An additional question was also asked about who else the respondent talked to in the tourism sector on a regular basis. This additional question probed the respondent to provide more information on network ties.

The fourth and fifth sections were concerned with dispositions and attitudes towards networking and knowledge sharing. Construct validity was established within the questionnaire by designing attitudinal statements. Attitudinal statements were developed based on theories and concepts derived from the literature (Figure 6-7). An attitude is defined as “*a readiness to respond in a favourable or unfavourable manner to a particular class of objects*” (Oskamp, 1977:19). Attitudes were measured since these are pre-dispositions to act in a particular manner (Simon, 1969; Oskamp, 1977; Ajzen, 1988; Oppenheim, 1992; Easton, 1995). An attitude is a precursor of behaviour and therefore impels people to behave in a particular manner. The research study sought to determine why people in different tourism and hospitality businesses network and as a result share information. Dispositions and attitudes for both networking and knowledge sharing were measured. Attitudes were measured based on a specific response to an attitude object (Ajzen, 1988). The specific response was the respondent’s agreement and the attitude object, the attitudinal statement. Consequently, attitudes were evaluated using a 5-point Likert agreement scale, which measured the level of agreement or disagreement regarding an attitudinal statement.

**Figure 6-7** Dispositional and Attitudinal Statements Topics

Source: Author



Statements were devised for each concept (Figure 6-7).

- *Self Interest*: Business people network because there is a self interest which means that networking as an activity is important and that their business contacts are important (Gulati, 1998; Argote & Ingram, 2000; Kogut, 2000; and Monge & Contractor, 2003).
- *Contagion, Semantic and Cognitive*: Networking activity occurs as a result of the spread of attitudes and beliefs (contagion effect), the similarities of individuals (semantic) and knowledge of the people who are networking (cognitive) (Krackhardt, 1990; Monge & Contractor, 2003).
- *Exchange and Dependency*: People become dependent on networks as a source of knowledge and so people engage in network exchanges (Lawson & Lorenz, 1999; Seufert et al., 1999; Kogut, 2000; Monge & Contractor, 2003).
- *Homophily, Proximity and Social Support*: Networking activity occurs as a result of people's preference to network with other people like themselves (homophily), who may be located close to them (proximity), and who can provide support (social support) (Law, 1986; Aloorie, 2000; Monge & Contractor, 2003; Awad & Ghaziri, 2004; Hawkins, 2004; Inkpen & Tsang, 2005; Hall & Michael, 2007).
- *Co-evolution*: Networking activity occurs as a result of the interaction within the networks themselves (Easton et al., 1997; Osborn & Hagedoorn, 1997; Monge & Contractor, 2003).
- *Trust*: Trust is important to initiate social networking (Rotter, 1967; Kalafatis & Miller, 1997; Dhanaraj et al., 2004).
- *Time*: Time constrains networking practices (question included after pilot study; Sub-section 6.5.6).
- *Personality*: Extraversion, individual focus, group focus and independence influence knowledge sharing practices (Kalish & Robins, 2006; Yang, 2008).
- *Information Needs*: Information is shared even with competitors based on the need for information to improve business performance (Argote & Ingram, 2000; von Krogh et al., 2001; Hansen, 2002; Pena, 2002).

- *Status of the Knower*: People share information with other people based on statuses (socio-economic, knowledgeability, similarity and improve relationship) of other people (Knocke, 1983, 1994; Powell et al., 1996; Spender & Grant, 1996; Argote & Ingram, 2000; Carlsson, 2003; Awad & Ghaziri, 2004)
- *Prior Experience*: People share information based on their prior experience with sharing information (Gulati, 1998; Bengtsson & Kock, 1999; Swan et al., 2000; Hansen, 2002; Skvortez et al., 2004; Choi & Hilton, 2005).
- *Social Interaction*: People share information through social interaction (Kogut, Weijian & Walker, 1993; Kogut, 2000).
- *Relationship Quality*: People share information with other people who they can trust (Tyler & Dinan, 2001; Bock & Kim, 2002; Saxena, 2005; Swan et al., 2005); and because of their altruism (Davenport & Prusak, 1998; Choi & Hilton, 2005).
- *Cost*: Cost influences knowledge sharing (Porter & Millar, 1995; Zander & Kogut, 1995; Grant, 1996; Boisot, 1998; Hansen, 2002; Diakoulakis et al., 2004; Cooper, 2006; Sherif & Xing, 2006).

These attitudinal statements were asked in order to determine if respondents were likely to have preferences, preconceptions and behaviours in relation to networking and knowledge sharing. Respondents were asked to focus on the answers that they would have given in the first three sections in the questionnaire and then to respond to the attitudinal statements. As a result, the attitudinal statements provided an explanation for respondents networking and information sharing practices in the first three sections of the questionnaire. It was important to ensure that the questionnaire was fully integrated and examined both aspects of this research study which are networking and knowledge sharing practices. Accordingly, by examining both aspects the research study collected a body of data on the subject matter of inter-organisational knowledge sharing.



In addition, empirical evidence suggests that people engage in different networking practices based on their psychological dispositions (Kalish & Robins, 2006) and hence psychological attributes of individual focus, group focus and independence affect network outcomes (Kalish & Robins, 2006). As explained,

*'The Individual focus component seems associated with persons specifically distinguishing themselves as different from others in their social groups. The Independence component, on the other hand, seems to relate to people not particularly defining themselves in relation to their social groups at all' ( Kalish and Robins 2006:69-70).*

In theory, an individualistic or independent respondent will have certain networking activities, which in turn influences their knowledge sharing practices. Additionally, characteristics of personality also influence behaviour. Personality traits include extraversion or surgency, agreeableness, conscientiousness, emotional stability and culture (Norman, 1963). Extraversion also seems to be a key personality trait for network formation (Kalish & Robins, 2006).

#### 6.5.5.2 Reliability

There are two tests for reliability: stability and consistency (Sekaran, 2003). Stability is the sameness of a measure (Bryman, 2008). Sameness of the measure was established by the same information content questions being asked for each of the four network types. Thus the measure was made stable. Consistency is obtained through using the same scale to measure items. A 5-point Likert agreement scale was used to measure the dispositional and attitudinal statements. Using the same scale achieves internal reliability which can be tested using Cronbach's alpha co-efficient. The rule of thumb for an acceptable level of internal reliability is 0.80 (Bryman, 2008).

### 6.5.5.3 Language

Language is important to help the respondent understand the questions and also to provide an answer (Moser and Kalton, 1971). As shown in Appendices III and IV each section of the questionnaire has a short introduction on the nature of the questions in the section and provides a guide for responses. Detailed guidelines were particularly important since the questionnaire was self completed. By giving attention to the wording of the questionnaire the research instrument was made easier to answer (Simon, 1969; Dillman, 1978; Yammarino, Skinner and Childers, 1991). Language can be tested during the pilot phase. The pilot study was then used to revise the wording of the questions (6.5.6.2). The wording of the questions gave respondents an inclination to respond and therefore respondents were not turned off by the details and sensitive nature of the questions.

### **6.5.6 Pilot Study**

A pilot study is a rehearsal of the main study and the main concerns are administrative and organisational problems (Sarantakos, 2005). The pilot study was then used to test the main questionnaire and also the data collection method. A research questionnaire is tested to determine the adequacy of instructions in the questionnaire (Bryman, 2008). Another reason for conducting a pilot study is to gain familiarity with the research environment (Sarantakos, 2005). In addition, ethical, privacy and question phrasing issues can be addressed. These issues are particularly important when the research study is regarding a sensitive topic of sharing information.

### 6.5.6.1 Pilot Exercise

Piloting involved first, discussing the questions with potential informants and second, implementing a postal survey. The main purpose of the pilot was to determine if the run of questions provided relevant responses on whether persons were engaging in social networking practices. The pilot was also used to determine if respondents received information through their networking connections. The wording of and response to the questions was also tested. A pilot of the questionnaire was conducted during the period January 3rd to February 15th, 2008. The selected tourism destination in Dorset was Christchurch.

The pilot began with a random selection of respondents from the sorted BH23 post code (the post code for Christchurch). Eighteen (18) potential respondents were selected. Respondents within the attractions sector were selected by the first listed attraction for each category of attraction. For instance, the first listed museum was selected. If another museum was listed this second museum was not selected. The accommodation establishments were selected by every fifth listed establishment from a list of sorted post codes of accommodation properties. If contact information was not available for the selected establishment the next one in line was selected. The main public sector tourism business was included.

During a preliminary site visit to the Christchurch information office it was learnt that 3 businesses were no longer in operation. Another not in operation was discovered during the call around and therefore the final list was 14 establishments. The initial series of calls received 8 refusals with reasons including: don't have time, wrong number, going on holiday, don't want to take part, not interested and illness. The pilot questionnaire was used to discuss questions with informants (Appendix II). Seven (7) informants discussed the questionnaire a 50% response rate and ranged from two types of attractions, one bed and breakfast, two self-catering, one caravan park accommodation and one tourist information office. There was also one telephone interview.

The piloted questionnaire (Appendix II) was used to evaluate the content and the phrasing of the questions. The revised questionnaire (Appendix III) was also pre-tested by a mail survey to a sample of six tourism businesses in Christchurch. Responses received from the piloted mail-version of the questionnaire were dated 4/3/2008 and 20/3/2008, the former response was a Bed & Breakfast and the latter response a Guesthouse. Respondents generally completed the relevant sections, although there were missing data for some social networking attitudinal questions in one questionnaire and a trust related question in the other questionnaire.

#### 6.5.6.2 Research Questionnaire Adjustments

Based on discussing the questionnaire with informants, the pilot also provided changes to and additional questions that could be included in the survey. First, the questionnaire that was used to discuss the questions during the pilot was re-designed into a booklet format. Second, questions were removed, the original section two about experiences, documents, new ideas and advice was removed to avoid duplication of answers resulting from answers to section one concerning types of information shared.

Administration of the piloted questionnaire (Appendix II) guided the construction of other questions. In some instances, respondents indicated that certain questions were ambiguous or not relevant to them since they were not social networking. These questions were reconstructed and/or re-worded to improve the accuracy of response. Questions that were reconstructed included: social networking is an important activity for me and so I network regularly (the part concerning I network regularly was taken out) and I prefer to social network with known reputable persons (known reputable was changed to reputable). A question that was reworded included, for instance: on the question of a feeling of being misled, the question was reworded to being misled by persons in other businesses in my industry.

In some instances, questions were added based on informant's comments such as: 'I do have a time constraint but this does not stop me from social networking'; 'the value obtained from sharing information far outweighs the cost'; and 'I generally do not like sharing information.' Questions about being outgoing or quiet were removed from the social networking section and placed in a new personality and identity section. In order to improve responses to the statements being measured on the 5-point Likert agreement scale, the tables were broken down with each section having not more than 15 dispositional and attitudinal statements.

In summary, for the face to face pilot exercise, respondents answered questions willingly and there was not an issue of privacy of information. The mail pilot exercise also proved that the questionnaire can be self-completed. Based on both pilot exercises, discussing and sending out the questionnaire, the research study was deemed feasible and would provide relevant data to be analysed to meet research objectives. The pilot exercise crystallised the research study and a poster presentation was delivered based on the research study's pilot.

## **6.6 Data Collection**

This section on the subject of data collection comprises self completion and survey method implementation. Data collection started with sorting the original Dorset database by post code and then all those establishments within the conurbation area of Bournemouth, Poole and Christchurch were selected. The basic criteria of selecting establishments in the tourism and hospitality industries were that these properties were registered. Thereafter, the Internet tourist guides, accommodation guides were searched for the names of each establishment's proprietor. Pre-contacts by telephone to obtain the name of the business person were also conducted.

### **6.6.1 Self Completion**

One person within each business was asked to complete a questionnaire. This was done because one respondent within the business can be selected to report on their ties with other businesses (Scott, Baggio and Cooper, 2008). Self completion allowed the respondent to complete the questionnaire at their own convenience (Finn et al., 2000). Convenience was important since respondents were asked to freely recall the names of the tourism or hospitality business names in respect of which they had a business or personal relationship with someone. The main advantage of the free recall method is that network data was collected for businesses that may not be known by the researcher. Each respondent was also asked whether there existed a relationship in each type of network. The information sharing activities as a result of network relationships were also obtained. As a result, time was needed to think about relationships.

### **6.6.2 Survey Method Implementation**

In order to manage the risk of a low response rate data collection was conducted in three stages. Three batches were randomly selected from each type of business and within each post code. Once the first batch of 132 properties was selected, a postal survey was administered to these establishments. After two weeks and after once again obtaining the names of business people, a second batch of establishments was prepared. During the second round, 128 establishments were approached and the research instrument administered. A third batch of 118 establishments was also prepared. The total figure of the three batches was 378 which is less than the planned 396 (Table 6-1). As a result, additional business people had to be approached to complete the survey instrument. Several methods were used to find additional respondents including field observation, website searches and trawling tourist guides including the Good Hotel and Automobile Association guides (AA, 2008a; AA, 2008b; Balmer and Raphael, 2008).

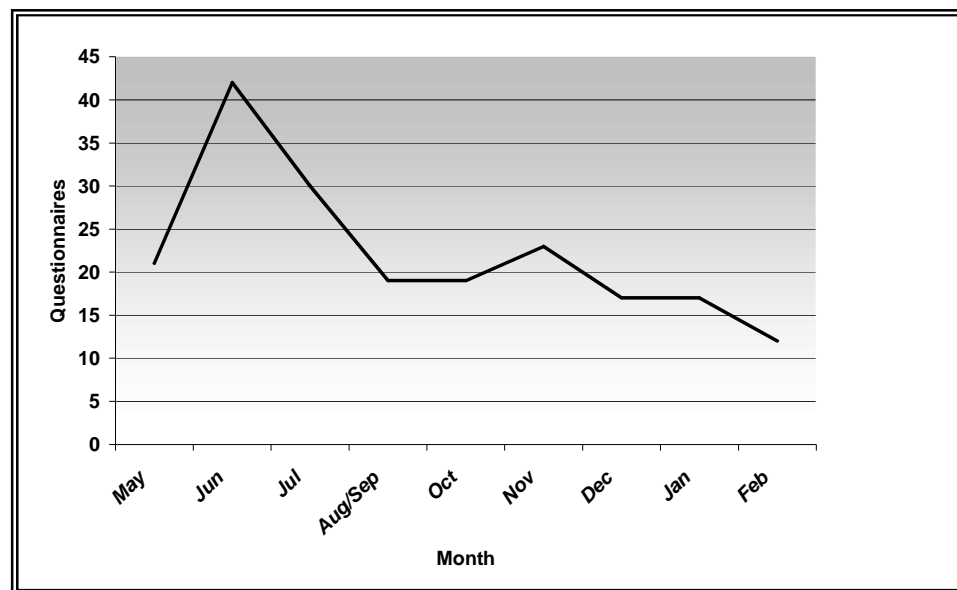
Mail surveys were previously used by several network researchers (Erickson and Nosanchuk, 1983; Burt, 1997a). Based on these considerations, and in particular time and cost constraints, a postal survey was used initially. However, as the response rate (30.30%) was unsatisfactory the postal survey was discontinued and replaced by administering the questionnaire employing the drop and collect method. This direct approach meant that the respondent had to be approached and engaged in a face to face conversation to explain the objectives of the survey and seek their support. As a result, Dillman's TDM was modified to include the drop and collect method an approach similar to that adopted by Keegan and Lucas (2005) in their study about wages in the hospitality sector.

The drop involved one questionnaire being delivered to the owner or manager taken from a stratified sample of hospitality and tourism businesses within the conurbation. In cases where a tourism business was owned and operated by two persons, such as a couple, either one or the other person was asked to complete the questionnaire. Similarly, where the same manager was responsible for more than one property, only one questionnaire was administered to that manager. The business person rather than the business was the sampling unit. The drop and collect method involved sending pre-notification letters to introduce the study, its objective and stating that a questionnaire was to be hand delivered in the near future (Appendix IV). For security reasons, all respondents were pre-notified before a drop took place. The hand delivery stage followed next with the process being done by post code. Some of the first hand delivered questionnaires were collected the same week. The collection procedure largely involved dropping the questionnaire one week and arranging for collection the following week. If the questionnaire was not collected and given that the respondent had initially agreed to complete the questionnaire, several subsequent follow-up visits ensued.

During the implementation of the second batch of drop and collect questionnaires, the postal survey was still in progress with responses coming in. The procedure of running the two methods concurrently resulted in quickening the return of questionnaires in a shorter period of time. Questionnaires were collected each month over a nine (9) month period (Figure 6-8). Evidently, there were two main months for questionnaires coming in, June, a summer month and November, an autumn month. As a result, questionnaires were collected at both the peak and off-peak seasons. While the drop and collect procedure was being implemented for the second batch, telephone calls were being made to obtain the names of business people for a third batch of establishments. These calls were largely made after 6pm at a time when owners and managers were likely to be present and have time to speak. In several cases an opportunity was given to explain the survey being conducted and there were a few refusals and not in operation responses.

**Figure 6-8** Questionnaires Return by Month

Source: Author





After about one month of implementing the drop and collect survey for the second batch via foot and public transport, the third batch of drop and collect questionnaires were administered. The third batch of questionnaires was delivered and respondents were given the opportunity to post in their questionnaires since several respondents in the second batch posted in their questionnaires at their own cost. As a result, the third batch was a drop and postal variant. In some instances, the business person was not on site when the questionnaire was dropped. In these instances a follow-up phone call in the evening of that day to speak to the business person was effective in obtaining a response.

Once the rounds of questionnaires were sent out and several reminders were conducted by early September a new strategy had to be adopted. The strategy was to identify those respondents from the first, second and third batches who did not respond. A non-response was defined as someone who had not refused to complete the questionnaire. Some 160 potential respondents emerged. These business people were once again approached with a letter which indicated that only over 100 questionnaires were received. The letter was written to encourage respondents to participate in the survey. Once, these letters were sent out through hand delivery, properties were again encouraged to respond by telephoning and setting appointments with the business person to have them self complete the questionnaire. With constant persistence and drive, a sample of 200 respondents was obtained. At the end of the data collection phase of the study, letters were sent to all respondents thanking them for their participation in the doctoral study.

### 6.6.3 Actual Sampling Frame

The sampling of tourism businesses to determine their formal and informal relationships was facilitated by the fact that the selected location was well-defined and the businesses had been counted. An initial list of 507 businesses was identified but this population was reduced to 310 owners and managers within the conurbation (Table 6-2). The reduction was due to some properties not being in operation, some were multiple ownership (to ensure that no owner or manager completed more than one questionnaire multiple properties under the same ownership/management were considered to be one business even though they were registered separately) and adjustments to the list of self-catering establishments. A total of 200 owners and managers completed the questionnaire, a response rate of 64.5%.

**Table 6-2 Actual Stratified Sampling framework for Owners and Managers in the Tourism Sector of the Bournemouth, Poole and Christchurch conurbation**

Source: Author

<i>PRODUCT TYPE</i>	<i>POPULATION OF BUSINESSES IN TOURISM SECTOR</i>	<i>TOURISM SECTOR CORRECTION (NOT IN OPERATION, MULTIPLE OWNERSHIP OR MANAGEMENT)</i>	<i>REVISED POPULATION OF OWNERS AND MANAGERS</i>	<i>ACTUAL RESPONDENT SAMPLE</i>
<b>Large Hotel</b>	65	5	60	<b>44</b>
<b>Small Hotel</b>	58	9	49	<b>34</b>
<b>Campsite &amp; other</b>	22	4	18	<b>8</b>
<b>Guesthouse</b>	55	14	41	<b>23</b>
<b>Bed &amp; Breakfast</b>	75	15	60	<b>33</b>
<b>Self-catering</b>	211	149	62	<b>40</b>
<b>Attractions</b>	21	1	20	<b>18</b>
<b>Total</b>	<b>507</b>	<b>197</b>	<b>310</b>	<b>200</b>

### 6.6.4 Goodness of Fit

Goodness of fit is a measure used to determine whether groups within the sample are statistically significantly different (Pallant, 2007). A chi-square test for goodness-of-fit was conducted to determine if there was a statistically significant difference in the proportion in each category based on a 50%/50% proportion of owners and managers. Based on a chi-square goodness-of-fit test, owners and managers were not statistically significantly different in proportion (Table 6-3).

**Table 6-3 Owners and Managers Goodness-of-Fit (Chi-square test)**

Source: Author

	<i>OBSERVED</i> <i>N</i>	<i>EXPECTED</i> <i>N</i>	<i>RESIDUAL</i>	<i>CHI-SQUARE</i>
<b>Owners</b>	109	100.0	9.0	$\chi^2$ 1.620
<b>Managers</b>	91	100.0	-9.0	<b>p 0.203</b>
<b>Total</b>	<b>200</b>	<b>200</b>		

## 6.7 Data Analysis

This research study used two methods of data analysis: statistical analysis and social network analysis. Statistical analyses included: uni-variate, bi-variate and multi-variate techniques. Social network analysis involved using measures to examine characteristics of embeddedness, structural influence and innovation. Training in regard to social network theory and application was provided by the University of Essex.

### 6.7.1 Statistical Techniques and Implementation

The data was coded, entered into a SPSS database and cleaned. Statistical methods were used to analyse the following data: information content; dispositions and attitudes towards networking and knowledge sharing; personality and identity; and classification categories. Statistical analyses involved descriptive, inferential and Principal Components analyses. Chi-Square tests were conducted on the data to explore the relationship of the information sharing variables with the main independent variable, position (owner or manager). Chi-square tests were also conducted once the reliability criteria was fulfilled of no more than 20% of cells have a count of less than 5 (Pallant, 2007). If the association statistic was less than 0.05, then the null hypothesis was rejected (Pallant, 2007). The null hypothesis was that there was no statistically significant difference between the groups being analysed.

Attribute data was analysed using an inferential statistical technique of data analysis, the Mann-Whitney  $U$  test. This test evaluates whether the medians are statistically significantly different. The Mann-Whitney  $U$  test was used to compare the difference in medians of the two groups: owners and managers. There are several statistical outputs from the test;  $U$  statistic,  $z$  value, probability value and  $r$  value (the calculated effect size) of which the main outputs are the  $z$  value and significance level (Pallant, 2007). The  $r$  value is calculated by dividing the  $z$  value by the square root of the number of respondents. Effect size ( $r$  value) is an “*objective measure of the magnitude of an observed effect*” (Field, 2005:32). A small effect is 0.10, a medium effect 0.30, and a large effect, 0.50 (Cohen, 1992).

Principal components analysis (PCA) is a multi-variate data analysis technique. PCA is a technique used to transform variables into smaller sets of combinations (Pallant, 2007). *“Principal components analysis (PCA) and factor analysis (FA) are statistical techniques applied to a single set of variables where the researcher is interested in discovering which variables in the set form coherent subsets that are relatively independent of one another”* (Tabachnick and Fidell, 1996:635). Data is reduced to an underlying structure by grouping variables together. Groups of variables form a factor component or dimension within the data set (Hair, Black, Babin and Anderson, 2010). Additionally, a distinction can be made between principal components analysis and common factor analysis. According to DeVellis (2003) PCA transforms original variables into principal components by combining and capturing much of the information contained in the original variables. On the other hand, common factor analysis produces composites which represent hypothetical variables. In view of this, components are end products whereas factors are a cause not an effect (DeVellis, 2003). Nonetheless, both procedures are referred to as involving factors.

PCA can be conducted on a sample size of 100 or larger and at least 5 observations for each variable (Hair et al., 2010). Several decisions are made in the course of conducting PCA: (1) variable deletion; (2) rotational method; (3) number of factors extracted; and (4) extraction method (Hair et al., 2010). In addition, the Cronbach Alpha coefficient was calculated to determine the reliability of the 5-point Likert agreement scale. The Cronbach Alpha coefficients for 20 networking and 25 knowledge sharing variables were 0.827 and 0.835 respectively. The rotation of the factors is particularly important since rotation redistributes *“the variance from earlier factors to later ones to achieve a simpler, theoretically more meaningful factor pattern”* (Hair et al., 2010:113). In this instance, an orthogonal rotation method, VARIMAX was selected since it provides an independent separation of the factors (Hair et al., 2010). A factor loading co-efficient was selected and these factor loadings are based on sample size (Hair et al., 2010) and a sample size of 200 has a required factor loading of 0.40 at a 0.05 significance level. Given that the data set was exactly 200 respondents the next level of factor loading was selected. In this instance, a 0.45 factor loading was used which is based on a sample size of 150.

### 6.7.2 Social Network Techniques and Implementation

The purpose of network studies is to define the relationships between groups of agents within a defined population boundary. When it is not possible to collect full network data, a sample of agents is obtained, particularly when there is refusal to participate in the study. In such instances, the data obtained is that of an ego-network. According to Wasserman and Faust (1994:42), “*an ego-centred network consists off a focal actor, termed ego, and a set of alters who have ties to ego, and measurements on the ties among these alters.*” In view of this, the network data obtained for this study was ego-network based.

The main reason for using the network approach can be explained as follows:

*“The social network approach is grounded in the intuitive notion that the patterning of social ties in which actors are embedded has important consequences for those actors. Network analysts, then, seek to uncover various kinds of patterns ... to determine the conditions under which those patterns arise and to discover their consequences”* (Freeman, 2004:2).

Social network analysis techniques are used to map relational data within a boundary. One type of network relational data comprises the transfer of non-material resources such as communication between respondents (Wasserman and Faust, 1994). Boundary selection is an important consideration to perform network mapping (Scott et al., 2008). Omission or arbitrary delineation may give misleading results (Scott et al., 2008). There are two methods of boundary selection: a realist approach and a nominalist perspective (Knoke and Kulinski, 1982). A realist approach defines the boundaries of a social entity as the limits that are consciously experienced by all or most of the agents that are members of the entity. A nominalist perspective means that the network is studied in a theoretically relevant manner (Stokowski, 1994). A realist approach which defined the network boundary in geographical terms was used for this research study.

Relational patterns are determined through network mapping. Interrelationships form structural patterns which may be analysed to understand how these structures influence behaviour (Stokowski, 1994). There are two analytical approaches: positional and relational. Relational approaches analyse largely the strength of relationships whereas positional approaches focus on aggregating similar patterns of relationships and grouping these agents (Stokowski, 1994). Within this research study, the network of relationships was analysed based on the overall network level (positional) and also from the nodal level (relational). This section explains how social network analysis was performed and how the positional and relational elements were determined. The section is divided into three parts: network coding, network data entry and social network measures.

#### 6.7.2.1 Network Coding

This section details the analysis of social network relational data. In terms of network mapping, the greater the number of nodes and connections between businesses, the more analysis can be conducted on how networks are formed. Models of social network data include: actor, dyad, triad, subgroup and set of agents or network (Wasserman and Faust, 1994). Network data for the various levels are collected through a name generator instrument (Burt, 1997a).

Respondents were asked to name businesses from which they had received information that was or will be important to the effective and efficient operation of their businesses. These names of businesses were listed and coded and then a linked list was developed. The node list comprised specific names of businesses which defined an entity based on their role and function within the tourism destination.

Once the network mapping data was collected, a list of names was generated and sorted into alphabetical order. Each node in the social network represents an agent who was identified first by location or industrial activity, then by type of property or operation (Table 6-4). At the end of the node's identifier is a unique number to distinguish one node of the same location and type from another. Subsequently, a large hotel in Bournemouth may be labelled BLH05, a small hotel in Poole may be labelled as PSH09, a particular attraction in Christchurch, CA05 and so on. Labelling guided the analysis by identifying the agent while at the same time preserving anonymity.

**Table 6-4** Index of Network Business Names Identification Codes

Source: Author

<i>AREA</i>		<i>INDUSTRY OR SECTOR</i>		<i>TYPE OF PROPERTY, ACTIVITY OR OPERATION</i>	
<b>B</b>	Bournemouth	<b>H</b>	Hospitality	<b>A</b>	Attraction
<b>P</b>	Poole	<b>T</b>	Tourism	<b>BB</b>	Bed & Breakfast
<b>C</b>	Christchurch	<b>G</b>	Government	<b>GH</b>	Guesthouse
<b>D</b>	Dorset	<b>P</b>	Private Sector	<b>LH</b>	Large Hotel
<b>R</b>	South West	<b>E</b>	Education & Recruitment	<b>SH</b>	Small Hotel
<b>N</b>	Great Britain	<b>X</b>	Transport	<b>SC</b>	Self Catering
<b>E</b>	Europe			<b>CA</b>	Caravan Park
<b>I</b>	International			<b>S</b>	Support
				<b>W</b>	Website
				<b>D</b>	Directories



### 6.7.2.2 Network Data Entry

Data processing started with assigning businesses codes (node labels) and then choosing a data format for input. In this case the data language (DL) used to input the data is the nodelist format (Table 6-5). The connections were then made and a linked list emerged. For instance, a linked relationship shown on the first line was defined as - BLH08 BLH20 BLH26 - where BLH08 is the respondent agent or ego. BLH20 and BLH26 are alters from which information was received. The ego was placed first at the start of the nodelist and the corresponding alters from which information was received were placed afterwards. The linked list was then entered into a software package, UCINET 6.232 for Windows (Borgatti et al., 2002) using the text editor.

**Table 6-5 Example of node list of actors in business networks**

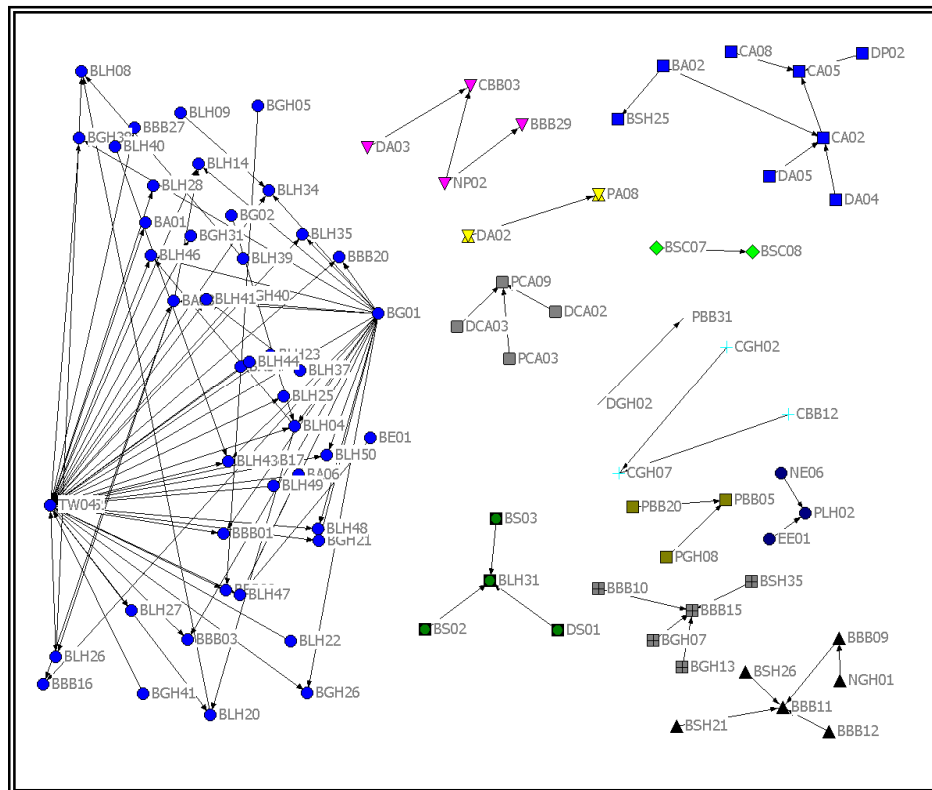
Source: Author

```
dl n=28
format=nodelist
Labels embedded
Data:
BLH08    BLH20    BLH26
BLH47    BG01     BA05     TW01     BL01
BBB20    BG01     PG01
CGH07    CGH02    CBB12
PA06     DA01     DG01     NG02     PG01
PBB06    RG01     NG01
BSH09    PG01     DG01
BGH38    BG01     BP01     BS01     NS01
BSH08    DP03     BA06
```

The network was formed since through the respondent or ego, alters were directly and indirectly inter-connected. NetDraw 2.089 (Borgatti, 2002) was used to illustrate the linked relationships. Since the relationship related to receiving information, and the social network agent was placed at the start of the node list, ties were reversed when illustrated in NetDraw 2.089 to show that the respondent ego received information from an alter. Upon the first run of the data file, several components often emerged as separate nodes. These nodes were pulled out to discover the ties (Figure 6-9). Afterwards it was then possible to identify the various components including the main component of relationships by shading and changing the shape of components.

Figure 6-9 Components of Business Knowledge Network (Example)

Source: Author



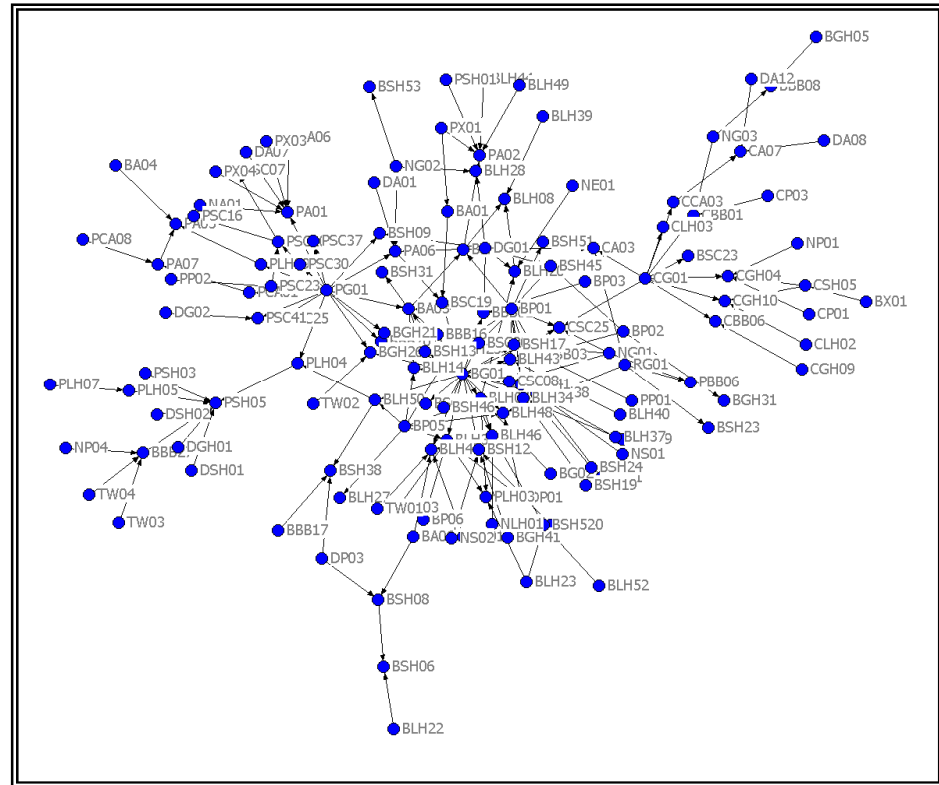
Thirteen (13) components emerged and each component was joined by inter-connecting lines (Figure 6-9). The main component, shown on the left hand side of the Figure 6-9 has evidence of dyadic (two connected agents) and triadic (two connected agents and one other agent) ties. Once there was evidence of many nodes being part of the same component, this was an indication that a main component existed within the relational data. Peripheral components were then removed so that social network measures can be conducted on the main component.

### 6.7.2.3 Social Network Measures

Social network measures are based on three network characteristics: embeddedness (positional), structural influence (relational) and innovation (Section 3.2). This section regarding social network measures explains how relationships affect network outcomes. For instance, the position of a node in the overall network determined access to network resources. In this case the network resource was received and potentially shared information. Within this part, a network which involved business network relationships was used to explain social network measures (Figure 6-10).

**Figure 6-10 Main Component Business Knowledge Network (Example)**

Source: Author



**6.7.2.3.1 Embeddedness**

Embeddedness means that business people are inter-linked and therefore network embeddedness may be analysed using characteristics of density, transitivity and clusters (Moller and Wilson, 1995). These conditions result in embeddedness. Embeddedness relates to the cohesiveness of the network. Density is viewed as the proportion of actual ties in relation to potential ties. Transitivity is viewed as the extent of inter-connectivity in the network based on the existence of transitive triads. Clustering is related to density and is the extent of cohesive groups of ties within the network. Based on these characteristics network resources are provided (Inkpen and Tsang, 2005).

### 6.7.2.3.1.1 Density

A dense local network of agents in businesses consists of dyads, triads, clusters and groups. The density measure is the proportion of existing ties as compared to possible ties in the whole network (Scott, 2000). The more connected points there are the denser the graph will be. Scott (2000) noted that density has two parameters, inclusiveness which is the number of points and the sum of the degrees of its points, that is how many points each point is connected to. As such, density describes the degree of cohesion in the network's structure (Scott, 2000). As expounded by Liebowitz (2007), density is how well connected everyone is to everyone else in the network.

Density is calculated as the sum of all ties divided by the possible number of ties (Erickson and Nosanchuk, 1983). The density formula is calculated where X is the number of dyads (two agents connected) and N is the number of network agents (Equation 1). In the network main component example (Figure 6-10) network density was 0.89% with 190 ties and therefore less than 1% of all potential ties were actually present.

#### Equation 1 Density

Source: Adapted from Erickson and Nosanchuk (1983)

$$D = \frac{\sum X}{N(N-1)}$$

### 6.7.2.3.1.2 Transitivity

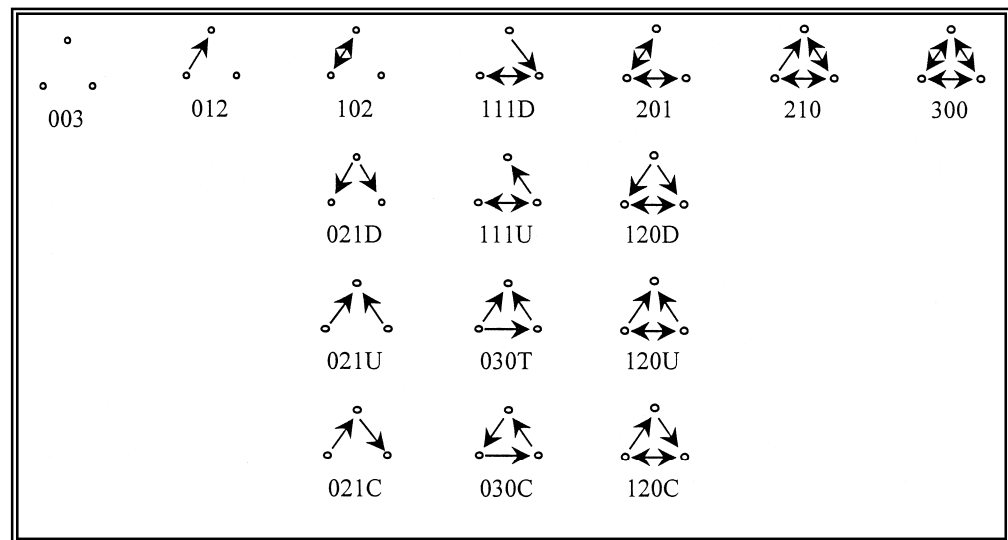
Transitivity is calculated by counting the number of transitive triads (dyad plus one agent) in the network. There are 16 types of resource-directed triads (where A sends a tie to B) (Figure 6-11). The basic idea of transitivity is that if A directs a tie to B, and B directs a tie to C, then A can also potentially direct a tie to C (Hanneman & Riddle, 2005). Snijders and Stokman (1987:249) explain,

*“In a network of size  $g$ , the triad census is obtained by enumerating all the  $(g/3)$  ordered triples of points and classifying them into the 16 possible triad types. These formations start from no ties, AB, AB & CB, BA & BC, AB & BC and so on, where A, B and C are nodes in a network.”*

Each triad has a notation. For instance, a notation of 003 means: 0 (first zero) – number of mutual ties; 0 (second zero) – number of non-mutual ties; and 3 – number of un-connected nodes. A notation of ‘D’ means down, ‘U’ means up, ‘T’ means transitive and ‘C’ means cyclic. Notated transitive triads are: 300; 120D; 030T; and 120U. Triad notation forms part of a triad census where each type of triad is counted. A triad census counts the strength of ties and also the level of transitivity within the network. In the network example (Figure 6-10) there were 6 transitive triads. This means there were 6 instances where if A sends a tie to B and B sends a tie to C, then A also sends a tie to C. Transitive triads are important since their presence enhance the potential re-distribution of network resources.

**Figure 6-11** Types of Triads

Source: Moody (1998)

**6.7.2.3.1.3 Clustering**

From an inter-organisational perspective, network clustering may be studied by using both relational (multi-dimensional scaling) and positional (block models) techniques (Mizruchi, 1994). This research study used a relational technique because, clustering may be viewed as a geodesic pattern in which nodes occur in close proximity to each other and multi-dimensional scaling is a technique which translates relationships into social distances for mapping clusters in a social space (Scott, 2000). Agents are located in geodesic space as neighbours and therefore clustering may be viewed as the relative densities of groups within a large network and each cluster within the network has a density. The level of clustering in the overall network is calculated based on the average densities of each ego-network neighbourhood (a sub-group of nodes immediately surrounding an ego) (Hanneman and Riddle, 2005). This figure can be weighted in proportion to the number of network agents. The overall clustering co-efficient for the business knowledge network (Figure 6-10) was 2.2%. Although the overall network density was 0.89%, there was a greater degree of clustering and this is an indication of the importance of key alters within the network's structure.

### **6.7.2.3.2 Structural Influence**

Three structural influences are: strength of ties, centrality and cliques. Structural influences are determined based on the position of a node within the network's overall structure. The basic idea is that a strong tie is one that shares more network resources. In view of this therefore within this study tie strength was measured by the size of the ego-network, the number of weak components and 'two-step reach' of ego. Centrality of an agent is determined by the resources sought from that agent and cliques are a group of strongly tied agents. Agents that are more central and are clique members are capable of greater influence within the network's structure.

#### **6.7.2.3.2.1 Strength of Ties**

The size of the ego-network is the number of nodes (egos and alters) that the focal ego is connected to. The number of weak components are resource-dependent agents (egos and alters). If an ego had a large number of weak components, this means that other network agents were solely dependent on the focal ego for resources. 'Two-step reach' measures, as a percentage, the magnitude of the ego-network neighbourhood within a 'friend-of-a-friend' distance. Based on the network example (Figure 6-10): (1) the business ego with the largest network was a Bournemouth attraction (8 agents); (2) the business ego with the highest number of weak components was a Bournemouth large hotel (6 agents); and (3) the business ego with the highest 'two-step reach' was also a Bournemouth attraction (33.56%). As a result, an attraction and large hotel have the strongest ties across the network and therefore have greater potential influence.



#### 6.7.2.3.2.2 Centrality

*'Centralisation measures the extent to which a network revolves around a single highly central actor'* (Everett and Borgatti, 2005:75). There are three kinds of centrality: degree, closeness and betweenness (Rowley, 1997; Shih, 2006). Degree centrality relates to the number of agents, closeness relates to distance of the central agent in relation to all other agents and betweenness is the position of an agent based on their network's path length. As such, degree centrality is a measure of the number of agents the focal ego is connected to, whereas closeness and betweenness centralities are indicators of an agent's ability to control the flow of resources within the network.

Closeness centrality calculates the distance of each node within the network from the focal node. Betweenness centrality expressed as a mean calculates an average distance that a node occurs on a geodesic path between two other nodes within the network. The most between positions would be achieved where an ego is the centre of a 'star' network. An overall network centralisation is calculated as a percentage for degree, closeness and betweenness centralities. Overall network centralisations were calculated using the network example (Figure 6-10) and the value was 16.95%. The mean 'incloseness' value was 0.689 and the mean betweenness value was 0.578.

#### 6.7.2.3.2.3 Cliques

A dense network consists of overlapping cliques, with several points being members of different cliques (Scott, 2000). Scott (2000) explained that the most widely held view is that a clique is so defined that an agent can only be in one clique and not another. Scott (2000) suggested that measurement of a clique starts with identification of a triad. Thereafter, overlapping cliques are merged into circles if two-thirds of their members are identical. Thus, a clique is a maximally complete sub-graph (Borgatti et al., 2002).

Within this research study, the size of a triad (3 nodes) was used as the smallest clique size. When the clique procedure is performed a clique co-membership matrix is obtained. Within the business knowledge network (Figure 6-10) there were 6 cliques. Members of one clique were a Bournemouth attraction, a Bournemouth bed and breakfast and a Bournemouth government actor.

### **6.7.2.3.3 Innovation**

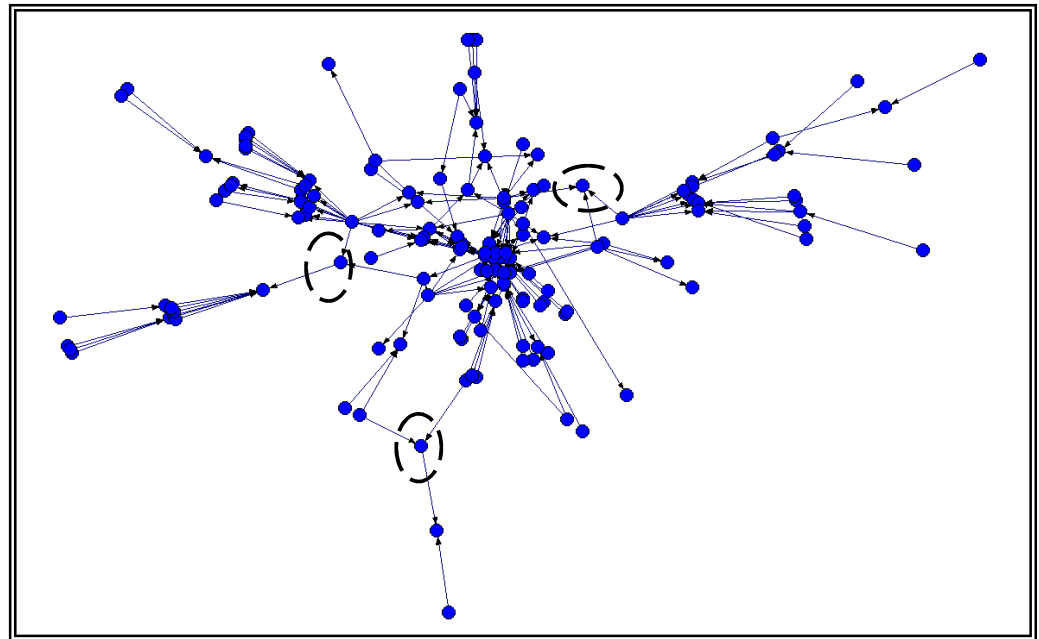
Innovation can be viewed as the capability to apply new knowledge. New knowledge can be potentially obtained through structural holes and brokerage opportunities. **Structural holes** are non-redundant ties in the social network (Figure 3-1). There is a structural hole when agent A is connected to two other agents, but these two other agents are not connected. As a result, agent A is in an advantageous position to know more than each of the other agents. **Brokerage** means that an agent is in a between position to share information.


#### **6.7.2.3.3.1 Structural Holes**

Structural holes were illustrated using multi-dimensional scaling (Figure 6-12) and the figure shows evidence of several structural holes around the centre of the illustration. A structural hole is a gap in which there are no existing ties and therefore the focal ego obtains network resources from two or more unconnected nodes. Several examples of agents spanning structural holes were circled (Figure 6-12).

**Figure 6-12 Main Component Business Network Example (Structural Holes)**

Source: Author



Key: Agents Spanning Structural hole - 

Structural holes are measured based on effective size, efficiency and constraint. Effective size is measured based on the number of nodes in the ego network less those nodes that are otherwise connected. Efficiency is the effective size divided by the number of alters in the ego network. Constraint is the connectivity throughout the network, the more the focal ego's alters are connected and re-connected within the network's structure, the less constrained ego becomes. Shih (2006) explains constraint as the extent to which nodes are directly and indirectly dependent on others.

### 6.7.2.3.2 Brokerage

**Brokerage** means that an agent is a go-between in the ego network and therefore connects two otherwise unconnected agents. The measures are: coordinator, all members of one group; consultant, brokering resources between two alters; gatekeeper, control access of outsiders; representative, a point of contact for the group; and liaison, joining two groups that are not a part of each other (Gould and Fernandez, 1989). An agent may perform a brokerage role in which it can obtain and then share knowledge (Figure 6-13). The relative brokerage role can be calculated by partitioning the actual brokerage scores by the expected brokerage scores and the result is an indication of which roles are significant (Hanneman and Riddle, 2005).

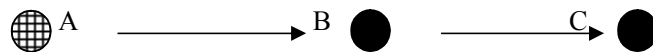
**Figure 6-13 Brokerage Roles**

Source: Hanneman and Riddle (2005)

**Co-ordinator:** node B is the broker and both node A, the source and node C, the destination node, are all members of the same sub-group in the network



**Gatekeeper:** node B is acting as a gatekeeper and is at the boundary of a sub-group in which both B and C are members. B controls access of node A to the sub-group.



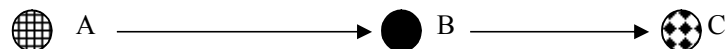
**Representative:** nodes B and A are members of the same sub-group and B acts as the contact point or representative of their sub-group to another sub-group in which node C is a member.



**Consultant:** node B is brokering a relation between two members of the same sub-group in which nodes A and C are members.



**Liaison:** node B is brokering a relation between two sub-groups, and is not a member of node A sub-group or node C sub-group.



## **6.8 Conclusion**

Inter-organisational knowledge sharing involves both a networking aspect and also knowledge sharing practices. A conceptual framework was designed to explain the inter-relatedness of both networking and knowledge sharing. The research design involved selecting a location, reviewing survey methods, questionnaire design, selecting respondents and piloting the questionnaire. Designing the questionnaire was important to ensure the validity and reliability of the research instrument. The main survey was conducted during the period May 2008 to February 2009 and therefore include both the peak and off peak tourism seasons.

The methodology of the research study was to produce data that could be analysed using statistical and social network analytical methods. Research questions as to how, why and why not and what information and knowledge are shared through social networking were developed. Application of social network analysis to map the relational data of knowledge sharing within a tourism destination was also used. The findings chapters follow this chapter. The first chapter, Chapter 7 is in regard to dispositions and attitudes towards inter-organisational knowledge sharing. The second chapter, Chapter 8 concerns information content and dissemination and the third chapter, Chapter 9 discusses networking.

## CHAPTER 7 DISPOSITIONS AND ATTITUDES TOWARDS INTER-ORGANISATIONAL KNOWLEDGE SHARING

### 7.1 Introduction

The purpose of this chapter is to examine respondents' dispositions and attitudes towards inter-organisational knowledge sharing through social networks. According to Naisbitt (1984:192) networking is a mega-trend and, "*networks are people talking to each other, sharing ideas, information and resources.*" In the context of this PhD, inter-organisational knowledge sharing may be viewed as the social interaction of owners and managers in tourism and hospitality businesses and through such interaction knowledge was shared. Dispositions and attitudes towards engaging in knowledge sharing through networking are the foundation of a knowledge sharing system. Dispositions and attitudes were defined (Sub-section 6.5.5) and were examined to understand why owners and managers of tourism and hospitality businesses shared information through social networks?

This chapter explains dispositions and attitudes and tests the null hypotheses that there were no relationships between the independent (owners and managers) and dependent variables. The dependent variables were dispositional and attitudinal statements. First, fourteen (14) statements relating to personality and identity traits were analysed. Second, dispositions and attitudes towards networking were tested and there were twenty (20) statements regarding networking which covered self-interest, contagion, semantic, cognitive, exchange, dependency, social support, homophily, proximity and time. Third, dispositions and attitudes towards knowledge sharing were analysed and there were twenty-five (25) statements concerning knowledge sharing. These statements requested agreement with why information was shared. Fourth, Principal Components Analysis (PCA) was conducted to reduce the networking and knowledge sharing variables into independent dimensions called components. Finally, the chapter is concluded by highlighting these results.

Dispositions and attitudes towards networking and knowledge sharing and personality and identity traits were operationally defined as a series of statements measured against a five-point Likert agreement scale. These statements were based on the literature and tested during the pilot survey. Values were assigned to the scale and consisted of a figure of 1 for strongly disagree (SD), 2 for disagree (D), 3 for neither agree nor disagree (NA/D), 4 for agree (A), and 5 for strongly agree (SA).

One type of descriptive and two types of statistical analyses were performed. Firstly, the mean and median values were calculated. In order to distinguish mean values that are low, medium and high, the range of Likert scale values from 1 to 5 can be divided into zones of 1.00-2.33 - low, 2.34-3.67 - medium and 3.68-5.00 - high (Vaughan, 2007). Zoning the mean values assisted with interpretation of the level of agreement with statements.

Secondly, Mann-Whiney  $U$  tests were used to test the null hypotheses that there were no statistically significant differences between the independent (owners and managers) and dependent variables. As part of the Mann-Whitney  $U$  test the mean rank was calculated after the scores had been ranked from lowest to highest. As a result, "*the group with the lowest mean rank is the group with the greatest number of lower scores*" (Field, 2005:530).

Thirdly, descriptive statistics involved the calculation of the frequency distribution of the 5-point Likert agreement scale data. Accordingly, analyses were performed in a manner that presented the overall agreement with statements, statistically significant inferences were then made and afterwards descriptive data was used to explain any statistical inference.

## **7.2 Personality and Identity**

Personality and identity characteristics were operationalised to explain respondents' disposition to inter-organisational knowledge sharing practices. In particular, identity characteristics define respondents' inclination to network and thus share knowledge. The identity characteristics were included based on the work of Kalish and Robins (2006) concerning psychological predispositions and network structure, the relationship between individual predispositions, structural holes and network closure. Dispositions inclined respondents to behave in a particular manner with regard to their social networking practices. Within this section mean and median calculations and Mann-Whitney *U* tests are presented. The mean and median values were an indication of the central tendency of the data while the inferential test was used to establish the probability of particular traits.

### **7.2.1 Personality**

Respondents were asked about whether they agreed that they relate well and quickly to other people, whether they are quiet and reserved or whether they are outgoing. These personality traits were selected since social interaction is suggested as a method of knowledge sharing. Personality traits are distinct characteristics that an individual holds (Norman, 1963) and as such, it is necessary to relate these characteristics with inter-organisational knowledge sharing practices. For instance, Kalish and Robins (2006) identified extraversion as a characteristic of networkers. As a result, it was necessary to ask whether someone is reserved or outgoing as a means of understanding their extraversion.



The overall mean value was highest with regard to the variable, 'I relate to other people well and quickly' (Table 7-1). While the median values for 'I relate to other people well and quickly' and 'I am more of an outgoing person' were agree (4), the median value for 'I am generally a quiet reserve person' was disagree (2). Although the median value for the variable about being a quiet reserved person was lower for owners (2 - disagree) as compared with managers (3 - neither agree nor disagree), results from performing a Mann-Whitney *U* test showed no statistically significant difference between owners and managers (Table 7-1). There were no statistically significant differences for the other variables either. Accordingly, the null hypotheses that there were no statistically significant differences between owners and managers and the personality variables were therefore accepted.

**Table 7-1 Owners & Managers and Personality (Averages and Mann-Whitney *U* test)**

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	z	p	r
<b>I relate to other people well and quickly</b>								
<b>Owners</b>	102	3.99	4.00	95.16				
<b>Managers</b>	88	4.03	4.00	95.90				
<b>Total</b>	<b>190</b>	<b>4.01</b>	<b>4.00</b>		<b>4453.000</b>	<b>-0.117</b>	<b>0.907</b>	
<b>I am generally a quiet, reserved person</b>								
<b>Owners</b>	103	2.00	2.00	95.68				
<b>Managers</b>	89	2.72	3.00	97.44				
<b>Total</b>	<b>192</b>	<b>2.72</b>	<b>2.00</b>		<b>4499.500</b>	<b>-0.237</b>	<b>0.813</b>	
<b>I am more of an outgoing person</b>								
<b>Owners</b>	103	3.43	4.00	96.13				
<b>Managers</b>	89	3.45	4.00	96.93				
<b>Total</b>	<b>192</b>	<b>3.44</b>	<b>4.00</b>		<b>4545.500</b>	<b>-0.108</b>	<b>0.914</b>	

**Key:** N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
*U* - Mann-Whitney *U* value; z - Z value; p - Probability value; r - R value.

## 7.2.2 Individual Focus

Individual focus means that respondents who engage in social interaction processes still hold their individual identity and this identity means that they are different from other members of their group. Individual identities relate to maintenance of one's own uniqueness in comparison to the characteristics of other group members and it is a pre-disposition to launch-out and do 'one's own thing' as it were.

**Table 7-2 Owners & Managers and Individual Focus**  
(Averages and Mann-Whitney *U* test)

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	z	p	r
<b>Being different to other people in my groups is important to me</b>								
<b>Owners</b>	99	2.96	3.00	94.61				
<b>Managers</b>	87	2.90	3.00	92.24				
<b>Total</b>	<b>186</b>	<b>2.93</b>	<b>3.00</b>		<b>4196.500</b>	<b>-0.320</b>	<b>0.749</b>	
<b>I like to distinguish myself from other people in my social groups</b>								
<b>Owners</b>	101	2.82	3.00	96.06				
<b>Managers</b>	89	2.79	3.00	94.87				
<b>Total</b>	<b>190</b>	<b>2.81</b>	<b>3.00</b>		<b>4438.000</b>	<b>-0.159</b>	<b>0.873</b>	
<b>My personal identity independent from others is important to me</b>								
<b>Owners</b>	101	3.46	4.00	96.73				
<b>Managers</b>	89	3.40	4.00	94.11				
<b>Total</b>	<b>190</b>	<b>3.43</b>	<b>4.00</b>		<b>4370.500</b>	<b>-0.358</b>	<b>0.720</b>	
<b>I often do my 'my own thing'</b>								
<b>Owners</b>	101	3.77	4.00	101.52				
<b>Managers</b>	88	3.59	4.00	87.52				
<b>Total</b>	<b>189</b>	<b>3.69</b>	<b>4.00</b>		<b>3785.500</b>	<b>-2.004</b>	<b>0.045</b>	<b>0.146</b>

*Key:* N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
*U* - Mann-Whitney *U* value; z - Z value; p - Probability value; r - R value.

Respondents neither agreed nor disagreed with variables about being different and distinguishing self (Table 7-2). Overall, respondents agreed (based on their median values) that their personal identity independent from others is important and that they often do their own thing. A statistically significant difference for the variable concerning 'I often do my own thing' was evident. Owners had a higher mean rank than managers and the probability value was 0.045, which is less than the required cut off point of 0.05 for statistical significance. As a result, the null hypothesis was rejected. The  $r$  value was 0.146 which is a small effect. Individuality was more evident for owners and can therefore explain in part their inter-organisational knowledge sharing practices.

### **7.2.3 Group Focus**

Group interaction is one mechanism by which people can network socially and as a result share information (Santoro et al., 2006). Respondents were asked whether belonging to social groups was an important part of their self-image. Being part of the group is not the only aspect of self-image but rather it is an important aspect. Similarly, identifying with people who are in their groups was also examined to determine if respondents were group focused. As part of a group, people may, or may not, maintain their identity and so a question was asked as to whether their membership in social groups was 'not' central to how they feel.

Overall while respondents neither agreed nor disagreed about belonging and identifying with social groups. These respondents agreed with the assertion that their membership of social groups was not central to how they felt about themselves (Table 7-3). Generally, mean values were medium and the median was 4. There were no statistically significant differences when Mann-Whitney  $U$  tests were performed. Consequently, the null hypotheses were accepted and therefore group focus does not explain differences between owners and managers inter-organisational knowledge sharing practices.

**Table 7-3 Owners & Managers and Group Focus (Averages and Mann-Whitney *U* test)**

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	<i>z</i>	<i>p</i>	<i>r</i>
<b>In general, belonging to social groups is an important part of my self-image</b>								
<b>Owners</b>	101	2.78	3.00	95.80				
<b>Managers</b>	89	2.78	3.00	95.16				
<b>Total</b>	<b>190</b>	<b>2.78</b>	<b>3.00</b>		<b>4464.000</b>	<b>-0.085</b>	<b>0.933</b>	
<b>I identify strongly with people because they are in one or more of my social groups</b>								
<b>Owners</b>	102	3.02	3.00	96.87				
<b>Managers</b>	89	2.96	3.00	95.00				
<b>Total</b>	<b>191</b>	<b>2.99</b>	<b>3.00</b>		<b>4450.000</b>	<b>-0.247</b>	<b>0.805</b>	
<b>My membership in social groups is not central to how I feel about myself</b>								
<b>Owners</b>	101	3.55	4.00	95.06				
<b>Managers</b>	89	3.56	4.00	95.99				
<b>Total</b>	<b>190</b>	<b>3.56</b>	<b>4.00</b>		<b>4450.500</b>	<b>-0.128</b>	<b>0.898</b>	

*Key:* N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
*U* - Mann-Whitney *U* value; *z* - Z value; *p* - Probability value; *r* - R value.

#### 7.2.4 Independence

Independence sets people apart from others. As such, independence means that even though there is group membership, persons still work alone. Statements of independence that were measured included self-reliance (reliance on self most of the time), self-dependence (depending on self not others), working alone and unimportance of social groups. Overall, based on the median values respondents agreed with all four statements about independence (Table 7-4). The mean value (3.82) was highest for the statement about self-reliance. Statistically significant differences between owners and managers, for the self-reliance and self-dependence variables were recorded (Table 7-4). Based on *r* values, there was a small effect for the self-reliance statement and a medium effect for the self-dependence statement. Consequently, the null hypotheses for both statements concerning self-reliance and self-dependence were rejected and these traits may explain differences between owners and managers social networking practices.

Additionally, the mean values for self-reliance and self-dependence statements were in different mean zones and for self-dependence, owners had the high mean value (4.10) as compared with managers' medium mean value (3.43). The lowest mean value (3.43) was recorded for managers in regard to two statements: 'I'd rather depend on myself than others' and 'The social groups I belong to are unimportant to my sense of what kind of person I am.'

**Table 7-4 Owners & Managers and Independence**  
(Averages and Mann-Whitney *U* test)

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	z	p	r
<b>I rely on myself most of the time</b>								
<b>Owners</b>	103	4.01	4.00	109.13				
<b>Managers</b>	88	3.59	4.00	80.64				
<b>Total</b>	<b>191</b>	<b>3.82</b>	<b>4.00</b>		<b>3180.000</b>	<b>-4.050</b>	<b>0.000</b>	<b>0.293</b>
<b>I'd rather depend on myself than others</b>								
<b>Owners</b>	104	4.10	4.00	115.10				
<b>Managers</b>	89	3.43	4.00	75.85				
<b>Total</b>	<b>193</b>	<b>3.79</b>	<b>4.00</b>		<b>2746.000</b>	<b>-5.233</b>	<b>0.000</b>	<b>0.377</b>
<b>If the groups I belong to are slowing me down, it is better to work alone</b>								
<b>Owners</b>	101	3.75	4.00	100.62				
<b>Managers</b>	87	3.54	4.00	87.39				
<b>Total</b>	<b>188</b>	<b>3.65</b>	<b>4.00</b>		<b>3775.000</b>	<b>-1.801</b>	<b>0.072</b>	
<b>The social groups I belong to are unimportant to my sense of what kind of person I am</b>								
<b>Owners</b>	103	3.52	4.00	99.69				
<b>Managers</b>	89	3.43	4.00	92.81				
<b>Total</b>	<b>192</b>	<b>3.48</b>	<b>4.00</b>		<b>4255.000</b>	<b>-0.913</b>	<b>0.361</b>	

*Key:* N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
*U* - Mann-Whitney *U* value; z - Z value; p - Probability value; r - R value.

### **7.3 Social Networking**

Networking is social when it involves people to people interaction and interaction can be either formal or informal (Saxena, 2005). Social networks that operate within a tourism destination often bring about knowledge sharing since people in tourism and hospitality businesses are the conduits of information (Hjalager, 2002). In view of this, statements that set out why people network and share information were developed based on Monge and Contractor's (2003) multi-theoretical, multi-level model of communication networks (Section 3.3) and formed part of the networking motivational inputs (Figure 6-3). The variables were: self-interest; cognitive, contagion and semantic; dependency; homophily, proximity and social support. Based on the literature two additional sets of variables were also included trust and time (Dhanaraj et al., 2004; Giddens, 1984).

#### **7.3.1 Self Interest**

Self interest is suggested as a reason for networking (Monge and Contractor, 2003) since networking takes place on the basis that there is some benefit to be obtained. Degenne and Forse (1999) in their work titled 'Introducing Social Networks' highlighted that individuals choose options according to their interests in order to achieve certain goals. As such, resources are exchanged based on an individual's own interest. These 'self interest' statements are about attitudes towards, and expectations of, the importance of social networking, the importance of relationships with business contacts and the main benefit being information receiving. Respondents generally agreed with all three statements about self-interest and the mean value was highest for the statement regarding 'as a business person social networking is an important activity for me.' Overall, the majority of respondents (58.1%) agreed that the main benefit of social networking was receiving information (Table 7-6).

The Mann-Whitney  $U$  test revealed statistically significant differences (probability values of 0.001 and 0.002 respectively) and consequently, the null hypotheses for variables in regard to importance of social networking and importance of business contacts were rejected (Table 7-5). In addition, effect size was calculated and although the importance of social networking had a slightly larger  $r$  value, as compared with importance of relationships with business contacts, whether the respondent was an owner or manager had a small effect on both variables. Accordingly, self-interest was an important motivator for the networking practices of managers. A Mann-Whitney  $U$  test showed that there was no significant difference between owners and managers in respect of the statement that ‘the main benefit of social networking is information receiving.’ Consequently, the null hypothesis for this variable was accepted.

**Table 7-5 Owners & Managers and Self Interest (Averages and Mann-Whitney  $U$  test)**

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	$U$	$z$	$p$	$r$
<b>As a business person social networking is an important activity for me</b>								
<b>Owners</b>	102	3.48	4.00	83.48				
<b>Managers</b>	88	3.93	4.00	109.44				
<b>Total</b>	<b>190</b>	<b>3.69</b>	<b>4.00</b>		<b>3261.500</b>	<b>-3.406</b>	<b>0.001</b>	<b>0.247</b>
<b>I view my network of business contacts as important relationships for the success of my business</b>								
<b>Owners</b>	101	3.47	4.00	84.21				
<b>Managers</b>	88	3.90	4.00	107.39				
<b>Total</b>	<b>189</b>	<b>3.67</b>	<b>4.00</b>		<b>3354.000</b>	<b>-3.069</b>	<b>0.002</b>	<b>0.223</b>
<b>The main benefit of my social networking is information receiving</b>								
<b>Owners</b>	98	3.54	4.00	88.11				
<b>Managers</b>	88	3.76	4.00	99.51				
<b>Total</b>	<b>186</b>	<b>3.65</b>	<b>4.00</b>		<b>3783.500</b>	<b>-1.622</b>	<b>0.105</b>	

**Key:** N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
 $U$  - Mann-Whitney  $U$  value;  $z$  - Z value;  $p$  - Probability value;  $r$  - R value.

Evidently, managers viewed social networking as an important activity and business contacts as important relationships more than did owners. Managers recorded the highest mean values for both variables although the median values (4, agree) were the same overall and for both owners and managers. Managers were in more agreement that social networking was an important activity since frequency percentages for strong agreement were higher for managers as compared with owners (Table 7-6). In addition, owners' disagreement with both statements concerning the importance of networking and business contacts was evidently higher than that of managers' disagreement.

**Table 7-6 Owners & Managers and Self Interest (count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>As a business person social networking is an important activity for me</b>							
<b>Owners</b>	N	2	16	30	39	15	102
	%	2.0	15.7	29.4	38.2	14.7	100.0
<b>Managers</b>	N	3	7	11	39	28	88
	%	3.4	8.0	12.5	44.3	31.8	100.0
<b>Total</b>	N	<b>5</b>	<b>23</b>	<b>41</b>	<b>78</b>	<b>43</b>	<b>190</b>
	%	<b>2.6</b>	<b>12.1</b>	<b>21.6</b>	<b>41.1</b>	<b>22.6</b>	<b>100.0</b>
<b>I view my network of business contacts as important relationships for the success of my business</b>							
<b>Owners</b>	N	2	18	24	45	12	101
	%	2.0	17.8	23.8	44.6	11.9	100.0
<b>Managers</b>	N	0	11	13	38	26	88
	%	0.0	12.5	14.8	43.2	29.5	100.0
<b>Total</b>	N	<b>2</b>	<b>29</b>	<b>37</b>	<b>83</b>	<b>38</b>	<b>189</b>
	%	<b>1.1</b>	<b>15.3</b>	<b>19.6</b>	<b>43.9</b>	<b>20.1</b>	<b>100.0</b>
<b>The main benefit of my social networking is information receiving</b>							
<b>Owners</b>	N	1	13	22	56	6	98
	%	1.0	13.3	22.4	57.1	6.1	100.0
<b>Managers</b>	N	0	5	21	52	10	88
	%	0.0	5.7	23.9	59.1	11.4	100.0
<b>Total</b>	N	<b>1</b>	<b>18</b>	<b>43</b>	<b>108</b>	<b>16</b>	<b>186</b>
	%	<b>0.5</b>	<b>9.7</b>	<b>23.1</b>	<b>58.1</b>	<b>8.6</b>	<b>100.0</b>

**Key:** Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage



### **7.3.2 Homophily and Proximity**

Aptly described by Monge and Contractor (2003:302) homophily relates to “*birds of a feather flock together.*” Homophily is viewed as business people social networking with people who are similar to them: for example, owners meet with owners and managers meet with managers. The desire to share experiences with the same type of person is the core homophily concept. Accordingly, the statements that were used to measure the homophily influences were about social networking with reputable persons, social networking with similar businesses, and discussing important matters with friends. Friendship is a reason for the formation of network ties (Ingram and Roberts, 2000) and arguably, reputable people network socially with other reputable persons. Business peoples’ desire to discuss important matters relating to their businesses with friends rather than competitors was also examined. Friendship is viewed as a homophily concept and thus influences the formation of network ties.

Physical proximity according to Monge and Contractor (2003) increases the probability that a tie will be created and it is proposed that physical proximity has a nonlinear (ties may be created in any direction) influence on creating communication ties. In addition, they posited that communication ties diminish with distance. Business people may face similar challenges particularly those relating to local issues. As a result, these people may communicate with other similar people that are close by to observe and learn. Thus, the variable used to examine the influence of proximity was ‘I prefer to network socially with persons working in businesses nearest my location.’

Homophily and proximity statements were included to understand the influence these variables have on the formation of social networks. Respondents agreed with two of the three homophily statements and these were concerning preference to network with reputable persons (54.2%) and persons in similar businesses (46.6%) (Table 7-8). Respondents generally neither agreed nor disagreed (median value of 3) with preference to discuss matters of importance with friends and the proximity statement (Table 7-7). Although on average respondents' overall median was 3 the most frequent response was that they agreed (36.3%) with 'I prefer to network socially with persons working in businesses nearest my location' and similarly the most frequent response was that they agreed (38.9%) that 'I prefer to discuss matters of importance to my business with my friends rather than my competitors.' This means that the level of disagreement was particularly high and brought down the agreement values (Table 7-8).

As shown by Mann-Whitney *U* tests there were no statistically significant differences for two of the three homophily variables (Table 7-7). Consequently, the null hypotheses were accepted for these variables concerning a preference to network with reputable persons and persons in similar businesses and these variables do not explain differences between owners and managers networking practices. However, a significant statistical difference (probability value of 0.007) was recorded for owners and managers for the statement concerning discussing matters of importance with friends rather than competitors (Table 7-7). Consequently, the null hypothesis that there was no difference between owners and managers for this variable was rejected. The mean value, for discussing matters of importance to my business with friends rather than competitors, was higher for owners than managers (Table 7-7) and while 45.5% of owners agreed with the statement a smaller proportion of managers, 31.5%, did so.

**Table 7-7 Owners & Managers and Homophily & Proximity**  
(Averages and Mann-Whitney *U* test)

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	<i>z</i>	<i>p</i>	<i>r</i>
<b>I prefer to social network with reputable persons</b>								
<b>Owners</b>	100	3.76	4.00	96.27				
<b>Managers</b>	90	3.71	4.00	94.64				
<b>Total</b>	<b>190</b>	<b>3.74</b>	<b>4.00</b>		<b>4423.000</b>	<b>-0.224</b>	<b>0.823</b>	
<b>I prefer to social network with persons in businesses similar to mine</b>								
<b>Owners</b>	101	3.41	4.00	97.22				
<b>Managers</b>	90	3.34	4.00	94.63				
<b>Total</b>	<b>191</b>	<b>3.38</b>	<b>4.00</b>		<b>4422.000</b>	<b>-0.344</b>	<b>0.731</b>	
<b>I prefer to discuss matters of importance to my business with my friends rather than my competitors</b>								
<b>Owners</b>	101	3.52	4.00	105.14				
<b>Managers</b>	89	3.13	3.00	84.56				
<b>Total</b>	<b>190</b>	<b>3.34</b>	<b>3.00</b>		<b>3520.500</b>	<b>-2.698</b>	<b>0.007</b>	<b>0.196</b>
<b>I prefer to social network with persons working in businesses nearest my location</b>								
<b>Owners</b>	100	3.37	3.00	101.64				
<b>Managers</b>	90	3.12	3.00	88.67				
<b>Total</b>	<b>190</b>	<b>3.25</b>	<b>3.00</b>		<b>3885.500</b>	<b>-1.705</b>	<b>0.088</b>	

*Key:* N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
*U* - Mann-Whitney *U* value; *z* - Z value; *p* - Probability value; *r* - R value

The results of Mann-Whitney *U* test showed that there was no statistically significant difference between owners and managers preference to network with persons working in businesses nearest to their location (Table 7-7). The null hypothesis was therefore accepted. Consequently, proximity is not a likely explanation of any differences in social networking behaviour of owners and managers.

**Table 7-8 Owners & Managers and Homophily & Proximity (count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>I prefer to social network with reputable persons</b>							
<b>Owners</b>	N	1	6	24	54	15	100
	%	1.0	6.0	24.0	54.0	15.0	100.0
<b>Managers</b>	N	1	9	18	49	13	90
	%	1.1	10.0	20.0	54.4	14.4	100.0
<b>Total</b>	N	<b>2</b>	<b>15</b>	<b>42</b>	<b>103</b>	<b>28</b>	<b>190</b>
	%	<b>1.1</b>	<b>7.9</b>	<b>22.1</b>	<b>54.2</b>	<b>14.7</b>	<b>100.0</b>
<b>I prefer to social network with persons in businesses similar to mine</b>							
<b>Owners</b>	N	2	20	24	45	10	101
	%	2.0	19.8	23.8	44.6	9.9	100.0
<b>Managers</b>	N	2	21	17	44	6	90
	%	2.2	23.3	18.9	48.9	6.7	100.0
<b>Total</b>	N	<b>4</b>	<b>41</b>	<b>41</b>	<b>89</b>	<b>16</b>	<b>191</b>
	%	<b>2.1</b>	<b>21.5</b>	<b>21.5</b>	<b>46.6</b>	<b>8.4</b>	<b>100.0</b>
<b>I prefer to discuss matters of importance to my business with my friends rather than my competitors</b>							
<b>Owners</b>	N	2	15	25	46	13	101
	%	2.0	14.9	24.8	45.5	12.9	100.0
<b>Managers</b>	N	4	22	28	28	7	89
	%	4.5	24.7	31.5	31.5	7.9	100.0
<b>Total</b>	N	<b>6</b>	<b>37</b>	<b>53</b>	<b>74</b>	<b>20</b>	<b>190</b>
	%	<b>3.2</b>	<b>19.5</b>	<b>27.9</b>	<b>38.9</b>	<b>10.5</b>	<b>100.0</b>
<b>I prefer to social network with persons working in businesses nearest my location</b>							
<b>Owners</b>	N	1	19	33	36	11	100
	%	1.0	19.0	33.0	36.0	11.0	100.0
<b>Managers</b>	N	1	26	27	33	3	90
	%	1.1	28.9	30.0	36.7	3.3	100.0
<b>Total</b>	N	<b>2</b>	<b>45</b>	<b>60</b>	<b>69</b>	<b>14</b>	<b>190</b>
	%	<b>1.1</b>	<b>23.7</b>	<b>31.6</b>	<b>36.3</b>	<b>7.4</b>	<b>100.0</b>

**Key:** Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

### **7.3.3 Trust**

Trust has been highlighted as a reason why people engage with social networks as posited by Monge and Contractor (2003) who noted that trust is a precursor for exchange relationships and thus trust can explain social networking behaviour. Two trust variables, about taking advantage and being misled, were modified based on the work of Dhanaraj et al. (2004) about managing tacit and explicit knowledge transfer. In addition, two further trust variables were included based on work by Rotter (1967) about reliance on verbal statements and Kalafatis et al. (1997) about promise keeping. Respondents were asked to indicate based on their attitudes towards and expectations of social networking activities, their agreement with the four statements concerning trust.

Generally mean values were medium (between 2.34 to 3.67) for all four trust variables. Overall respondents agreed, based on a median value of 4, to statements about promise keeping and about never being misled. Overall the most frequent response (48.7%) was agreement with the statement about 'I can usually rely on my social network of persons in other businesses to keep their promises' (Table 7-10). Respondents neither agreed nor disagreed with statements about being taken advantage of and reliance on a person's verbal statements and the overall lowest mean value (3.05) was recorded for the variable regarding being taken advantage of (Table 7-9). Accordingly, business people generally trust other people in their networks in terms of promise keeping and being misled but there is however a reduced extent of trust in relation to being taken advantage of and reliance on verbal statements.

Mann-Whitney  $U$  tests conducted on the four trust variables demonstrated that there were no statistically significant differences between owners and managers (Table 7-9) in respect of the trust statements and therefore the null hypotheses were accepted. Owners and managers do not have different attitudes in terms of trusting other people in their networks and therefore trust cannot be used as an explanation for the differences between the networking practices of owners and managers.

**Table 7-9 Owners & Managers and Trust (Averages and Mann-Whitney  $U$  test)**

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	$U$	z	p	r
<b>My social network of persons in other businesses know my weaknesses and do not take advantage of me</b>								
<b>Owners</b>	99	3.11	3.00	97.74				
<b>Managers</b>	88	2.99	3.00	89.80				
<b>Total</b>	<b>187</b>	<b>3.05</b>	<b>3.00</b>		<b>3986.000</b>	<b>-1.104</b>	<b>0.270</b>	
<b>I can usually rely on my social network of persons in other businesses to keep their promises</b>								
<b>Owners</b>	99	3.42	4.00	92.46				
<b>Managers</b>	88	3.49	4.00	95.73				
<b>Total</b>	<b>187</b>	<b>3.45</b>	<b>4.00</b>		<b>4203.500</b>	<b>-0.458</b>	<b>0.647</b>	
<b>I have never had a feeling of being misled by my social network of persons in other businesses in my industry</b>								
<b>Owners</b>	101	3.32	4.00	95.83				
<b>Managers</b>	88	3.32	3.00	94.05				
<b>Total</b>	<b>189</b>	<b>3.32</b>	<b>4.00</b>		<b>4360.500</b>	<b>-0.240</b>	<b>0.811</b>	
<b>From my social network of persons in other businesses, I can rely on persons' verbal statements</b>								
<b>Owners</b>	99	3.18	3.00	89.13				
<b>Managers</b>	89	3.35	4.00	100.47				
<b>Total</b>	<b>188</b>	<b>3.26</b>	<b>3.00</b>		<b>3874.000</b>	<b>-1.531</b>	<b>0.126</b>	

*Key:* N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
 $U$  - Mann-Whitney  $U$  value; z - Z value; p - Probability value; r - R value

**Table 7-10 Owners & Managers and Trust (count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>My social network of persons in other businesses know my weaknesses and do not take advantage of me</b>							
<b>Owners</b>	N	3	12	60	19	5	99
	%	3.0	12.1	60.6	19.2	5.1	100.0
<b>Managers</b>	N	2	22	42	19	3	88
	%	2.3	25.0	47.7	21.6	3.4	100.0
<b>Total</b>	N	<b>5</b>	<b>34</b>	<b>102</b>	<b>38</b>	<b>8</b>	<b>187</b>
	%	<b>2.7</b>	<b>18.2</b>	<b>54.5</b>	<b>20.3</b>	<b>4.3</b>	<b>100.0</b>
<b>I can usually rely on my social network of persons in other businesses to keep their promises</b>							
<b>Owners</b>	N	2	6	41	48	2	99
	%	2.0	6.1	41.4	48.5	2.0	100.0
<b>Managers</b>	N	1	4	37	43	3	88
	%	1.1	4.5	42.0	48.9	3.4	100.0
<b>Total</b>	N	<b>3</b>	<b>10</b>	<b>78</b>	<b>91</b>	<b>5</b>	<b>187</b>
	%	<b>1.6</b>	<b>5.3</b>	<b>41.7</b>	<b>48.7</b>	<b>2.7</b>	<b>100.0</b>
<b>I have never had a feeling of being misled by my social network of persons in other businesses in my industry</b>							
<b>Owners</b>	N	5	16	26	50	4	101
	%	5.0	15.8	25.7	49.5	4.0	100.0
<b>Managers</b>	N	3	12	30	40	3	88
	%	3.4	13.6	34.1	45.5	3.4	100.0
<b>Total</b>	N	<b>8</b>	<b>28</b>	<b>56</b>	<b>90</b>	<b>7</b>	<b>189</b>
	%	<b>4.2</b>	<b>14.8</b>	<b>29.6</b>	<b>47.6</b>	<b>3.7</b>	<b>100.0</b>
<b>From my social network of persons in other businesses, I can rely on persons' verbal statements</b>							
<b>Owners</b>	N	2	17	43	35	2	99
	%	2.0	17.2	43.4	35.4	2.0	100.0
<b>Managers</b>	N	1	14	29	43	2	89
	%	1.1	15.7	32.6	48.3	2.2	100.0
<b>Total</b>	N	<b>3</b>	<b>31</b>	<b>72</b>	<b>78</b>	<b>4</b>	<b>188</b>
	%	<b>1.6</b>	<b>16.5</b>	<b>38.3</b>	<b>41.5</b>	<b>2.1</b>	<b>100.0</b>

**Key:** Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

### **7.3.4 Cognitive, Contagion and Semantic**

Cognitive variables may be analysed to understand their impact on networking practices. Cognitive social structure (Monge and Contractor, 2003) is formed when respondents have a fair idea of what is happening within different social networks, not only their own. The cognitive variable was 'I usually know who networks with whom.' This variable was used to examine whether or not respondents have knowledge about not only their immediate social networks but also about networks within the conurbation.

In addition, "*contagion theories seek to explain networks as conduits for contagious attitudes and behaviour*" (Monge and Contractor, 2003:299). In this instance contagion relates to the spread of beliefs and attitudes which can in turn contribute to social networking behaviour. Monge and Contractor (2003) suggest that contagion effects also relate to mimetic processes and the application of best practices and therefore contagion variables were 'social networking has improved the decisions I have made in the past to a great extent', 'my network of social relations has contributed to my beliefs and attitudes about how to operate my business' and 'I sometimes apply best practices that I learn from my social network.' Contagion effects may be viewed as diffusion processes since respondents adopt practices learnt through their social networking practices (Burt, 1997; Rogers, 2003).

Semantic means there is similarity of information and interpretation of that information (Monge and Contractor, 2003). Similarities between respondents in terms of their experiences, culture and history are considered semantics (Cohen, 1989). In terms of business relationships, one similarity is working in the same industry. Business people in the tourism sector share similar experiences with regard to the marketing, operation and development of their businesses. As such the semantic variable was stated as, 'I network with persons only in my industry since they best know the business.'



Overall, respondents agreed with the statements about their social network contributing to their attitudes and beliefs regarding how to operate their business and concerning applying best practices that they learnt from their social network (Table 7-11). On the other hand, respondents generally neither agreed nor disagreed with the cognitive statement in regard to who networks with whom and the statements concerning improving decision making and regarding networking with persons only in their industry.

The highest mean value (3.58) was recorded for the statement concerning 'my social network of social relations has contributed to my beliefs and attitudes about how to operate my business' while the lowest mean value (2.95) was recorded for the statement about 'I usually know who networks with whom' (Table 7-11). There was agreement between respondents (45.7%) that their network of social relations contributed to beliefs and attitudes about how to operate their business while the most frequent response (36.0%) for the cognitive variable was neither agree nor disagree (Table 7-12). In terms of the proportion of responses for the variable, 'I network with persons only in my industry since they best know the business' the most frequent response (36.0%) was disagreed (Table 7-12).

A Mann-Whitney  $U$  test revealed that there was a statistically significant difference between owners and managers in terms of their cognition of their networks (Table 7-11). In view of this, the null hypothesis was rejected. The mean rank for managers (105.72) was higher than that for owners and the  $r$  value was a small effect. The category with the highest mean value was managers (3.13) although the median values were the same for owners and managers. As a result, more owners than managers disagreed with the assertion that they usually know who networks with whom (Table 7-12).

A statistically significant difference between owners and managers was recorded for the contagion variable ‘Social networking has improved the decisions I have made in the past to a great extent’ (probability value of 0.002) (Table 7-11). The mean rank for managers (3.43) was higher than that of owners. The effective size was 0.228 which was a small effect. Consequently the null hypothesis was rejected. While owners generally neither agreed nor disagreed with the statement, managers agreed with the statement (Table 7-12). On the other hand, there were more owners (20.4%) as compared with managers (9.0%) who disagreed with the statement.

**Table 7-11 Owners & Managers and Cognitive, Contagion and Semantic (Averages and Mann-Whitney *U*)**

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	z	p	r
<b>I usually know who networks with whom</b>								
Owners	100	2.79	3.00	85.46				
Managers	89	3.13	3.00	105.72				
<b>Total</b>	<b>189</b>	<b>2.95</b>	<b>3.00</b>		<b>3495.500</b>	<b>-2.677</b>	<b>0.007</b>	<b>0.195</b>
<b>Social networking has improved the decisions I have made in the past to a great extent</b>								
Owners	98	3.07	3.00	83.08				
Managers	89	3.43	4.00	106.03				
<b>Total</b>	<b>187</b>	<b>3.24</b>	<b>3.00</b>		<b>3290.500</b>	<b>-3.111</b>	<b>0.002</b>	<b>0.228</b>
<b>My network of social relations has contributed to my beliefs and attitudes about how to operate my business</b>								
Owners	98	3.23	3.00	84.80				
Managers	88	3.53	4.00	103.19				
<b>Total</b>	<b>186</b>	<b>3.58</b>	<b>4.00</b>		<b>3459.000</b>	<b>-2.500</b>	<b>0.012</b>	<b>0.183</b>
<b>I sometimes apply best practices that I learn from my social network</b>								
Owners	98	3.36	3.00	88.05				
Managers	89	3.53	4.00	100.55				
<b>Total</b>	<b>187</b>	<b>3.44</b>	<b>4.00</b>		<b>3778.000</b>	<b>-1.726</b>	<b>0.084</b>	
<b>I network with persons only in my industry since they best know the business</b>								
Owners	99	3.05	3.00	98.47				
Managers	90	2.90	3.00	91.18				
<b>Total</b>	<b>189</b>	<b>2.98</b>	<b>3.00</b>		<b>4111.500</b>	<b>-0.959</b>	<b>0.338</b>	

*Key:* N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank; *U* - Mann-Whitney *U* value; z - Z value; p - Probability value; r - R value

**Table 7-12 Owners & Managers and Cognitive, Contagion & Semantic  
(count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>I usually know who networks with whom</b>							
<b>Owners</b>	N	5	40	28	25	2	100
	%	5.0	40.0	28.0	25.0	2.0	100.0
<b>Managers</b>	N	1	18	40	28	2	89
	%	1.1	20.2	44.9	31.5	2.2	100.0
<b>Total</b>	N	<b>6</b>	<b>58</b>	<b>68</b>	<b>53</b>	<b>4</b>	<b>189</b>
	%	<b>3.2</b>	<b>30.7</b>	<b>36.0</b>	<b>28.0</b>	<b>2.1</b>	<b>100.0</b>
<b>Social networking has improved the decisions I have made in the past to a great extent</b>							
<b>Owners</b>	N	3	20	45	27	3	98
	%	3.1	20.4	45.9	27.6	3.1	100.0
<b>Managers</b>	N	1	8	34	44	2	89
	%	1.1	9.0	38.2	49.4	2.2	100.0
<b>Total</b>	N	<b>4</b>	<b>28</b>	<b>79</b>	<b>71</b>	<b>5</b>	<b>187</b>
	%	<b>2.1</b>	<b>15.0</b>	<b>42.2</b>	<b>38.0</b>	<b>2.7</b>	<b>100.0</b>
<b>My network of social relations has contributed to my beliefs and attitudes about how to operate my business</b>							
<b>Owners</b>	N	0	22	34	39	3	98
	%	0.0	22.4	34.7	39.8	3.1	100.0
<b>Managers</b>	N	1	9	26	46	6	88
	%	1.1	10.2	29.5	52.3	6.8	100.0
<b>Total</b>	N	<b>1</b>	<b>31</b>	<b>60</b>	<b>85</b>	<b>9</b>	<b>186</b>
	%	<b>0.5</b>	<b>16.7</b>	<b>32.3</b>	<b>45.7</b>	<b>4.8</b>	<b>100.0</b>
<b>I sometimes apply best practices that I learn from my social network</b>							
<b>Owners</b>	N	1	13	38	42	4	98
	%	1.0	13.3	38.8	42.9	4.1	100.0
<b>Managers</b>	N	1	9	24	52	3	89
	%	1.1	10.1	27.0	58.4	3.4	100.0
<b>Total</b>	N	<b>2</b>	<b>22</b>	<b>62</b>	<b>94</b>	<b>7</b>	<b>187</b>
	%	<b>1.1</b>	<b>11.8</b>	<b>33.2</b>	<b>50.3</b>	<b>3.7</b>	<b>100.0</b>
<b>I network with persons only in my industry since they best know the business</b>							
<b>Owners</b>	N	4	35	18	36	6	99
	%	4.0	35.4	18.2	36.4	6.1	100.0
<b>Managers</b>	N	6	33	20	26	5	90
	%	6.7	36.7	22.2	28.9	5.6	100.0
<b>Total</b>	N	<b>10</b>	<b>68</b>	<b>38</b>	<b>62</b>	<b>11</b>	<b>189</b>
	%	<b>5.3</b>	<b>36.0</b>	<b>20.1</b>	<b>32.8</b>	<b>5.8</b>	<b>100.0</b>

**Key:** Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

A Mann-Whitney *U* test performed on the variable ‘My network of social relations has contributed to my beliefs and attitudes about how to operate my business’ revealed a statistically significant difference (probability value 0.012) and accordingly the null hypothesis was rejected (Table 7-11). The *r* value was 0.183 which was a small effect. The median values were different since managers’ median was 4, agree and the owners’ median was 3, neither agree nor disagree (Table 7-11). Also, the mean value (3.53) for managers was higher than the mean value for owners (3.23).

On the other hand, there were no statistically significant differences revealed for the variable about applying best practices (Table 7-11) and as a result the null hypothesis was accepted. Results from a Mann-Whitney *U* test showed no statistically significant difference between owners and managers about the semantic variable (Table 7-11). Consequently, the null hypothesis was accepted and semantics do not explain any differences between owners’ and managers’ social networking behaviour.

### **7.3.5 Exchange, Dependency and Social Support**

The need for information potentially creates a situation of dependency. There were two variables which measured exchange and dependency and these were in regard to, social networking as the best means to know what is happening and reliance on social networking for information on the ‘goings on’ to assist with business operation. Reliance on social networks for knowledge about the ‘goings on’ in the tourism sector can potentially explain the formation of social networks. The use of the word ‘goings on’ was purposeful and was included to suggest to the respondents that the information is up-to-date and as a result this information was not previously known to them.

These variables focused on whether people in tourism and hospitality businesses social network because they want to obtain benefits and thus fulfil needs and therefore dependency and social support statements were analysed together in this sub-section. Although Monge and Contractor (2003) suggest that social support be linked to homophily and proximity, this concept was theoretically de-linked and analysed in this section. This was done since Monge and Contractor (2003) also noted that social support is facilitated through embeddedness, the ability to offer empathy, understanding and provision of resources. Social support is therefore a form of exchange. Respondents were asked how strongly they agreed with the statement, ‘social networking provides a great deal of social support for me.’

**Table 7-13 Owners & Managers and Exchange, Dependency & Social Support**  
(Averages and Mann-Whitney *U* test)

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	z	p	r
<b>Social networking is the best means for me to know exactly what is happening to assist me in operating my business</b>								
<b>Owners</b>	97	3.02	3.00	87.87				
<b>Managers</b>	89	3.21	3.00	99.63				
<b>Total</b>	<b>186</b>	<b>3.11</b>	<b>3.00</b>		<b>3770.500</b>	<b>-1.567</b>	<b>0.117</b>	
<b>I rely on my social network for general information on the ‘goings on’ to assist me in operating my business</b>								
<b>Owners</b>	98	3.13	3.00	89.26				
<b>Managers</b>	89	3.31	3.00	99.22				
<b>Total</b>	<b>187</b>	<b>3.22</b>	<b>3.00</b>		<b>3896.000</b>	<b>-1.328</b>	<b>0.184</b>	
<b>Social networking provides a great deal of social support for me</b>								
<b>Owners</b>	98	2.88	3.00	86.62				
<b>Managers</b>	88	3.12	3.00	101.16				
<b>Total</b>	<b>186</b>	<b>2.99</b>	<b>3.00</b>		<b>3637.500</b>	<b>-1.940</b>	<b>0.052</b>	

*Key:* N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
*U* - Mann-Whitney *U* value; z - Z value; p - Probability value; r - R value

**Table 7-14 Owners & Managers and Exchange, Dependency & Social Support  
(count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>Social networking is the best means for me to know exactly what is happening to assist me in operating my business</b>							
<b>Owners</b>	N	2	30	32	30	3	97
	%	2.1	30.9	33.0	30.9	3.1	100.0
<b>Managers</b>	N	3	18	28	37	3	89
	%	3.4	20.2	31.5	41.6	3.4	100.0
<b>Total</b>	N	<b>5</b>	<b>48</b>	<b>60</b>	<b>67</b>	<b>6</b>	<b>186</b>
	%	<b>2.7</b>	<b>25.8</b>	<b>32.3</b>	<b>36.0</b>	<b>3.2</b>	<b>100.0</b>
<b>I rely on my social network for general information on the 'goings on' to assist me in operating my business</b>							
<b>Owners</b>	N	1	12	33	51	2	98
	%	1.0	12.1	33.3	51.5	2.0	100.0
<b>Managers</b>	N	0	16	28	42	4	88
	%	0.0	17.8	31.1	46.7	4.4	100.0
<b>Total</b>	N	<b>1</b>	<b>28</b>	<b>61</b>	<b>93</b>	<b>6</b>	<b>186</b>
	%	<b>0.5</b>	<b>14.8</b>	<b>32.3</b>	<b>49.2</b>	<b>3.2</b>	<b>100.0</b>
<b>Social networking provides a great deal of social support for me</b>							
<b>Owners</b>	N	3	31	41	21	2	98
	%	3.1	31.6	41.8	21.4	2.0	100.0
<b>Managers</b>	N	2	22	30	31	3	88
	%	2.3	25.0	34.1	35.2	3.4	100.0
<b>Total</b>	N	<b>5</b>	<b>53</b>	<b>71</b>	<b>52</b>	<b>5</b>	<b>186</b>
	%	<b>2.7</b>	<b>28.5</b>	<b>38.2</b>	<b>28.0</b>	<b>2.7</b>	<b>100.0</b>

*Key:* Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

Based on the median values, respondents generally neither agreed nor disagreed with the exchange, dependency and social support statements. The highest mean value (3.22) was recorded for the statement about reliance on social network for general information about the 'goings on' to assist with business operation (Table 7-13). The lowest mean value (2.99), which is a medium mean value, was recorded for the variable about social support (Table 7-13).

Overall, the most frequent responses for the both dependency statements were that respondents agreed (36.0% and 49.2%) (Table 7-14). On the other hand, respondents generally neither agreed nor disagreed (38.2%) with the social support statement (Table 7-14). Mann-Whiney *U* tests were performed on the exchange, dependency and social support variables and these tests revealed that there were no statistically significant differences between owners and managers and consequently the null hypotheses were accepted (Table 7-13). These findings suggest that exchange, dependency and social support theories do not explain for the differences between owners and managers social networking practices.

### **7.3.6 Time for Social Networking**

It takes time to transfer knowledge (Awad and Ghaziri, 2004). A statement about time constraint was developed after the pilot survey (Section 6.5.6.2). If social networking is the mechanism by which knowledge is transferred then it is necessary to assess whether or not there is a time constraint that influences social networking practices.

Overall respondents neither agreed nor disagreed that time did not stop them from social networking. Generally the most frequent response (36.3%) was agreement that 'I do have a time constraint, but this does not stop me from social networking' (Table 7-16). The results of a Mann-Whitney *U* test showed no statistically significant difference between owners and managers and the null hypothesis was therefore accepted (Table 7-15). Consequently, time constraint does not contribute to an explanation of the differences in social networking practices of owners and managers.

**Table 7-15 Owners & Managers and Time to Social Network**  
(Averages and Mann-Whitney *U* test)

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	Z	p	r
<b>I do have a time constraint, but this does not stop me from social networking</b>								
<b>Owners</b>	101	3.03	3.00	88.78				
<b>Managers</b>	89	3.29	4.00	103.12				
<b>Total</b>	<b>190</b>	<b>3.15</b>	<b>3.00</b>		<b>3816.000</b>	<b>-1.880</b>	<b>0.060</b>	

*Key:* N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank; *U* - Mann-Whitney *U* value; z - Z value; p - Probability value; r - R value.

**Table 7-16 Owners & Managers and Time to Social Network (count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>I do have a time constraint, but this does not stop me from social networking</b>							
<b>Owners</b>	N	3	29	35	30	4	101
	%	3.0	28.7	34.7	29.7	4.0	100.0
<b>Managers</b>	N	2	25	15	39	8	89
	%	2.2	28.1	16.9	43.8	9.0	100.0
<b>Total</b>	N	<b>5</b>	<b>54</b>	<b>50</b>	<b>69</b>	<b>12</b>	<b>190</b>
	%	<b>2.6</b>	<b>28.4</b>	<b>26.3</b>	<b>36.3</b>	<b>6.3</b>	<b>100.0</b>

*Key:* Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

## 7.4 Knowledge Sharing

The influences on knowledge sharing, found in the knowledge management literature, were categorised as feelings, preferences, status of knower, prior experience, time relating to knowledge sharing and cost of sharing knowledge. These categories were included in the conceptual design (Figure 6-4). These knowledge sharing influences are related to fears, positive and negative feelings and feelings of constraint. Such influences are also related to certain sub-conscious preferences such as for example sharing in groups versus sharing on a one to one basis and sharing information verbally.



Other influences towards knowledge sharing relate to the circumstances of the receiver of the information, such as for example whether the knowledge receiver is previously known, knowledgeable, of a high social/economic status and someone to improve a relationship with. Prior experience may also influence inter-organisational knowledge sharing (Cohen and Levinthal, 1990). Serendipity is also a consideration and relates to whether information is received by chance or whether opportunities are made to share information.

These influences on inter-organisational knowledge sharing were operationally defined as a series of statements measured against a five-point Likert agreement scale. Once again, values were assigned to the scale: 1 for strongly disagree (SD), 2 for disagree (D), 3 for neither agree nor disagree (NA/D), 4 for agree (A), and 5 for strongly agree (SA). As before three types of analyses were conducted: mean and median values, Mann-Whitney *U* tests and frequency percentages.

#### **7.4.1 Feelings**

Feelings contribute to attitude development which may be associated with the choice of certain behaviours (Ajzen, 1988). For information to be shared, respondents' feelings have to be examined to determine why they do, or do not, share information. One general outcome, which helps knowledge sharing, is a positive feeling towards information sending and receiving practices (Bock and Kim, 2002). On the other hand, fear may influence knowledge sharing (Cross et al., 2001). A good feeling, like when giving a gift, is another influencing factor (Choi and Hilton, 2005). In addition, some business people simply do not like sharing information which is a negative feeling.

There were four feelings' variables. First, fear is a negative feeling that may result in limited information sending and receiving practices. The fear statement particularly measured the fear of sharing information with competitors. By phrasing the statement to specify who is being feared, competitors, the statement examined a specific circumstance. Second, altruistic tendencies, such as gift giving, may influence knowledge sharing. Third, during the pilot phase of the study respondents noted that they just do not like to share information (6.5.6.2). Such a feeling influences whether or not business people share information which is used to build knowledge. Fourth, a statement was specifically worded in terms of whether respondents generally have a positive feeling about sharing information with persons in other businesses.

**Table 7-17 Owners & Managers and Feelings (Averages and Mann-Whitney *U* test)**

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	z	p	r
<b>I am fearful to share information with my competitors</b>								
<b>Owners</b>	97	2.71	3.00	90.76				
<b>Managers</b>	89	2.82	3.00	96.48				
<b>Total</b>	<b>186</b>	<b>2.76</b>	<b>3.00</b>		<b>4051.000</b>	<b>-0.773</b>	<b>0.440</b>	
<b>I get a good feeling inside, like giving a gift, when I share information</b>								
<b>Owners</b>	99	3.00	3.00	95.93				
<b>Managers</b>	88	2.95	3.00	91.82				
<b>Total</b>	<b>187</b>	<b>2.98</b>	<b>3.00</b>		<b>4164.500</b>	<b>-0.551</b>	<b>0.581</b>	
<b>I generally do not like sharing information</b>								
<b>Owners</b>	100	2.63	2.00	96.12				
<b>Managers</b>	88	2.56	2.00	92.66				
<b>Total</b>	<b>188</b>	<b>2.60</b>	<b>2.00</b>		<b>4238.500</b>	<b>-0.467</b>	<b>0.641</b>	
<b>I generally have a positive feeling about sharing information with persons in other businesses</b>								
<b>Owners</b>	99	3.52	4.00	93.19				
<b>Managers</b>	88	3.58	4.00	94.91				
<b>Total</b>	<b>187</b>	<b>3.55</b>	<b>4.00</b>		<b>4276.000</b>	<b>-0.237</b>	<b>0.813</b>	

**Key:** N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
*U* - Mann-Whitney *U* value; z - Z value; p - Probability value; r - R value.

**Table 7-18 Owners & Managers and Feelings (count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>I am fearful to share information with my competitors</b>							
<b>Owners</b>	N	1	42	40	12	2	97
	%	1.0	43.3	41.2	12.4	2.1	100.0
<b>Managers</b>	N	4	34	28	20	3	89
	%	4.5	38.2	31.5	22.5	3.4	100.0
<b>Total</b>	N	<b>5</b>	<b>76</b>	<b>68</b>	<b>32</b>	<b>5</b>	<b>187</b>
	%	<b>2.7</b>	<b>40.9</b>	<b>36.6</b>	<b>17.2</b>	<b>2.7</b>	<b>100.0</b>
<b>I get a good feeling inside, like giving a gift, when I share information</b>							
<b>Owners</b>	N	4	20	41	39	2	99
	%	4.1	20.4	41.4	39.8	2.0	100.0
<b>Managers</b>	N	2	16	39	35	2	88
	%	2.2	17.8	44.3	38.9	2.2	100.0
<b>Total</b>	N	<b>6</b>	<b>36</b>	<b>80</b>	<b>74</b>	<b>4</b>	<b>187</b>
	%	<b>3.2</b>	<b>19.1</b>	<b>42.8</b>	<b>39.4</b>	<b>2.1</b>	<b>100.0</b>
<b>I generally do not like sharing information</b>							
<b>Owners</b>	N	5	47	30	16	2	100
	%	5.0	47.0	30.0	16.0	2.0	100.0
<b>Managers</b>	N	6	41	28	12	1	88
	%	6.8	46.6	31.8	13.6	1.1	100.0
<b>Total</b>	N	<b>11</b>	<b>88</b>	<b>58</b>	<b>28</b>	<b>3</b>	<b>188</b>
	%	<b>5.9</b>	<b>46.8</b>	<b>30.9</b>	<b>14.9</b>	<b>1.6</b>	<b>100.0</b>
<b>I generally have a positive feeling about sharing information with persons in other businesses</b>							
<b>Owners</b>	N	1	9	33	50	6	99
	%	1.0	9.1	33.3	50.5	6.1	100.0
<b>Managers</b>	N	0	4	36	41	7	88
	%	0.0	4.5	40.9	46.6	8.0	100.0
<b>Total</b>	N	<b>1</b>	<b>13</b>	<b>69</b>	<b>91</b>	<b>13</b>	<b>187</b>
	%	<b>0.5</b>	<b>7.0</b>	<b>36.9</b>	<b>48.7</b>	<b>7.0</b>	<b>100.0</b>

**Key:** Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

Overall median values for feelings about being fearful to share information with competitors and gift giving were ‘neither agree nor disagree’ (Table 7-17). As some of the statements were negatively worded there was disagreement with several statements. The overall median for the variable concerning ‘do not like sharing information’ was ‘disagree’ and the most frequent response (40.9%) in regard to ‘I am fearful to share information with my competitors’ was ‘disagree’ (Table 7-18). Similarly, the most frequent response (46.8%) was ‘disagree’ concerning ‘I generally do not like sharing information.’

The most frequent response (42.8%) was 'neither agree nor disagree' concerning 'I get a good feeling inside, like giving a gift, when I share information' and some 48.7% of respondents agreed that they have a positive feeling about sharing information with persons in other businesses. Mann-Whitney *U* tests revealed no statistically significant differences for the four feelings' variables and consequently the null hypotheses were accepted for these variables.

#### **7.4.2 Preferences**

Knowledge sharing preferences relate to particular knowledge sharing practices that the information sharer adopts. The three preferences which influence knowledge sharing were deemed to be sharing information in groups; the usual way to share information is on a one to one basis; and preference for sharing information verbally (Bennett, 1998; Argote & Ingram, 2000; Carlsson, 2003; Jackson, 2005; Sherif & Xing, 2006). For these three variables, averages, Mann-Whitney *U* tests and distribution analyses were performed. The main goal was to understand whether these preferences were likely to influence the context in which knowledge was shared by owners and managers.

Overall a median value of 3 was revealed for each variable. The mean value for sharing information on a one to one basis was medium (3.34) followed by sharing information verbally (3.32) and the lowest mean value was for preference to share information in groups (2.66). Generally, while the most frequent response (42.9%) was 'neither agree nor disagree' for the variable about preference to share information in groups, the most frequent response (43.9%) was 'agree' for the variable about sharing information on a one to one basis. Based on Mann-Whitney *U* tests, no statistically significant differences were recorded and therefore the null hypotheses were accepted (Table 7-19).

**Table 7-19 Owners & Managers and Preferences (Averages and Mann-Whitney U test)**

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	U	z	p	r
<b>I prefer sharing information in groups</b>								
<b>Owners</b>	95	2.59	3.00	87.59				
<b>Managers</b>	87	2.74	3.00	95.76				
<b>Total</b>	<b>182</b>	<b>2.66</b>	<b>3.00</b>		<b>3761.500</b>	<b>-1.132</b>	<b>0.258</b>	
<b>I usually share information on a one to one basis</b>								
<b>Owners</b>	97	3.44	4.00	100.31				
<b>Managers</b>	90	3.23	3.00	87.20				
<b>Total</b>	<b>187</b>	<b>3.34</b>	<b>3.00</b>		<b>3753.000</b>	<b>-1.776</b>	<b>0.076</b>	
<b>I prefer sharing information verbally</b>								
<b>Owners</b>	99	3.36	3.00	98.68				
<b>Managers</b>	90	3.27	3.00	90.95				
<b>Total</b>	<b>189</b>	<b>3.32</b>	<b>3.00</b>		<b>4090.500</b>	<b>-1.046</b>	<b>0.296</b>	

*Key:* N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank; U - Mann-Whitney U value; z - Z value; p - Probability value; r - R value.

**Table 7-20 Owners and Managers and Preferences (count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>I prefer sharing information in groups</b>							
<b>Owners</b>	N	3	40	45	7	0	95
	%	3.2	42.1	47.4	7.4	0.0	100.0
<b>Managers</b>	N	3	34	33	17	0	87
	%	3.4	39.1	37.9	19.5	0.0	100.0
<b>Total</b>	N	<b>6</b>	<b>74</b>	<b>78</b>	<b>24</b>	<b>0</b>	<b>182</b>
	%	<b>3.3</b>	<b>40.7</b>	<b>42.9</b>	<b>13.2</b>	<b>0.0</b>	<b>100.0</b>
<b>I usually share information on a one to one basis</b>							
<b>Owners</b>	N	1	13	30	48	5	97
	%	1.0	13.4	30.9	49.5	5.2	100.0
<b>Managers</b>	N	2	15	36	34	3	90
	%	2.2	16.7	40.0	37.8	3.3	100.0
<b>Total</b>	N	<b>3</b>	<b>28</b>	<b>66</b>	<b>82</b>	<b>8</b>	<b>187</b>
	%	<b>1.6</b>	<b>15.0</b>	<b>35.3</b>	<b>43.9</b>	<b>4.3</b>	<b>100.0</b>
<b>I prefer sharing information verbally</b>							
<b>Owners</b>	N	2	10	43	38	6	99
	%	2.0	10.1	43.4	38.4	6.1	100.0
<b>Managers</b>	N	0	14	43	28	5	90
	%	0.0	15.6	47.8	31.1	5.6	100.0
<b>Total</b>	N	<b>2</b>	<b>24</b>	<b>86</b>	<b>66</b>	<b>11</b>	<b>189</b>
	%	<b>1.1</b>	<b>12.7</b>	<b>45.5</b>	<b>34.9</b>	<b>5.8</b>	<b>100.0</b>

*Key:* Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

### 7.4.3 Status of Knower

Awad and Ghaziri (2004) pointed out that status of the knower may act as an inhibitor to knowledge transfer. Status of the knower relates to characteristics which the receiver of the information has and these characteristics influence knowledge sharing (Knoke, 1983, 1994). Characteristics include social and economic status, being knowledgeable, similar interests, and desire for relationship improvement (Powell et al., 1996, Spender and Grant, 1996; Argote and Ingram, 2000). These characteristics help the sharing of information since people share information with other people that they are comfortable with (Cross et al., 2001).

**Table 7-21 Owners & Managers and Status of Knower**  
(Averages and Mann-Whitney *U* test)

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	<i>z</i>	<i>p</i>	<i>r</i>
<b>I prefer to share information with persons of a higher social/economic status than myself</b>								
Owners	99	2.42	2.00	91.30				
Managers	90	2.54	3.00	99.07				
<b>Total</b>	<b>189</b>	<b>2.48</b>	<b>2.00</b>		<b>4088.500</b>	<b>-1.073</b>	<b>0.283</b>	
<b>I usually share information with persons who I perceive to also be knowledgeable</b>								
Owners	99	3.41	4.00	96.23				
Managers	90	3.38	4.00	93.64				
<b>Total</b>	<b>189</b>	<b>3.40</b>	<b>4.00</b>		<b>4333.000</b>	<b>-0.354</b>	<b>0.724</b>	
<b>I share information with people who have similar interests to me</b>								
Owners	99	3.57	4.00	102.49				
Managers	90	3.29	3.00	86.76				
<b>Total</b>	<b>189</b>	<b>3.43</b>	<b>4.00</b>		<b>3713.000</b>	<b>-2.157</b>	<b>0.031</b>	<b>0.157</b>
<b>I share information with people with whom I want to improve my relationship</b>								
Owners	97	3.18	3.00	93.06				
Managers	88	3.19	3.00	92.94				
<b>Total</b>	<b>185</b>	<b>3.18</b>	<b>3.00</b>		<b>4262.500</b>	<b>-0.016</b>	<b>0.987</b>	

**Key:** N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
*U* - Mann-Whitney *U* value; *z* - Z value; *p* - Probability value; *r* - R value.

**Table 7-22 Owners & Managers and Status of Knower (count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>I prefer to share information with persons of a higher social/economic status than myself</b>							
<b>Owners</b>	N	8	45	42	4	0	99
	%	8.1	45.5	42.4	4.0	0.0	100.0
<b>Managers</b>	N	4	39	41	6	0	90
	%	4.4	43.3	45.6	6.7	0.0	100.0
<b>Total</b>	N	<b>12</b>	<b>84</b>	<b>83</b>	<b>10</b>	<b>0</b>	<b>189</b>
	%	<b>6.3</b>	<b>44.4</b>	<b>43.9</b>	<b>5.3</b>	<b>0.0</b>	<b>100.0</b>
<b>I usually share information with persons who I perceive to also be knowledgeable</b>							
<b>Owners</b>	N	1	12	33	51	2	99
	%	1.0	12.1	33.3	51.5	2.0	100.0
<b>Managers</b>	N	0	16	28	42	4	90
	%	0.0	17.8	31.1	46.7	4.4	100.0
<b>Total</b>	N	<b>1</b>	<b>28</b>	<b>61</b>	<b>93</b>	<b>6</b>	<b>189</b>
	%	<b>0.5</b>	<b>14.8</b>	<b>32.3</b>	<b>49.2</b>	<b>3.2</b>	<b>100.0</b>
<b>I share information with people who have similar interests to me</b>							
<b>Owners</b>	N	1	7	31	55	5	99
	%	1.0	7.1	31.3	55.6	5.1	100.0
<b>Managers</b>	N	1	19	26	41	3	90
	%	1.1	21.1	28.9	45.6	3.3	100.0
<b>Total</b>	N	<b>2</b>	<b>26</b>	<b>57</b>	<b>96</b>	<b>8</b>	<b>189</b>
	%	<b>1.1</b>	<b>13.8</b>	<b>30.2</b>	<b>50.8</b>	<b>4.2</b>	<b>100.0</b>
<b>I share information with people with whom I want to improve my relationship</b>							
<b>Owners</b>	N	1	23	32	40	1	97
	%	1.0	23.7	33.0	41.2	1.0	100.0
<b>Managers</b>	N	1	17	37	30	3	88
	%	1.0	19.3	42.0	34.1	3.4	100.0
<b>Total</b>	N	<b>2</b>	<b>40</b>	<b>69</b>	<b>70</b>	<b>4</b>	<b>185</b>
	%	<b>1.1</b>	<b>21.6</b>	<b>37.3</b>	<b>37.8</b>	<b>2.2</b>	<b>100.0</b>

*Key:* Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

Overall, the most frequently agreed with statement was sharing information with people who have similar interests (50.8%) and therefore this variable had the highest mean value of 3.43 (Table 7-22). On the other hand, respondents most frequently disagreed with the statement that they preferred to share information with persons of a higher social/economic status (44.4%). Sharing information with perceived knowledgeable people had a median value of 4. A median value of 3 was recorded for the variable about sharing information to improve a relationship since a lower percentage of respondents agreed with this variable (Table 7-22).

A Mann-Whitney *U* test showed there was a statistically significant difference between owners and managers in regard to their sharing information with people who have similar interests to them and therefore the null hypothesis was rejected: the median for owners was 'agree' and the median for managers was 'neither agree nor disagree.' The *r* value was 0.157 which was a small effect. This difference can be explained by the proportion (21.1%) of managers who disagreed with the statement (Table 7-22).

#### **7.4.4 Prior Experience**

Prior experiences are associated with knowledge sharing practices (Cohen and Levinthal, 1990; Gulati, 1998). Reciprocal sharing of information is one reason why business people may feel obligated to share information with someone who previously shared information with them. As such, based on a prior experience of receiving information from someone previously known to them, business people may in turn reciprocate and share information. Prior experience statements were specifically worded to refer to the 'I' do something (share information), thereby suggesting that the behaviour was linked to a prior experience. There were two variables, 'I generally share information with people I knew previously' and 'I generally share information with persons who share information with me.' The results of the descriptive and inferential tests are shown in Tables 7-23 and 7-24 below.



**Table 7-23 Owners & Managers and Prior Experience**  
(Averages and Mann-Whitney *U* test)

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	<i>z</i>	<i>p</i>	<i>r</i>
<b>I generally share information with people I know previously</b>								
<b>Owners</b>	98	3.58	4.00	96.24				
<b>Managers</b>	99	3.67	4.00	92.61				
<b>Total</b>	<b>188</b>	<b>3.56</b>	<b>4.00</b>		<b>4239.500</b>	<b>-0.529</b>	<b>0.597</b>	
<b>I generally share information with persons who share information with me</b>								
<b>Owners</b>	99	3.67	4.00	94.60				
<b>Managers</b>	90	3.71	4.00	95.44				
<b>Total</b>	<b>189</b>	<b>3.69</b>	<b>4.00</b>		<b>4415.000</b>	<b>-0.127</b>	<b>0.899</b>	

*Key:* N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
*U* - Mann-Whitney *U* value; *z* - Z value; *p* - Probability value; *r* - R value.

Generally respondents agreed with the two prior experience variables as evidenced by a median of 4 (Table 7-23) and similarly frequency results revealed general agreement with the two prior experience variables (Table 7-24). Overall, the majority of respondents agreed that they share information with people known previously (62.2%) and that they share information with persons who share information with them (66.1%). The overall mean value for reciprocal sharing of information was high (3.69). The results of the Mann-Whitney *U* tests undertaken on the two prior experience variables are also shown within this table and there were no statistically significant differences between owners and managers and accordingly the null hypotheses were accepted.

**Table 7-24 Owners & Managers and Prior Experience (count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>I generally share information with people I know previously</b>							
<b>Owners</b>	N	1	11	19	64	3	98
	%	1.0	11.2	19.4	65.3	3.1	100.0
<b>Managers</b>	N	0	13	20	53	4	90
	%	0.0	14.4	22.2	58.9	4.4	100.0
<b>Total</b>	N	<b>1</b>	<b>24</b>	<b>39</b>	<b>117</b>	<b>7</b>	<b>188</b>
	%	<b>0.5</b>	<b>12.8</b>	<b>20.7</b>	<b>62.2</b>	<b>3.7</b>	<b>100.0</b>
<b>I generally share information with persons who share information with me</b>							
<b>Owners</b>	N	1	8	19	66	5	99
	%	1.0	8.1	19.2	66.7	5.1	100.0
<b>Managers</b>	N	0	5	21	59	5	90
	%	0.0	5.6	23.3	65.6	5.6	100.0
<b>Total</b>	N	<b>1</b>	<b>13</b>	<b>40</b>	<b>125</b>	<b>10</b>	<b>189</b>
	%	<b>0.5</b>	<b>6.9</b>	<b>21.2</b>	<b>66.1</b>	<b>5.3</b>	<b>100.0</b>

**Key:** Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

### 7.4.5 Serendipity

Serendipity means that business people obtain information ‘out of the blue.’ Important information can be obtained through an opportunity to receive or share information (Lundvall, 1993; Madhavan et al., 1998; Argote & Ingram, 2000; Carlson, 2003). The opposite of serendipity relates to making opportunities to share information and therefore information is not received by chance. Badaracco (1991) suggests that the chance that knowledge escapes decreases with group and long-term relationships based on trust. In addition, a knowledge network depends on chance conversations and there are concerns regarding access to these informal networks (Davenport and Prusak, 1998).

**Table 7-25 Owners & Managers and Serendipity (Averages and Mann-Whitney *U* test)**

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	<i>z</i>	<i>p</i>	<i>r</i>
<b>I sometimes receive important business information by chance</b>								
<b>Owners</b>	99	3.65	4.00	91.51				
<b>Managers</b>	90	3.79	4.00	98.84				
<b>Total</b>	<b>189</b>	<b>3.71</b>	<b>4.00</b>		<b>4109.000</b>	<b>-1.139</b>	<b>0.255</b>	
<b>There are many opportunities for me to receive important business information</b>								
<b>Owners</b>	97	3.11	3.00	86.16				
<b>Managers</b>	88	3.35	3.50	100.53				
<b>Total</b>	<b>185</b>	<b>3.23</b>	<b>3.00</b>		<b>3605.000</b>	<b>-1.934</b>	<b>0.053</b>	
<b>I generally share information once the opportunity presents itself</b>								
<b>Owners</b>	99	3.61	4.00	99.39				
<b>Managers</b>	90	3.51	4.00	90.17				
<b>Total</b>	<b>189</b>	<b>3.56</b>	<b>4.00</b>		<b>4020.000</b>	<b>-1.324</b>	<b>0.185</b>	
<b>I sometimes make opportunities to share information</b>								
<b>Owners</b>	98	3.12	3.00	86.18				
<b>Managers</b>	90	3.41	4.00	103.56				
<b>Total</b>	<b>188</b>	<b>3.26</b>	<b>3.00</b>		<b>3594.500</b>	<b>-2.337</b>	<b>0.019</b>	<b>0.170</b>

**Key:** N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
*U* - Mann-Whitney *U* value; *z* - Z value; *p* - Probability value; *r* - R value.

The overall median values for statements about receiving information by chance and sharing information when the opportunity presents itself were 'agree'. The mean value for receiving information by chance was high (3.71) and this is because the majority of respondents (69.8%) agreed that they received important business information by chance (Table 7-26). The majority (59.8%) also agreed that they shared information once the opportunity presented itself. The most frequent response (38.4%) was agreed for the statement about many opportunities to receive important business information. Similarly, the most frequent response (42.0%) was to agree with the statement concerning 'I sometimes make opportunities to share information.'

The Mann-Whitney *U* test revealed a statistically significant difference between owners and managers in regard to the statement about making opportunities to share information (Table 7-25). Managers had a higher mean rank (103.56) that is managers were more aware of making opportunities to share information. This difference was evident since 48.9% of managers as compared with 35.7% of owners agreed with the statement.

**Table 7-26 Owners & Managers and Serendipity (count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>I sometimes receive important business information by chance</b>							
<b>Owners</b>	N	1	10	16	68	4	99
	%	1.0	10.1	16.2	68.7	4.0	100.0
<b>Managers</b>	N	0	5	15	64	6	90
	%	0.0	5.6	16.7	71.1	6.7	100.0
<b>Total</b>	<b>N</b>	<b>1</b>	<b>15</b>	<b>31</b>	<b>132</b>	<b>10</b>	<b>189</b>
	<b>%</b>	<b>0.5</b>	<b>7.9</b>	<b>16.4</b>	<b>69.8</b>	<b>5.3</b>	<b>100.0</b>
<b>There are many opportunities for me to receive important business information</b>							
<b>Owners</b>	N	2	23	38	30	4	97
	%	2.1	23.7	39.2	30.9	4.1	100.0
<b>Managers</b>	N	0	16	28	41	3	88
	%	0.0	18.2	31.8	46.6	3.4	100.0
<b>Total</b>	<b>N</b>	<b>2</b>	<b>39</b>	<b>66</b>	<b>71</b>	<b>7</b>	<b>185</b>
	<b>%</b>	<b>1.1</b>	<b>21.1</b>	<b>35.7</b>	<b>38.4</b>	<b>3.8</b>	<b>100.0</b>
<b>I generally share information once the opportunity presents itself</b>							
<b>Owners</b>	N	1	9	21	65	3	99
	%	1.0	9.1	21.2	65.7	3.0	100.0
<b>Managers</b>	N	0	8	31	48	3	90
	%	0.0	8.9	34.4	53.3	3.3	100.0
<b>Total</b>	<b>N</b>	<b>1</b>	<b>17</b>	<b>52</b>	<b>113</b>	<b>6</b>	<b>189</b>
	<b>%</b>	<b>0.5</b>	<b>9.0</b>	<b>27.5</b>	<b>59.8</b>	<b>3.2</b>	<b>100.0</b>
<b>I sometimes make opportunities to share information</b>							
<b>Owners</b>	N	1	25	35	35	2	98
	%	1.0	25.5	35.7	35.7	2.0	100.0
<b>Managers</b>	N	0	13	30	44	3	90
	%	0.0	14.4	33.3	48.9	3.3	100.0
<b>Total</b>	<b>N</b>	<b>1</b>	<b>38</b>	<b>65</b>	<b>79</b>	<b>5</b>	<b>188</b>
	<b>%</b>	<b>0.5</b>	<b>20.2</b>	<b>34.6</b>	<b>42.0</b>	<b>2.7</b>	<b>100.0</b>

**Key:** Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

### 7.4.6 Time to Share Information

Time influences the sharing of information (Boisot, 1998). Certain types of shared information and communication methods are affected by time (Haas and Hansen, 2007). Knowledge transfer is also time-consuming (Awad and Ghaziri, 2004). It also takes time to understand shared knowledge so that in turn this knowledge can be shared again (Cohen and Levinthal, 1990).

The overall median for the statement ‘I feel like I do not have time to share information’ was ‘neither agree nor disagree’ (Table 7-27). The most frequent response (39.4%) with this time statement was ‘disagree’ (Table 7-28). The Mann-Whitney *U* test revealed that there was no statistically significant difference between owners and managers and consequently the null hypothesis was accepted (Table 7-27), hence time does not emerge from this data as a variable that differentiates between owners and managers in regard to their knowledge sharing practices.

**Table 7-27 Owners & Managers and Time to Share Information**  
(Averages and Mann-Whitney *U* test)

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	<i>U</i>	<i>z</i>	<i>p</i>	<i>r</i>
<b>I feel like I do not have the time to share information</b>								
<b>Owners</b>	98	2.85	3.00	95.59				
<b>Managers</b>	90	2.79	3.00	93.31				
<b>Total</b>	<b>188</b>	<b>2.82</b>	<b>3.00</b>		<b>4303.000</b>	<b>-0.305</b>	<b>0.760</b>	

**Key:** N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank;  
*U* - Mann-Whitney *U* value; *z* - Z value; *p* - Probability value; *r* - R value.

**Table 7-28 Owners & Managers and Time to Share Information (count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>I feel like I do not have the time to share information</b>							
<b>Owners</b>	N	2	39	33	20	4	98
	%	2.0	39.8	33.7	20.4	4.1	100.0
<b>Managers</b>	N	2	35	35	16	2	90
	%	2.2	38.9	38.9	17.8	2.2	100.0
<b>Total</b>	N	<b>4</b>	<b>74</b>	<b>68</b>	<b>36</b>	<b>6</b>	<b>188</b>
	%	<b>2.1</b>	<b>39.4</b>	<b>36.2</b>	<b>19.1</b>	<b>3.2</b>	<b>100.0</b>

**Key:** Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

### 7.4.7 Cost

Cost has been noted as a barrier to information sharing (Boisot, 1998; Cooper, 2006). Accordingly, respondents were asked specifically to consider the aspect of cost and to agree or disagree that it is very costly to share information. Meeting cost was specified so that first, the respondent is clear about what type of cost is being considered and second, to determine if this type of cost acts as a barrier to a tacit-based (face to face) communication method which costs more.

**Table 7-29 Owners & Managers and Cost to Share Information (Averages and Mann-Whitney U test)**

OWNERS & MANAGERS	STATISTICS							
	N	MV	ME	MR	U	z	p	r
<b>It is very costly, when I consider meeting costs, to share information</b>								
<b>Owners</b>	98	2.71	3.00	93.73				
<b>Managers</b>	88	2.73	3.00	93.24				
<b>Total</b>	<b>186</b>	<b>2.72</b>	<b>3.00</b>		<b>4289.500</b>	<b>-0.066</b>	<b>0.947</b>	
<b>The value obtained from sharing information far outweighs any cost</b>								
<b>Owners</b>	98	3.07	3.00	89.72				
<b>Managers</b>	86	3.16	3.00	95.66				
<b>Total</b>	<b>184</b>	<b>3.11</b>	<b>3.00</b>		<b>3942.000</b>	<b>-0.852</b>	<b>0.394</b>	

**Key:** N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank; U - Mann-Whitney U value; z - Z value; p - Probability value; r - R value.

Overall, respondents neither agreed nor disagreed with both statements relating to cost as the median values were 3. In percentage terms respondents neither agreed nor disagreed that it was very costly to share information (45.7%) and the majority agreed that the value obtained from sharing information far outweighs any cost (58.7%) (Table 7-29). There were no statistically significant differences between owners and managers agreement with the two cost variables and consequently, the null hypotheses were accepted (Table 7-30). As a result, cost cannot be used as a basis to explain the differences between owners and managers knowledge sharing practices.

**Table 7-30 Owners & Managers and Cost to Share Information (count and percentages)**

OWNERS & MANAGERS		SCALE					TOTAL
		SD	D	NA/D	A	SA	
<b>It is very costly, when I consider meeting costs, to share information</b>							
<b>Owners</b>	N	5	32	48	12	1	98
	%	5.1	32.7	49.0	12.2	1.0	100.0
<b>Managers</b>	N	1	36	37	14	0	88
	%	1.1	40.9	42.0	15.9	0.0	100.0
<b>Total</b>	N	<b>6</b>	<b>68</b>	<b>85</b>	<b>26</b>	<b>1</b>	<b>186</b>
	%	<b>3.2</b>	<b>36.6</b>	<b>45.7</b>	<b>14.0</b>	<b>0.5</b>	<b>100.0</b>
<b>The value obtained from sharing information far outweighs any cost</b>							
<b>Owners</b>	N	1	15	61	18	3	98
	%	1.0	15.3	62.2	18.4	3.1	100.0
<b>Managers</b>	N	0	14	47	22	3	86
	%	0.0	16.3	54.7	25.6	3.5	100.0
<b>Total</b>	N	<b>1</b>	<b>29</b>	<b>108</b>	<b>40</b>	<b>6</b>	<b>184</b>
	%	<b>0.5</b>	<b>15.8</b>	<b>58.7</b>	<b>21.7</b>	<b>3.3</b>	<b>100.0</b>

**Key:** Strongly Disagree (SD); Disagree (D); Neither Agree nor Disagree (NA/D); Agree (A); Strongly Agree (SA); N – count; % - percentage

## **7.5 Inter-organisational Knowledge Sharing**

Principal Components Analysis (PCA) was performed on the 5-point Likert agreement scale data regarding social networking and knowledge sharing. The reason for conducting PCA was to derive components that explain networking and knowledge sharing practices. The details about performing PCA were discussed previously (Sub-section 6.7.1). First, there were variables relating to networking (20 variables) and those relating to knowledge sharing (25 variables). Second, negative scale items were reversed since the variables were being reduced. This section analyses data obtained from all respondents.

### **7.5.1 Social Networking**

The PCA procedure as detailed by Pallant (2007) was followed. First, the KMO and Barlett's test of sphericity was performed to ensure that the data was suitable for PCA. A KMO result of 0.6 or above, means that the data is appropriate for PCA (Pallant, 2007). The components were extracted using the principal components method. The Screeplot was selected in the display section and Eigenvalue over 1 was selected. The Screeplot can be used to select the number of extracted components in the factor solution. For example, an elbow in the screeplot suggests that the number of components immediately preceding the elbow should be used.

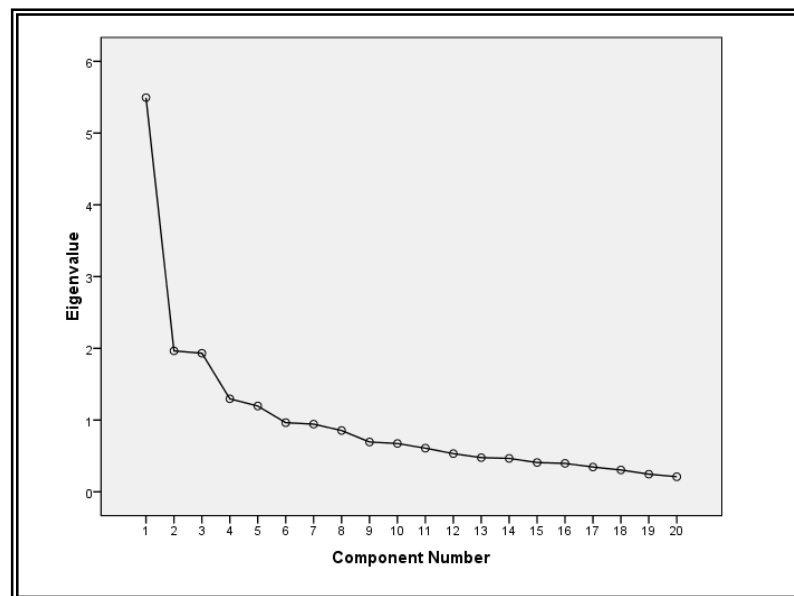
The rotation of the factors was particularly important since rotation redistributes the variance between each factor. 'VARIMAX' rotation was selected since the purpose of the test was to derive independent components. The next step was to deal with missing values by clicking on exclude cases pair wise. Finally a factor loading co-efficient was selected, 0.45 (Sub-section 6.7.1) and PCA was performed. The KMO Bartlett's test result was significant and was above the required 0.6 (Table 7-31) and consequently, the data was appropriate for PCA.



**Table 7-31 Social Networking PCA (KMO and Bartlett's Test)**

KMO AND BARTLETT'S TEST		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		<b>0.804</b>
Bartlett's Test of Sphericity	Approx. Chi-Square	1252.625
	Df	190.000
	Sig.	0.000

The Scree Plot shows components and Eigenvalues (Figure 7-1). An Eigenvalue of 1 was before the 5<sup>th</sup> component. While the screeplot test can be used to identify a cut off point, the Eigenvalue criterion was used instead. This is because the screeplot criterion is based on a visual decision whereas the Eigenvalue is a calculated number. In addition, the rotated sum of variance for the 5<sup>th</sup> component's contribution to the overall variance was below 10% whereas the other components were above 10% (Table 7-32). As a result, the test was performed to extract four (4) components (Table 7-33).

**Figure 7-1 Social Networking PCA (Screeplot)**

**Table 7-32 Social Networking PCA Five Components (Rotation Sums of Squared Loadings)**

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.495	27.475	27.475	3.533	17.664	17.664
2	1.964	9.822	37.297	2.723	13.613	31.277
3	1.932	9.660	46.956	2.255	11.277	42.554
4	1.296	6.480	53.437	2.096	10.478	53.031
5	1.196	5.979	59.416	1.277	6.385	59.416
6	0.964	4.818	64.234			
7	0.943	4.714	68.948			
8	0.854	4.272	73.220			
9	0.694	3.470	76.690			
10	0.673	3.364	80.054			
11	0.608	3.039	83.094			
12	0.532	2.658	85.752			
13	0.476	2.380	88.131			
14	0.465	2.327	90.458			
15	0.408	2.040	92.498			
16	0.396	1.979	94.477			
17	0.345	1.725	96.202			
18	0.304	1.522	97.724			
19	0.245	1.227	98.951			
20	0.210	1.049	100.00			

**Table 7-33 Social Networking PCA Four Components (Rotation Sums of Squared Loadings)**

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.495	27.475	27.475	3.568	17.839	17.839
2	1.964	9.822	37.297	2.794	13.968	31.807
3	1.932	9.660	46.956	2.202	11.012	42.819
4	1.296	6.480	53.437	2.123	10.617	53.437

**Table 7-34 Social Networking Principal Component Analysis (Rotated Component Matrix)**

NAME OF COMPONENT	COMPONENTS			
	1	2	3	4
<b><u>Social Capital</u></b>				
My network of social relations has contributed to my beliefs and attitudes about how to operate my business	0.723			
I rely on my social network for general information on the 'goings on' to assist me in operating my business	0.710			
The main benefit of my social networking is information receiving	0.690			
I sometimes apply best practices that I learn from my social network	0.677			
Social networking has improved the decisions I have made in the past to a great extent	0.673			
Social networking provides a great deal of social support for me	0.658			
Social networking is the best means for me to know exactly what is happening to assist me in operating my business	0.628			
<b><u>Cognitive Network Fit</u></b>				
I usually know who network with whom		0.760		
I do have a time constraint, but this does not stop me from social networking		0.732		
As a business person social networking is an important activity for me		0.731		
I view my network of business contacts as important relationships for the success of my business		0.713		
<b><u>Trust</u></b>				
From my social network of persons in other businesses, I can rely on persons' verbal statements			0.829	
I have never had a feeling of being misled by my social network of persons in other businesses in my industry			0.804	
I can usually rely on my social network of persons in other businesses to keep their promises			0.692	
<b><u>Social Identity</u></b>				
I prefer to social network with persons in businesses similar to mine				0.815
I prefer to social network with persons in businesses nearest to my location				0.779
I network with persons only in my industry since they best know the business				0.765

The Principal Components Analysis shows the underlying structure of the indicator variables within the dataset. Four components were extracted with a cumulative total variance explained of 53.437% (Table 7-33). As a result there were four social networking dimensions within the dataset. Each component was subsequently labelled based on the derived rotated component matrix and the main loading items (high factor scores) on each component. The four components were:

1. Component 1 - social capital;
2. Component 2 - cognitive network fit;
3. Component 3 - trust; and
4. Component 4 - social identity (Table 7-34)

The first dimension relates to social capital. This dimension accounts for the highest percentage of variance within the data set (17.839%) (Table 7-33). Social capital is viewed as a resource and there are three forms: obligations and expectations, information channels and social norms (Coleman, 1988). Business people network to obtain network benefits including receipt of information, attitudes and beliefs, social support, and to make better decisions. Accordingly, these forms of social capital relate to information and social norms. In addition, social support is viewed as a form of social capital and therefore is not related to homophily and proximity as suggested by Monge and Contractor (2003).

Four positive variables loaded in the second dimension. A positive sign means that the variables are positively related to the component and a negative sign means that the variables are negatively related to the component (Hair et al., 2010). The second dimension explains the cognitive network fit within the data set. The cognitive knowledge of who networks with whom is related to time constraint, importance of networking and importance of business contacts. Accordingly, this second dimension is important in understanding why business people have knowledge of who their colleagues are networking with.

The third dimension was trust. Trust is an important consideration if a business person is to engage in social networking practices and this variable accounted for 11.012% of the variance within the dataset. The trust variable concerning reliance on persons' verbal statements (competency-based trust item) had the highest factor score for any variable within the dataset (0.829). Competency-based trust is particularly important for the sharing of tacit knowledge (Levin and Cross, 2004). This finding therefore is an indication of the critical importance trust plays in initiating social networking activities and influencing the sharing of tacit knowledge.

Homophily, proximity and semantic variables loaded in the fourth dimension and all these variables are related to social identity theory. Social identity is viewed as the categorisation of people based on their attributes (Ashforth and Mael, 1989). The semantic variable, 'network with persons only in my industry' also loaded with the homophily and proximity variables. Monge and Contractor (2003) suggested that semantics relate to cognitive and contagion theories, however, within this study the semantic variable loaded with homophily and proximity variables. It makes logical sense for the semantic variable to load with the homophily and proximity variables since, also according to Monge and Contractor (2003), semantic theories explain similarities among individuals. Although owners and managers were not statistically significantly different about these homophily, proximity and semantic variables, these concepts are important in order to understand why or why not business people social network.

**Table 7-35 Social Networking PCA (Components Transformation Matrix)**

Component	1	2	3	4
1	0.713	0.584	0.300	0.245
2	-0.428	0.145	0.875	-0.173
3	-0.156	-0.282	0.155	0.934
4	0.533	-0.747	0.346	-0.195

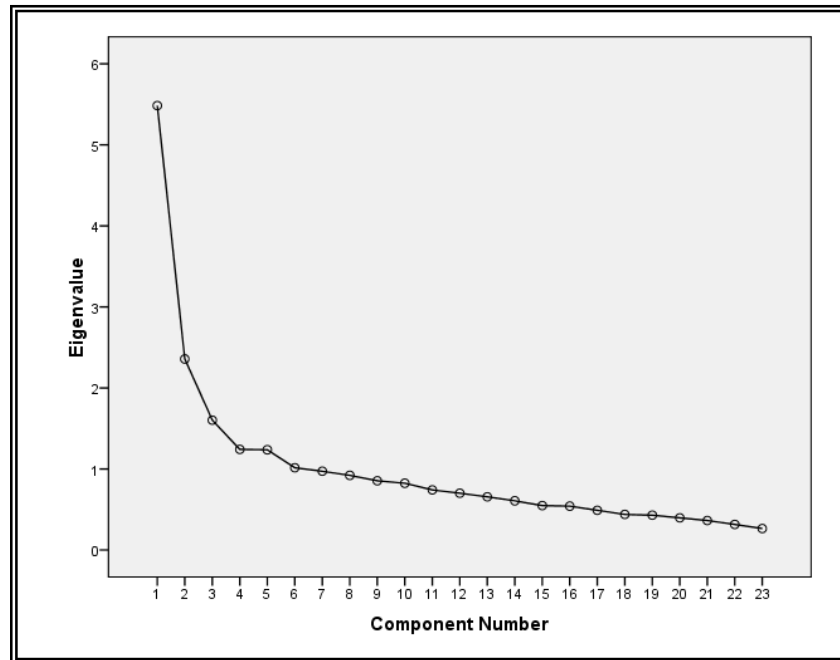
Component correlation values were calculated (Table 7-35). The strength of a correlation is determined based on its sign and value. The sign indicates the direction of the relationship and the closer the value is to 1 the greater the strength of the relationship (Pallant, 2007). Cohen (1992) suggests groupings to determine the degree of strength as 0.10 to 0.29 - small; 0.30 to 0.49 - medium; and 0.50 to 1.0 - large. Strongest relationships were recorded for comfort and safety and trust (0.934) and trust and cognitive network fit (0.875).

### 7.5.2 Knowledge Sharing

A similar procedure was performed using the twenty-five (25) knowledge sharing variables. Two variables were removed from the analysis: (1) ‘I generally do not like sharing information’ and ‘I generally have a positive feeling about sharing information with persons in other businesses’, since these variables were double loading. The factor loading co-efficient was once again 0.45. The KMO and Bartlett’s test value was greater than 0.600 and therefore the data was suitable for PCA (Table 7-36). An Eigenvalue of 1 was selected as the cut-point (Figure 7-2 and Table 7-37) and as a result, three (3) components were extracted.

**Table 7-36 Knowledge Sharing PCA (KMO and Bartlett’s Test)**

KMO AND BARTLETT’S TEST		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.810
Bartlett’s Test of Sphericity	Approx. Chi-Square	1095.999
	df	253.000
	Sig.	0.000

**Figure 7-2 Knowledge Sharing PCA (Screeplot)**

The three components had a cumulative variance explained of 41.062% (Table 7-37) and were:

1. Component 1 - altruism and serendipity;
2. Component 2 - knowledge sharing tendency;
3. Component 3 - comfort and safety (Table 7-37).

Notably, the percentage variance of the first component was almost double that of the second component and more than double that of the third component (Table 7-37). Thus, altruism and serendipity were particularly important concepts if we are to understand the dynamics of knowledge sharing in an inter-organisational context.

**Table 7-37 Knowledge Sharing PCA (Rotation Sums of Squared Loadings)**

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.485	23.846	23.846	4.667	20.292	20.292
2	2.358	10.250	34.096	2.674	11.628	31.919
3	1.602	6.966	41.062	2.103	9.143	41.062
4	1.242	5.398	46.460			
5	1.237	5.377	51.837			
6	1.015	4.413	56.250			
7	0.972	4.225	60.475			
8	0.921	4.003	64.478			
9	0.854	3.712	68.190			
10	0.824	3.582	71.772			
11	0.741	3.223	74.995			
12	0.701	3.047	78.042			
13	0.656	2.853	80.895			
14	0.607	2.638	83.533			
15	0.548	2.382	85.915			
16	0.541	2.351	88.267			
17	0.490	2.130	90.397			
18	0.439	1.907	92.304			
19	0.430	1.869	94.173			
20	0.397	1.725	95.898			
21	0.364	1.581	97.478			
22	0.315	1.372	98.850			
23	0.265	1.150	100.00			

Altruism and serendipity are the first component (Table 7-38). Altruism is the view that knowledge is given as a gift. According to Blau (1964) altruism is selflessness to benefit another and by giving the giver receives an intrinsic sense of satisfaction. The highest factor score (0.720) was recorded for a firm belief that sharing information improves business performance and linked with this belief are positive attitudes regarding information sharing. The serendipity aspect relates to obtaining information by chance and through social interaction. The altruism and serendipity variables are the key underlying influences on inter-organisational knowledge sharing and accounted for the highest total variance explained (20.292%) (Table 7-37).



**Table 7-38 Knowledge Sharing PCA (Rotated Component Matrix)**

NAME OF COMPONENT	COMPONENT		
	1	2	3
<b><u>Altruism and Serendipity</u></b>			
I firmly believe I may improve the performance of my business by sharing my information	0.720		
I sometimes make opportunities to share information	0.673		
I get a good feeling inside, like giving a gift, when I share information	0.658		
I readily share my business information with my competitors	0.598		
I sometimes receive important business information by chance	0.598		
I frequently use a computer to send e-mails and share information	0.593		
Sharing information has benefited me (reversed)	0.583		
There are many opportunities for me to receive important business information	0.566		
Social interaction is the usual way I share my business information with persons in other hospitality and tourism businesses	0.565		
The value obtained from sharing information far outweighs the cost	0.559		
I generally share information once the opportunity presents itself	0.467		
<b><u>Knowledge Sharing Tendency</u></b>			
I usually share information on a one to one basis		0.736	
I usually share information with persons who I perceive to also be knowledgeable		0.673	
I share information with people who have similar interests to me		0.595	
I generally share information with persons who share information with me		0.555	
I prefer sharing information verbally		0.459	
<b><u>Comfort and Safety</u></b>			
I prefer sharing information in groups			0.638
It is very costly, when I consider meeting costs, to share information			0.634
I am fearful to share information with my competitors			0.552
I prefer to share information with persons of a higher social/economic status than myself			0.537
I feel like I do have the time to share information (reversed)			-0.497

Serendipity relates to receiving information by chance. Opportunities to receive business information are linked to variables about altruism ('I get a good feeling inside, like giving a gift, when I share information') and making opportunities to share information. Thus serendipity and altruism are two sides of the same coin. Since managers were statistically different, when compared to owners, in terms of making more opportunities to share information, it can be concluded that managers are serendipitous and therefore more altruistic than owners (Sub-section 7.4.5). Notably the serendipitous and altruistic sharing of knowledge is facilitated through social interaction (Table 7-38; row 9).

The second component relates to knowledge sharing tendency. Knowledge sharing tendency means that business people are inclined or not, to share their knowledge. There were five (5) variables in the third dimension and these variables accounted for 11.628% of the rotated variance. Sharing information on a one to one basis and sharing information with knowledgeable people recorded the highest factor scores within the component. In addition, the inter-relationship of the variables within the dimension can be explained as business people who prefer sharing verbally, on a one to one basis, share information with people who are knowledgeable and have similar interests to them, and because the person shared information with them. As suggested by Chua (2003), direct social interaction and reciprocity engender knowledge sharing.

Comfort and safety are the last component and these latent variables influence knowledge sharing. Comfort relates to a preference to share information in groups, sharing information with competitors and sharing information once the opportunity presents itself, while safety relates to time and cost. Cross et al. (2001) suggested that engagement, access and safety with knowledge sharers are indicators for the initiation of a knowledge sharing process. Engagement relates to the sense of vulnerability (hence the use of the term comfort) the knowledge sharer has with sharing their information with other people. Thus, a sense of comfort can change in conditions of group sharing, competitor sharing and when the receivers of information are of a higher social/economic status. Added to a sense of comfort, safety, in regard to time and cost, is another condition that can influence the inter-organisational knowledge sharing process.

**Table 7-39 Knowledge Sharing PCA (Component Transformation Matrix)**

Component	1	2	3
1	0.881	0.472	-0.028
2	-0.255	0.525	0.812
3	0.398	-0.708	0.584

The components show largely with small correlation co-efficient values (Table 7-39). Knowledge sharing tendency was negatively related to altruism and serendipity, although this relationship was small. Thus, the level of altruism and serendipity may be reduced by an individual's knowledge sharing tendency. Comfort and safety were highly negatively correlated with knowledge sharing tendency. This finding indicates that the level of comfort and safety strongly influenced respondents' knowledge sharing tendency.

## 7.6 Conclusion

Chapter 7 has provided a detailed explanation of the dispositions and attitudes towards networking and knowledge sharing practices of owners and managers. Owners were statistically significantly different in terms of showing greater individuality and independence. Networking variables: self interest, cognitive, contagion, semantic, trust, dependency, homophily, proximity, social support and time were analysed. The null hypotheses were that they had no effect on the attitudes of owners and managers. Respondents agreed with several statements detailing their experience of networking including the importance of: self interest; homophily; trust and contagion. In terms of social networking, managers were statistically significantly different in regard to the importance of networking and business contacts, knowledge of who networks with whom, improved decision making and social relations contribution to attitudes and beliefs and owners were statistically significantly different in regard to discussing important matters with friends.

Dispositions and attitudes towards knowledge sharing were examined. The respondents were shown to agree with several statements including the significance of positive feelings, knowledgeable people, similar interests, prior experience and serendipity. Managers were statistically significantly different in regard to making opportunities to share information and owners were statistically significant different concerning sharing information with people who have similar interests. PCA was conducted on twenty (20) networking and twenty-five (25) knowledge sharing variables. The networking components were social capital, cognitive network fit, trust and social identity. The knowledge sharing components were altruism and serendipity, knowledge sharing tendency, and comfort and safety. These components are the enablers of the inter-organisational knowledge sharing and explain facilitating conditions as to why and why not knowledge is shared through social networks.

The next chapter, Chapter 8 examines the information content and dissemination of owners and managers and also four network types. First, information content is examined based on the extent of information sharing relationships, type of information and communication methods. Second, the different individual and group inter-organisational knowledge sharing practices are examined based on type of information, dissemination and outcomes.

## **CHAPTER 8 INFORMATION CONTENT AND DISSEMINATION**

### **8.1 Introduction**

The information content and patterns of dissemination within the tourism sector of the Bournemouth, Poole and Christchurch conurbation are the foci of this chapter. A representative sample of respondents defined as the owners and managers of registered tourism and hospitality establishments within the conurbation were asked for details of their information receiving relationships. Two-hundred respondents gave details of their inter-organisational knowledge transfer practices including the type and form of received information. Owners and managers received information and used this to build up knowledge within four network types: business and personal individual networks and formal and informal group networks.

The chapter is divided into three sections. First, the instrumental reasons for networking are examined. Second, the information content is examined in respect of: (1) the number of information relationships by owners and managers; (2) the type of information received; (3) the communication methods; and (4) the type of information by the communication method. Third, social networking characteristics were also examined based on the information types and communication methods for each of the four networking practices and in addition the social network outcomes were analysed. The chapter concludes with a summary of the main findings.

## 8.2 Instrumental Reasons for Social Networking

There are certain reasons as to why knowledge is shared. Respondents were asked to list reasons (instrumental reasons), in order of importance, for working and talking with individuals and communicating with group members. The reasons for social networking relationships were categorised based on the different types of social networking practices of which there were four types: business and personal individual networks and formal and informal group networks. There were two types of data transformation processes. First, the respondents were asked for three reasons, in order of importance, for being involved in each network type. A list of reasons was developed and coded. For instance, fifty-eight (58) first reasons were given for the business network. These reasons were placed into a new variable containing six (6) reasons. The six (6) reasons were: marketing, business development, information gathering and sharing, accommodation sharing, socialisation and pricing. Second, multiple response sets were constructed for each reason and cross tabulated by owners and managers. A multiple response counts each response within the same variable.

Reasons for networking with people in other tourism and hospitality businesses were examined (Table 8-1 and Appendix V). The data is based on the number of responses. Altogether, owners and managers stated five hundred and twenty seven (527) reasons for social networking. The main aggregate reason was business development. This was closely followed by information gathering and sharing, and then marketing. For owners the two main reasons were marketing and accommodation sharing while for managers the main reasons were business development and marketing. Based on a chi-square test, a statistically significant difference was recorded between owners' and managers' instrumental business development and marketing reasons ( $\chi^2 - 6.126$ ;  $p - 0.013$ ). Within the marketing category most responses related to advertising including use of websites. Business development included, for example, planning, event organisation, sharing of costs, purchasing, and training. Based on these information needs, business people received information through their social networking practices. The information content and dissemination will therefore be examined in the next section.

**Table 8-1 Reasons for social networking (multiple response cross-tabulation)**

<i>REASONS</i>	<i>OWNERS</i>		<i>MANAGERS</i>		<i>TOTAL</i>	
	N	%	N	%	N	%
<b>Marketing</b>	54	21.8	57	20.4	<b>111</b>	<b>21.1</b>
<b>Business Development</b>	48	19.4	96	34.4	<b>144</b>	<b>27.3</b>
<b>Information Gathering and Sharing</b>	51	20.6	64	22.9	<b>115</b>	<b>21.8</b>
<b>Accommodation Sharing</b>	37	14.9	12	4.3	<b>49</b>	<b>9.3</b>
<b>Socialisation</b>	46	18.5	37	13.3	<b>83</b>	<b>15.7</b>
<b>Pricing</b>	12	4.8	13	4.7	<b>25</b>	<b>4.7</b>
<b>Total</b>	<b>248</b>	<b>100.0</b>	<b>279</b>	<b>100.0</b>	<b>527</b>	<b>100.0</b>

*Key:* N – count; % - percentage

### 8.3 Information Content and Dissemination

Knowledge sharing may be viewed as sending and receiving information, ideas and advice (Bartol and Srivastava, 2002). Once information is received it means that knowledge was shared. Information content forms an important aspect of this research study since shared knowledge takes on two forms, one that is tacit-based and another that is explicit-based. In the previous chapter the dispositions and attitudes toward social networking and knowledge sharing were examined. Now within this chapter the information content and dissemination are being examined. The concept of information was the main construct examined since information is data which is communicated to a ‘receiver’. When information is interpreted it then becomes knowledge. As a result data for this research study was collected on received information which formed the basis of the inter-organisational knowledge sharing argument.

First, the volume of information relationships was assessed and to do this, respondents were asked first to specify if a relationship existed and whether they had received important business information as a result (Sub-section 8.3.1). Second, the information received by owners and managers was allocated to one of four types: technical, managerial, strategic and local. Technical information relates to operational aspects of tourism and hospitality businesses such as housekeeping and advertising. Managerial information in terms of budgeting and co-ordinating was also requested. Strategic information in terms of market research and local information in terms of information about people and businesses were the other two types of information requested (Sub-section 8.3.2). Third, owners and managers were asked to specify how the information was received, that is the communication methods. There were two categories of communication method: those that were tacit-based and those that were explicit-based (Sub-section 8.3.3).

### **8.3.1 Information Relationship**

Within each of the four network types, respondents were asked whether they received information from business people in other tourism businesses, not their own, which was or will be important to the effective and efficient operation of their business. A new information relationship variable was created with three values, 1 for yes received information, 2 for no received information and 3 for no information relationship. Once a respondent indicated yes they received important information within any of the four network types this response was coded as a 1 (yes). Afterwards the data was cross tabulated against owners and managers and explored using a chi-square test. Overall, the majority of respondents (61.5%) were in an information receiving relationship (Table 8-2). More managers (65.9%) as compared with owners (57.8%) received important business information and therefore it can be deduced that managers were able to obtain greater social capital through their network relationships.



In addition, there was no statistically significant difference between owners and managers and consequently the null hypothesis was accepted.

**Table 8-2 Owners and Managers and Information relationships (cross-tabulation and chi-square test)**

INFORMATION RELATIONSHIPS			<i>OWNERS</i>	<i>MANAGERS</i>	<i>TOTAL</i>
Yes information received	N		63	60	<b>123</b>
	%		57.8%	65.9%	<b>61.5%</b>
No information received	N		20	10	<b>30</b>
	%		18.3%	11.0%	<b>15.0%</b>
No information relationship	N		26	21	<b>47</b>
	%		23.9%	23.1%	<b>23.5%</b>
<b>Total</b>	N		<b>109</b>	<b>91</b>	<b>200</b>
	%		<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
$\chi^2 - 2.337$ $p - 0.311$					

Key: N – Number;  $\chi^2$  – Chi-square value; p – probability value

### 8.3.2 Types of Information

Respondents were also asked to detail the nature of the information received. Overall, there were 30 to 50 different details for each type of technical, managerial, strategic or local information (Appendix VI). These details were coded and categorised as marketing, product (which includes service), human resource and finance, and competitive information. Marketing information ranged from issues dealing with advertising, promotion, websites and public relations. Product information included health and safety issues, legislation and planning. Human resource and finance aspects were largely recruitment, employee training and budget reports. Competitive information included pricing structures, employee's wages, new developments and business opportunities, how other businesses were doing, properties going out of business, occupancy statistics, and new market niches.

As previously indicated there were four types of information, technical, managerial, strategic and local. New dichotomous variables based on whether the respondent indicated yes or no to receiving a particular type of information from at least one of the four network types were created for the analysis. The categorised type of information details was cross tabulated by owners and managers. Thereafter, chi-square tests were conducted (Table 8-3). The total number of respondents for each type of information ranged from 119 to 122. The results revealed that local and strategic information were important aspects of the information content (Table 8-3).

In total, the majority of respondents (84.0%) received local information and therefore this type of information was widely diffused through social networking practices. Boisot (1998) suggests that the speed of diffusion is facilitated by cultural context and setting and therefore these factors can be used to explain diffusion of local information. Local information was readily diffused since this type of information has the same cultural context which is local and also the information was located within a familiar type of setting. Respondents therefore had a greater absorptive capacity for local information and thus became capable of using the same language and codes to abstract and diffuse local information.

There were statistically significantly more managers who received strategic information and therefore the null hypothesis was rejected and this finding confirms that the inter-organisational knowledge sharing practices of managers resulted in more strategic information being obtained than those practices of owners. This finding is an indication of the key role played by managers within the tourism destination since strategic information enhances innovative capability and is a source for business growth and sustainability.

**Table 8-3 Owners and Managers and Information Type (cross-tabulations and chi-square test)**

	<b>OWNERS</b>		<b>MANAGERS</b>		<b>TOTAL</b>		$\chi^2$	<i>p</i>
	N	%	N	%	N	%		
<b>Technical Information</b>								
<b>Yes</b>	45	71.4%	40	67.8%	<b>85</b>	<b>69.7%</b>	0.190	0.663
<b>No</b>	18	28.6%	19	32.2%	<b>37</b>	<b>30.3%</b>		
<b>Total</b>	<b>63</b>	<b>100.0%</b>	<b>59</b>	<b>100.0%</b>	<b>122</b>	<b>100.0%</b>		
<b>Managerial Information</b>								
<b>Yes</b>	21	34.4%	20	33.9%	<b>41</b>	<b>34.2%</b>	0.004	0.951
<b>No</b>	40	65.6%	39	66.1%	<b>79</b>	<b>65.8%</b>		
<b>Total</b>	<b>61</b>	<b>100.0%</b>	<b>59</b>	<b>100.0%</b>	<b>120</b>	<b>100.0%</b>		
<b>Strategic Information</b>								
<b>Yes</b>	28	45.9%	42	70.0%	<b>70</b>	<b>57.9%</b>	7.204	0.007
<b>No</b>	33	54.1%	18	30.0%	<b>51</b>	<b>42.1%</b>		
<b>Total</b>	<b>61</b>	<b>100.0%</b>	<b>60</b>	<b>100.0%</b>	<b>121</b>	<b>100.0%</b>		
<b>Local Information</b>								
<b>Yes</b>	47	78.3%	53	89.8%	<b>100</b>	<b>84.0%</b>	2.931	0.087
<b>No</b>	13	21.7%	6	10.2%	<b>19</b>	<b>16.0%</b>		
<b>Total</b>	<b>60</b>	<b>100.0%</b>	<b>59</b>	<b>100.0%</b>	<b>119</b>	<b>100.0%</b>		

*Key: N – Number;  $\chi^2$  – Chi-square value; *p* – probability value*

Liebowitz (2007) suggests that strategic intelligence is obtained through knowledge management, business and competitive intelligence and these processes are facilitated by social networking. Bou-Llusar and Segarra-Ciprés (2006) in their intra-organisational work argue that strategic knowledge generates competitive advantages although this type of knowledge can be subject to a transfer barrier since strategic knowledge is tacit (difficult to imitate and substitute). Given that strategic knowledge is tacit in nature attention must be given to its diffusion through certain kinds of communication methods.

### **8.3.3 Communication Methods**

This sub-section analyses the communication methods used by owners and managers. Chi-square tests are not reported in instances where 20% of the cells had expected frequencies of 5 or less (Pallant, 2007). In theory communication methods impact both the type of information shared and also the knowledge sharing outcomes (Chua, 2001). Basically, the communication process may be tacit-based or explicit-based. Pre-defined categories of communication methods were provided and included: face to face conversation, written documents, telephone, electronic mail, electronic discussion and video conferencing (Cohen & Levinthal, 1990; Badaracco, 1991; Bennett, 1998; Boisot, 1998; Chua, 2001).

Tacit-based communication relates to face to face conversation, telephone and video conferencing and explicit-based communication relates to written documents, electronic-mail and electronic discussion. The distinction between tacit-based and explicit-based communication of information is therefore made based on the mode of communication. Respondents were asked to indicate how the important information was provided through these communication methods. A new variable was constructed which indicated that the respondent had received information from a method of communication at least once within the four network types. Analyses of the tacit-based methods of communication: face to face conversation, telephone and video conferring were performed (Table 8-4).

Overall more respondents (73.2%) received important information through face to face conversation than through the other tacit-based communication methods. The method of communication is important since based on Haas and Hansen's (2007) work concerning different knowledge bringing different benefits, knowledge shared through direct contact with individuals improved work quality. Face to face conversation was followed by the telephone (48.4%) as a means of tacit-based communication. Daft and Lengel (1984) suggest that both the face to face and telephone conversation methods are sources of 'rich' information and therefore these means of communication are important to build innovative capability.

The null hypotheses were tested (using chi-square tests) that there were no differences between owners and managers in their use of communication methods. Based on the chi-square tests, there were no statistically significant differences between owners and managers and therefore the null hypotheses, that there were no differences between owners and managers use of the types of tacit-based communication methods, were accepted (Table 8-4). This finding is important since no statistical significant difference assert that both owners and managers use similar means of tacit-based communication when transferring knowledge resources and therefore information resources are being shared in the same way within the group of owners and the group of managers.

**Table 8-4 Owners and Managers and Tacit-Based Communication Methods  
(cross-tabulations and chi-square test)**

	<i>OWNERS</i>		<i>MANAGERS</i>		<i>TOTAL</i>		$\chi^2$	<i>p</i>
	N	%	N	%	N	%		
<i>Face to Face Conversation</i>								
<b>Yes</b>	42	66.7%	48	80.0%	90	73.2%	2.783	0.095
<b>No</b>	21	33.3%	12	20.0%	33	26.8%		
<b>Total</b>	<b>63</b>	<b>100.0%</b>	<b>60</b>	<b>100.0%</b>	<b>122</b>	<b>100.0%</b>		
<i>Telephone</i>								
<b>Yes</b>	30	47.6%	29	49.2%	59	48.4%	0.029	0.865
<b>No</b>	33	52.4%	30	50.8%	63	51.6%		
<b>Total</b>	<b>63</b>	<b>100.0%</b>	<b>59</b>	<b>100.0%</b>	<b>122</b>	<b>100.0%</b>		
<i>Video Conferencing</i>								
<b>Yes</b>	2	3.2%	2	3.3%	4	3.3%	50%<5	
<b>No</b>	61	96.8%	58	96.7%	119	16.0%		
<b>Total</b>	<b>63</b>	<b>100.0%</b>	<b>60</b>	<b>100.0%</b>	<b>123</b>	<b>100.0%</b>		

Key: N – Number;  $\chi^2$  – Chi-square value; *p* – probability value

Cross tabulations of owners and managers and explicit-based communication methods were also conducted (Table 8-5). Overall, there was greater use of electronic mail (79.5%) as compared with written documents (52.0%) as a communication method. Only a small minority (1.6%) used electronic discussion. There were no statistically significant differences between owners and managers for explicit-based communication methods and therefore the null hypotheses were accepted.

**Table 8-5 Owners and Managers and Explicit-Based Communication Methods  
(cross-tabulation and chi-square test)**

	<i>OWNERS</i>		<i>MANAGERS</i>		<i>TOTAL</i>		$\chi^2$	<i>p</i>
	N	%	N	%	N	%		
<i>Written Documents</i>								
<b>Yes</b>	30	47.6%	34	56.7%	64	52.0%	1.008	0.315
<b>No</b>	33	52.4%	26	43.3%	59	48.0%		
<b>Total</b>	<b>63</b>	<b>100.0%</b>	<b>60</b>	<b>100.0%</b>	<b>123</b>	<b>100.0%</b>		
<i>Electronic Mail</i>								
<b>Yes</b>	48	77.4%	49	81.7%	97	79.5%	0.338	0.561
<b>No</b>	14	22.6%	11	18.3%	25	20.5%		
<b>Total</b>	<b>62</b>	<b>100.0%</b>	<b>60</b>	<b>100.0%</b>	<b>122</b>	<b>100.0%</b>		
<i>Electronic Discussion</i>								
<b>Yes</b>	2	3.2%	0	0.0%	2	1.6%	50%<5	
<b>No</b>	60	96.8%	60	100.0%	120	98.4%		
<b>Total</b>	<b>62</b>	<b>100.0%</b>	<b>60</b>	<b>100.0%</b>	<b>122</b>	<b>100.0%</b>		

Key: N – Number;  $\chi^2$  – Chi-square value; p – probability value

Researchers suggest that explicit knowledge is easier to transfer and therefore based on an intra-organisational context there is concern that this type of knowledge requires protection (Chilton and Bloodgood, 2007). Nonetheless, findings from this study suggest that explicit knowledge was transferred between business people in the tourism sector. In view of this, respondents' inter-organisational knowledge sharing practices involved transfer of explicit knowledge which was used to improve business performance and therefore it was not the case that explicit-based knowledge was protected.

### **8.3.4 Information Type and Communication Method**

The four information types were cross-tabulated by the six communication methods. This analysis was conducted using newly created variables for type of information and communication methods which means that once the respondent had received the information type and used the communication method within a type of network, this event was indicated as yes. This sub-section is partitioned based on the information types: technical, managerial, strategic and local information since information is a resource which is used to benefit the business.

The form of communication, whether tacit-based or explicit-based, is also important since the form of communication determines the level of codification and abstraction of the type of information and therefore the dissemination of that information. Communication methods were once again categorised as tacit-based and explicit-based. The tacit-based communication methods are face to face conversations and telephone conversations. The explicit-based communication methods are written documents and electronic mail. Too few responses were received for video conferencing and electronic discussion and therefore these variables were not included in the analysis.

### 8.3.4.1 Technical Information

**Table 8-6 Technical Information and Tacit-based Communication Methods (cross-tabulation and chi-square test)**

		<i>TECHNICAL INFORMATION</i>		
<i>Face to Face</i>		Yes	No	<b>Total</b>
	N	65	24	<b>89</b>
Yes	%	76.5	64.9	<b>73.0</b>
	N	20	13	<b>33</b>
No	%	23.5	35.1	<b>27.0</b>
	<b>N</b>	<b>85</b>	<b>37</b>	<b>122</b>
<b>Total</b>	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		1.760		
<b>Probability</b>		0.185		
<i>Telephone</i>		Yes	No	<b>Total</b>
	N	44	15	<b>59</b>
Yes	%	52.4	40.5	<b>48.8</b>
	N	40	22	<b>62</b>
No	%	47.6	59.5	<b>51.2</b>
	<b>N</b>	<b>84</b>	<b>37</b>	<b>121</b>
<b>Total</b>	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		1.441		
<b>Probability</b>		0.230		

Key: N – Number; % – Percentage

An item of technical information is produced based on an individual's competency (Hansen, 2002) and the available technical knowledge assets are used to develop expertise (Cohen and Levinthal, 1990). As a result, it was important to understand how technical knowledge assets can be acquired and in this instance items of technical information were received to a greater extent using face to face conversation as compared to telephone use (Table 8-6). There were no statistically significant differences recorded for technical information through either of the tacit-based communication methods.

**Table 8-7 Technical Information and Explicit-based Communication Methods (cross-tabulation and chi-square test)**

		<i>TECHNICAL INFORMATION</i>		
<i>Written Documents</i>		Yes	No	<b>Total</b>
Yes	N	51	12	<b>63</b>
	%	60.0	32.4	<b>51.6</b>
No	N	34	25	<b>59</b>
	%	40.0	67.6	<b>48.4</b>
<b>Total</b>	<b>N</b>	<b>85</b>	<b>37</b>	<b>122</b>
	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		<b>7.845</b>		
<b>Probability</b>		<b>0.005</b>		
<i>Electronic Mail</i>		Yes	No	<b>Total</b>
Yes	N	72	24	<b>96</b>
	%	85.7	64.9	<b>79.3</b>
No	N	12	13	<b>25</b>
	%	14.3	35.1	<b>20.7</b>
<b>Total</b>	<b>N</b>	<b>84</b>	<b>37</b>	<b>121</b>
	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		<b>6.812</b>		
<b>Probability</b>		<b>0.009</b>		

Key: N – Number; % – Percentage



Unlike the tacit-based communication methods, there were statistically significant differences in regard to the use of written documents and electronic mail to acquire technical knowledge assets (Table 8-7). As a result, the null hypotheses were rejected for both forms of explicit communication. This is an important finding since it is argued by Choo (1998) that technical knowledge forms part of the two parts of tacit knowledge which are technical and cognitive. In view of this, acquiring technical knowledge builds tacit knowledge and since technical knowledge was more readily diffused through explicit-based methods of communication, these methods were of prime importance.

### 8.3.4.2 Managerial Information

**Table 8-8 Managerial Information and Tacit-based Communication Methods (cross-tabulation and chi-square test)**

		<i>MANAGERIAL INFORMATION</i>		
<i>Face to Face</i>		Yes	No	<b>Total</b>
	N	34	54	<b>88</b>
Yes	%	82.9	68.4	<b>73.3</b>
	N	7	25	<b>32</b>
No	%	17.1	31.6	<b>26.7</b>
	<b>N</b>	<b>41</b>	<b>79</b>	<b>120</b>
<b>Total</b>	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		2.931		
<b>Probability</b>		0.087		
<i>Telephone</i>		Yes	No	<b>Total</b>
	N	26	32	<b>58</b>
Yes	%	63.4	41.0	<b>48.7</b>
	N	15	46	<b>61</b>
No	%	36.6	59.0	<b>51.3</b>
	<b>N</b>	<b>41</b>	<b>78</b>	<b>119</b>
<b>Total</b>	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		<b>5.392</b>		
<b>Probability</b>		<b>0.020</b>		

Key: N – Number; % – Percentage

Although the percentage of respondents who received managerial information through the face to face method was higher, face to face conversation was not statistically significantly different for managerial information. Telephone use was statistically significantly different as a means to acquire managerial information (Table 8-8). Consequently the null hypothesis that there was no difference between use of the telephone and receiving managerial information was rejected. The telephone provides a direct means to clarify complex issues in regard to day to day managerial items (Daft and Lengel, 1984). In addition, a telephone connection increases reach almost immediately and as a result, there is an opportunity to resolve issues in a faster period of time.

**Table 8-9 Managerial Information and Explicit-based Communication Methods (cross-tabulation and chi-square test)**

		<b>MANAGERIAL INFORMATION</b>		
<i>Written Documents</i>		Yes	No	<b>Total</b>
Yes	N	26	37	<b>63</b>
	%	63.4	46.8	<b>52.5</b>
No	N	15	42	<b>57</b>
	%	36.6	53.2	<b>47.5</b>
<b>Total</b>	<b>N</b>	<b>41</b>	<b>79</b>	<b>120</b>
	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		2.975		
<b>Probability</b>		0.085		
<i>Electronic Mail</i>		Yes	No	<b>Total</b>
Yes	N	37	58	<b>95</b>
	%	90.2	74.4	<b>79.8</b>
No	N	4	20	<b>24</b>
	%	9.8	25.6	<b>20.2</b>
<b>Total</b>	<b>N</b>	<b>41</b>	<b>78</b>	<b>119</b>
	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		<b>4.212</b>		
<b>Probability</b>		<b>0.040</b>		

Key: N – Number; % – Percentage

A greater number of respondents used electronic mail as compared with written documents. There was a statistically significant difference in relation to use of electronic mail to acquire managerial information. The speed of electronic mail means that a managerial issue can be resolved in an almost immediate manner. Accordingly, acquiring managerial information is associated with methods of communication that have instantaneous access to the knowledge sharer. Telephone and electronic mail methods also offer specificity in the information delivered and as a result, codification and abstraction processes are tailored to the information need, which can be an urgent managerial issue.

### 8.3.4.3 Strategic Information

**Table 8-10 Strategic Information and Tacit-based Communication Methods (cross-tabulation and chi-square test)**

		<i>STRATEGIC INFORMATION</i>		
<i>Face to Face</i>		Yes	No	<b>Total</b>
	N	61	28	<b>89</b>
Yes	%	87.1	54.9	<b>73.6</b>
	N	9	23	<b>32</b>
No	%	12.9	45.1	<b>26.4</b>
	<b>N</b>	<b>70</b>	<b>51</b>	<b>121</b>
<b>Total</b>	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		<b>15.766</b>		
<b>Probability</b>		<b>0.000</b>		
<i>Telephone</i>		Yes	No	<b>Total</b>
	N	34	24	<b>58</b>
Yes	%	49.3	47.1	<b>48.3</b>
	N	35	27	<b>62</b>
No	%	50.7	52.9	<b>51.7</b>
	<b>N</b>	<b>69</b>	<b>51</b>	<b>120</b>
<b>Total</b>	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		0.058		
<b>Probability</b>		0.810		

Key: N – Number; % – Percentage

Strategic information is needed to grow and develop businesses and businesses change based on their strategic intentions (Anderson et al., 1998). This means that a business will have great difficulty adjusting to changes within its external environment if it does not have the benefit of acquiring strategic information. Accordingly businesses interact with each other as a means to gather strategic intelligence (Backhaus and Buschken, 1997). Hence the reason the finding that strategic information was statistically significantly received through face to face conversations is of prime importance and the null hypothesis was consequently rejected (Table 8-10). Additionally, when the tacit-based and explicit-based communication methods are compared, face to face conversation was the dominant means of obtaining strategic information.

**Table 8-11 Strategic Information and Explicit-based Communication Methods (cross-tabulation and chi-square test)**

		<i>STRATEGIC INFORMATION</i>		
<i>Written Documents</i>		Yes	No	<b>Total</b>
	N	38	25	<b>63</b>
Yes	%	54.3	49.0	<b>52.1</b>
	N	32	26	<b>58</b>
No	%	45.7	51.0	<b>47.9</b>
	<b>N</b>	<b>70</b>	<b>51</b>	<b>121</b>
<b>Total</b>	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		0.328		
<b>Probability</b>		0.567		
<i>Electronic Mail</i>		Yes	No	<b>Total</b>
	N	59	36	<b>95</b>
Yes	%	84.3	72.0	<b>79.2</b>
	N	11	14	<b>25</b>
No	%	15.7	28.0	<b>20.8</b>
	<b>N</b>	<b>70</b>	<b>50</b>	<b>120</b>
<b>Total</b>	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		2.669		
<b>Probability</b>		0.102		

Key: N – Number; % – Percentage

More strategic information was obtained through electronic mail as compared with written documents. A statistically significant difference was not recorded for explicit-based communication methods and strategic information and as a result the null hypothesis that there was no difference was accepted (Table 8-11). This means that within the dynamic external environment of businesses, the repositories of written documents and electronic mail are apparently not the first port of call to obtain strategic intelligence and therefore these sources may hold irrelevant information. In view of this, a face to face conversation, although the speed of diffusion is less, may provide relevant information that the business person needs.

#### 8.3.4.4 Local Information

**Table 8-12 Local Information and Tacit-based Communication Methods (cross-tabulation and chi-square test)**

		<i>LOCAL INFORMATION</i>		
<i>Face to Face</i>		Yes	No	<b>Total</b>
Yes	N	75	13	<b>88</b>
	%	75.0	68.4	<b>73.9</b>
No	N	25	6	<b>31</b>
	%	25.0	31.6	<b>26.1</b>
<b>Total</b>	<b>N</b>	<b>100</b>	<b>19</b>	<b>119</b>
	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		0.359		
<b>Probability</b>		0.549		
<i>Telephone</i>		Yes	No	<b>Total</b>
Yes	N	52	5	<b>57</b>
	%	52.0	27.8	<b>48.3</b>
No	N	48	13	<b>61</b>
	%	48.0	72.2	<b>51.7</b>
<b>Total</b>	<b>N</b>	<b>100</b>	<b>18</b>	<b>118</b>
	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		3.584		
<b>Probability</b>		0.058		

Key: N – Number; % – Percentage

Local information was received through relatively more face to face conversations as compared with telephone discussions (Table 8-12). Although, there were no statistically significant differences for receiving local information through both face to face conversations and telephone discussions and consequently the null hypotheses were accepted. Business people keep their information current through their local connections (Davenport and Prusak, 1998) and local connections provide updates and as a result, there is need to provide speed of access to this type of information. Speed of delivery may be the prime reason for local information being disseminated through electronic mail (Table 8-13), since the majority of respondents (79.7%) received local information through electronic mail.

**Table 8-13 Local Information and Explicit-based Communication Methods (cross-tabulation and chi-square test)**

		<i>LOCAL INFORMATION</i>		
<i>Written Documents</i>		Yes	No	<b>Total</b>
	N	53	8	<b>61</b>
Yes	%	53.0	42.1	<b>51.3</b>
	N	47	11	<b>58</b>
No	%	47.0	57.9	<b>48.7</b>
	<b>N</b>	<b>100</b>	<b>19</b>	<b>119</b>
<b>Total</b>	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		0.759		
<b>Probability</b>		0.384		
<i>Electronic Mail</i>		Yes	No	<b>Total</b>
	N	87	7	<b>94</b>
Yes	%	87.0	38.9	<b>79.7</b>
	N	13	11	<b>24</b>
No	%	13.0	61.1	<b>20.3</b>
	<b>N</b>	<b>100</b>	<b>18</b>	<b>118</b>
<b>Total</b>	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Chi-square</b>		<b>21.792</b>		
<b>Probability</b>		<b>0.000</b>		

Key: N – Number; % – Percentage

Local information is important since it helps the understanding of the context of the business environment. For instance, local communities fit within broader economic, social and political plans. Based on the need for dissemination speed, there was a statistically significant difference in the receipt of local information through electronic mail (Table 8-13). Consequently, the null hypothesis that there was no difference between local information and electronic mail was rejected. The majority of local information was received through electronic mail and therefore local knowledge assets were readily available to respondents. On the other hand, there was no statistically significant difference to receive local information through written documents and this means that the null hypothesis was accepted.

#### **8.4 Individual and Group Networks**

The purpose of this section is to determine whether there were differences between people who received a particular type of information and used particular communication methods based on the types of social networking practices. Formal and informal networking practices result in information transformation and this information flows through knowledge networks in the tourism sector within the Bournemouth, Poole and Christchurch conurbation. Four social network types were examined: individual business, individual personal, formal group and informal group relationships (Figure 6-5 in the methodology chapter) and within each network type the respondent indicated the type of communication method used and type of information received. Two-hundred (200) respondents indicated their networking practices. Social network types were analysed based on the number of respondents who indicated that they engaged in the particular type of networking practice.

### 8.4.1 Individual Business

A statistically significant difference was recorded for those business people who were in the business network and received strategic information (Table 8-14). As a result, the null hypothesis that business networking through face to face conversation did not result in obtaining strategic information was rejected. This means that strategic information which is used to generate new knowledge according to Choo (1998) is made available within business networking practices. The null hypothesis was also rejected for the variable concerning managerial information and telephone use since managerial information was statistically significantly different based on telephone use (Table 8-14). This means that managerial information was likely to be accessed through the use of the telephone based on business networking practices.

**Table 8-14 Individual Business Network Information Type and Tacit-based Dissemination (cross-tabulation and chi-square)**

<i>TACIT-BASED</i>		<i>TECHNICAL</i>			<i>MANAGERIAL</i>			<i>STRATEGIC</i>			<i>LOCAL</i>		
		Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
<i>Face to Face Conversation</i>													
Yes	N	26	20	<b>46</b>	13	34	<b>47</b>	28	20	<b>48</b>	37	11	<b>48</b>
	%	66.7	66.7	<b>66.7</b>	76.5	64.2	<b>67.1</b>	82.4	52.6	<b>66.7</b>	69.8	61.1	<b>67.6</b>
No	N	13	10	<b>23</b>	4	19	<b>23</b>	6	18	<b>24</b>	16	7	<b>23</b>
	%	33.3	33.3	<b>33.3</b>	23.5	35.8	<b>32.9</b>	17.6	47.4	<b>33.3</b>	30.2	38.9	<b>32.4</b>
<b>Total</b>	N	<b>39</b>	<b>30</b>	<b>69</b>	<b>17</b>	<b>53</b>	<b>70</b>	<b>34</b>	<b>38</b>	<b>72</b>	<b>53</b>	<b>18</b>	<b>71</b>
	%	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-square</b>	0.000			0.886			7.133			0.464			
<b>Probability</b>	1.000			0.347			<b>0.008</b>			0.496			
<i>Telephone</i>													
Yes	N	18	16	<b>34</b>	13	21	<b>34</b>	14	20	<b>34</b>	24	10	<b>34</b>
	%	46.2	53.3	<b>49.3</b>	76.5	39.6	<b>48.6</b>	41.2	52.6	<b>47.2</b>	45.3	55.6	<b>47.9</b>
No	N	21	14	<b>35</b>	4	32	<b>36</b>	20	18	<b>38</b>	29	8	<b>37</b>
	%	53.8	46.7	<b>50.7</b>	23.5	60.4	<b>51.4</b>	58.8	47.4	<b>52.8</b>	54.7	44.4	<b>52.1</b>
<b>Total</b>	N	<b>39</b>	<b>30</b>	<b>69</b>	<b>17</b>	<b>53</b>	<b>70</b>	<b>34</b>	<b>38</b>	<b>72</b>	<b>53</b>	<b>18</b>	<b>71</b>
	%	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-square</b>	0.350			6.996			0.945			0.568			
<b>Probability</b>	0.554			<b>0.008</b>			0.331			0.451			

Key: N – Number; % – Percentage



On the other hand, use of the explicit-based methods of communication, did not provide business people who engaged with business networking practices an information advantage (Table 8-15). There were no statistically significant differences in terms of the type of information received based on the explicit-based methods of communication and therefore the null hypotheses were accepted. Findings revealed that business people obtained an information advantage by use of tacit-based methods of communication as opposed to the explicit-based methods of communication. In view of this, there are implications as to the speed of diffusion of the tacit-based methods and hence the importance of understanding how particular types of information are diffused. For example, a business person may hold a certain position within the network's structure and therefore can potentially obtain strategic information; however, strategic information is obtained through face to face conversations and only with this type of information transformation will strategic knowledge be obtained.

**Table 8-15 Individual Business Network Information Type and Explicit-based Dissemination (cross-tabulation and chi-square)**

<b>EXPLICIT -BASED</b>		<b>TECHNICAL</b>			<b>MANAGERIAL</b>			<b>STRATEGIC</b>			<b>LOCAL</b>		
		Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
<i>Written Documents</i>													
Yes	N	20	9	<b>29</b>	9	21	<b>30</b>	13	17	<b>30</b>	20	8	<b>28</b>
	%	51.3	30.0	<b>42.0</b>	52.9	39.6	<b>42.9</b>	38.2	44.7	<b>41.7</b>	37.7	44.4	<b>39.4</b>
No	N	19	21	<b>40</b>	8	32	<b>40</b>	21	21	<b>42</b>	33	10	<b>43</b>
	%	48.7	40.0	<b>58.0</b>	47.1	60.4	<b>57.1</b>	61.8	55.3	<b>58.3</b>	62.3	55.6	<b>60.6</b>
<b>Total</b>	N	<b>39</b>	<b>30</b>	<b>69</b>	<b>17</b>	<b>53</b>	<b>70</b>	<b>34</b>	<b>38</b>	<b>72</b>	<b>53</b>	<b>18</b>	<b>71</b>
	%	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-square</b>	3.152			0.932			0.312			0.253			
<b>Probability</b>	0.076			0.334			0.576			0.615			
<i>Electronic Mail</i>													
Yes	N	31	24	<b>55</b>	14	42	<b>56</b>	27	30	<b>57</b>	44	12	<b>56</b>
	%	79.5	80.0	<b>79.7</b>	82.4	79.2	<b>80.0</b>	79.4	78.9	<b>79.2</b>	83.0	66.7	<b>78.9</b>
No	N	8	6	<b>14</b>	3	11	<b>14</b>	7	8	<b>15</b>	9	6	<b>15</b>
	%	20.5	20.0	<b>20.3</b>	17.6	20.8	<b>20.0</b>	20.6	21.1	<b>20.8</b>	17.0	33.3	<b>21.1</b>
<b>Total</b>	N	<b>39</b>	<b>30</b>	<b>69</b>	<b>17</b>	<b>53</b>	<b>70</b>	<b>34</b>	<b>38</b>	<b>72</b>	<b>53</b>	<b>18</b>	<b>71</b>
	%	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-square</b>	0.003			0.078			0.002			2.156			
<b>Probability</b>	0.958			0.780			0.961			0.142			

Key: N – Number; % – Percentage

### 8.4.2 Individual Personal

Business people in the individual personal network were statistically significantly different in regard to their use of face to face conversation. Both strategic and local information were received through face to face conversation and therefore the null hypotheses were rejected (Table 8-16). Unlike face to face conversation, use of the telephone did not result in an information advantage since no statistical significant differences were recorded. Consequently the null hypothesis that use of the telephone resulted in receiving technical, managerial, strategic or local information was accepted.

**Table 8-16 Individual Personal Network Information Type and Tacit-based Dissemination (cross-tabulation and chi-square)**

<i>TACIT-BASED</i>		<i>TECHNICAL</i>			<i>MANAGERIAL</i>			<i>STRATEGIC</i>			<i>LOCAL</i>		
		Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
<i>Face to Face Conversation</i>													
Yes	N	28	23	<b>51</b>	16	35	<b>51</b>	28	25	<b>53</b>	39	14	<b>53</b>
	%	84.8	95.8	<b>89.5</b>	94.1	87.5	<b>89.5</b>	100	80.6	<b>89.8</b>	97.5	73.7	<b>89.8</b>
No	N	5	1	<b>6</b>	1	5	<b>6</b>	0	6	<b>6</b>	1	5	<b>6</b>
	%	15.2	4.2	<b>10.5</b>	5.9	12.5	<b>10.5</b>	0.0	19.4	<b>10.2</b>	2.5	26.3	<b>10.2</b>
<b>Total</b>	<b>N</b>	<b>33</b>	<b>24</b>	<b>57</b>	<b>17</b>	<b>40</b>	<b>57</b>	<b>28</b>	<b>31</b>	<b>59</b>	<b>40</b>	<b>19</b>	<b>59</b>
	<b>%</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-square</b>	1.780			0.555			<b>6.033</b>			<b>7.998</b>			
<b>Probability</b>	0.182			0.456			<b>0.014</b>			<b>0.005</b>			
<i>Telephone</i>													
Yes	N	16	13	<b>29</b>	7	22	<b>29</b>	13	17	<b>30</b>	22	8	<b>30</b>
	%	48.5	54.2	<b>50.9</b>	41.2	55.0	<b>50.9</b>	46.4	54.8	<b>50.8</b>	55.0	42.1	<b>50.8</b>
No	N	17	11	<b>28</b>	10	18	<b>28</b>	15	14	<b>29</b>	18	11	<b>29</b>
	%	51.5	45.8	<b>49.1</b>	58.8	45.0	<b>49.1</b>	53.6	45.2	<b>49.2</b>	45.0	57.9	<b>49.2</b>
<b>Total</b>	<b>N</b>	<b>33</b>	<b>24</b>	<b>57</b>	<b>17</b>	<b>40</b>	<b>57</b>	<b>28</b>	<b>31</b>	<b>59</b>	<b>40</b>	<b>19</b>	<b>59</b>
	<b>%</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-square</b>	0.179			0.912			0.416			0.857			
<b>Probability</b>	0.672			0.340			0.519			0.355			

Key: N – Number; % – Percentage

Similarly there were no statistically significant differences recorded for written documents and electronic mail within the individual personal network and, consequently, the null hypotheses were accepted. As a result, individual personal networking practices did not provide an information advantage through the use of explicit-based knowledge creation processes. Based on previous findings within this study, explicit-based communication methods facilitated the flow of technical and local information types (Tables 8-7 and 8-13). Nonetheless, respondents within individual personal networks seem not to have an information advantage in regard to technical and local information. Even though technical and local information were easily diffused, these types of information were not readily flowing through personal network connections. Liebowitz (2007) suggests that the structure of the network influences the disseminative capacity and notes that there are three primary forms of personal knowledge networks. These are the line network, the circle or ring network and the star network (Liebowitz, 2007) and therefore given the results below (Table 8-17) the structure of the network may provide reasons for these results.

**Table 8-17 Individual Personal Network Information Type and Explicit-based Dissemination (cross-tabulation and chi-square)**

<b>EXPLICIT -BASED</b>		<b>TECHNICAL</b>			<b>MANAGERIAL</b>			<b>STRATEGIC</b>			<b>LOCAL</b>		
		Yes	No	<b>Total</b>	Yes	No	<b>Total</b>	Yes	No	<b>Total</b>	Yes	No	<b>Total</b>
<i>Written Documents</i>													
Yes	N	8	2	<b>10</b>	4	7	<b>11</b>	8	3	<b>11</b>	9	2	<b>11</b>
	%	24.2	8.3	<b>17.5</b>	23.5	17.5	<b>19.3</b>	28.6	9.7	<b>18.6</b>	22.5	10.5	<b>18.6</b>
No	N	25	22	<b>47</b>	13	33	<b>46</b>	20	28	<b>48</b>	31	17	<b>48</b>
	%	75.8	91.7	<b>82.5</b>	76.5	82.5	<b>80.7</b>	71.4	90.3	<b>81.4</b>	77.5	89.5	<b>81.4</b>
<b>Total</b>	N	<b>33</b>	<b>24</b>	<b>57</b>	<b>17</b>	<b>40</b>	<b>57</b>	<b>28</b>	<b>31</b>	<b>59</b>	<b>40</b>	<b>19</b>	<b>59</b>
	%	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-square</b>	2.431			0.278			3.462			1.218			
<b>Probability</b>	0.119			0.598			0.063			0.270			
<i>Electronic Mail</i>													
Yes	N	17	9	<b>26</b>	8	19	<b>27</b>	14	14	<b>28</b>	20	8	<b>28</b>
	%	51.5	37.5	<b>45.6</b>	47.1	47.5	<b>47.4</b>	50.0	45.2	<b>47.5</b>	50.0	42.1	<b>47.5</b>
No	N	16	15	<b>31</b>	9	21	<b>30</b>	14	17	<b>31</b>	20	11	<b>31</b>
	%	48.5	62.5	<b>54.4</b>	52.9	52.5	<b>52.6</b>	50.0	54.8	<b>52.5</b>	50.0	57.9	<b>52.5</b>
<b>Total</b>	N	<b>33</b>	<b>24</b>	<b>57</b>	<b>17</b>	<b>40</b>	<b>57</b>	<b>28</b>	<b>31</b>	<b>59</b>	<b>40</b>	<b>19</b>	<b>59</b>
	%	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-square</b>	1.100			0.001			0.138			0.322			
<b>Probability</b>	0.294			0.976			0.710			0.570			

Key: N – Number; % – Percentage

### 8.4.3 Group Formal

Within this sub-section chi-square values were violated since the minimum expected cell frequencies were less than 5. This was the case because at most there were 27 respondents who indicated information receiving practices within the group formal network. Observations were made based on the proportions of respondents who received information using each communication method. Based on the results, the most frequent responses were: received technical information through face to face conversations and received managerial and strategic information through telephone discussions (Table 8-18). Results for the explicit-based methods revealed that the most frequent responses were: received managerial information through written documents and electronic mail (Table 8-19).

**Table 8-18 Group Formal Network Information Type and Tacit-based Dissemination (cross-tabulation and chi-square)**

<b>TACIT-BASED</b>		<b>TECHNICAL</b>			<b>MANAGERIAL</b>			<b>STRATEGIC</b>			<b>LOCAL</b>		
		Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
<i>Face to Face Conversation</i>													
Yes	N	4	2	<b>6</b>	1	4	<b>5</b>	2	3	<b>5</b>	4	1	<b>5</b>
	%	26.7	16.7	<b>22.2</b>	20.0	19.0	<b>19.2</b>	20.0	18.8	<b>19.2</b>	22.2	12.5	<b>19.2</b>
No	N	11	10	<b>21</b>	4	17	<b>21</b>	8	13	<b>21</b>	14	7	<b>21</b>
	%	73.3	83.3	<b>77.8</b>	80.0	81.0	<b>80.8</b>	80.0	81.2	<b>80.8</b>	77.8	87.5	<b>80.8</b>
<b>Total</b>	<b>N</b>	<b>15</b>	<b>12</b>	<b>27</b>	<b>5</b>	<b>21</b>	<b>26</b>	<b>10</b>	<b>16</b>	<b>26</b>	<b>18</b>	<b>8</b>	<b>26</b>
	<b>%</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-Square</b>		50%<5			75%<5			50%<5			50%<5		
<i>Telephone</i>													
Yes	N	2	1	<b>3</b>	1	1	<b>2</b>	2	0	<b>2</b>	2	0	<b>2</b>
	%	13.3	8.3	<b>11.1</b>	20.0	4.8	<b>7.7</b>	20.0	0.0	<b>7.7</b>	11.1	0.0	<b>7.7</b>
No	N	13	11	<b>24</b>	4	20	<b>24</b>	8	16	<b>24</b>	16	8	<b>24</b>
	%	86.7	91.7	<b>88.9</b>	80.0	95.2	<b>92.3</b>	80.0	100.0	<b>92.3</b>	88.9	100.0	<b>92.3</b>
<b>Total</b>	<b>N</b>	<b>15</b>	<b>12</b>	<b>27</b>	<b>5</b>	<b>21</b>	<b>26</b>	<b>10</b>	<b>16</b>	<b>26</b>	<b>18</b>	<b>8</b>	<b>26</b>
	<b>%</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-Square</b>		50%<5			75%<5			50%<5			50%<5		

Key: N – Number; % – Percentage

**Table 8-19 Group Formal Network Information Type and Explicit-based Dissemination (cross-tabulation and chi-square)**

<i>EXPLICIT-BASED</i>		<i>TECHNICAL</i>			<i>MANAGERIAL</i>			<i>STRATEGIC</i>			<i>LOCAL</i>		
		Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
<i>Written Documents</i>													
Yes	N	10	6	<b>16</b>	4	11	<b>15</b>	7	8	<b>15</b>	9	6	<b>15</b>
	%	66.7	50.0	<b>59.3</b>	80.0	52.4	<b>57.7</b>	70.0	50.0	<b>57.7</b>	50.0	75.0	<b>57.7</b>
No	N	5	6	<b>11</b>	1	10	<b>11</b>	3	8	<b>11</b>	9	2	<b>11</b>
	%	33.3	50.0	<b>40.7</b>	20.0	47.6	<b>42.3</b>	30.0	50.0	<b>42.3</b>	50.0	25.0	<b>42.3</b>
<b>Total</b>	N	<b>15</b>	<b>12</b>	<b>27</b>	<b>5</b>	<b>21</b>	<b>26</b>	<b>10</b>	<b>16</b>	<b>26</b>	<b>18</b>	<b>8</b>	<b>26</b>
	%	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-Square</b>	25%<5			50%<5			25%<5			50%<5			
<i>Electronic Mail</i>													
Yes	N	10	11	<b>21</b>	5	15	<b>20</b>	8	12	<b>20</b>	16	4	<b>20</b>
	%	66.7	91.7	<b>77.8</b>	100.0	71.4	<b>76.9</b>	80.0	75.0	<b>76.9</b>	88.9	50.0	<b>76.9</b>
No	N	5	1	<b>6</b>	0	6	<b>6</b>	2	4	<b>6</b>	2	4	<b>6</b>
	%	33.3	8.3	<b>22.2</b>	0.0	28.6	<b>23.1</b>	20.0	25.0	<b>23.1</b>	11.1	50.0	<b>23.1</b>
<b>Total</b>	N	<b>15</b>	<b>12</b>	<b>27</b>	<b>5</b>	<b>21</b>	<b>26</b>	<b>10</b>	<b>16</b>	<b>26</b>	<b>18</b>	<b>8</b>	<b>26</b>
	%	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-Square</b>	50%<5			75%<5			50%<5			50%<5			

Key: N – Number; % – Percentage

#### 8.4.4 Group Informal

The most frequent responses for tacit-based communication methods were received strategic information through face to face conversation and telephone use. Similar to the group formal network, within the group informal network there were no statistically significant differences recorded for the four information types based on the tacit-based and explicit-based communication methods and as a result the null hypotheses that there were no differences were accepted. Within the group informal network, based on explicit-based communication methods, the most frequent responses were: received technical information through written documents and received local information through electronic mail. Some chi-square values for written documents were conducted and these values indicated that there were no statistically significant differences and therefore the null hypotheses that there were no differences were accepted.

**Table 8-20 Group Informal Network Information Type and Tacit-based Dissemination (cross-tabulation and chi-square)**

<b>TACIT-BASED</b>		<b>TECHNICAL</b>			<b>MANAGERIAL</b>			<b>STRATEGIC</b>			<b>LOCAL</b>		
		Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
<i>Face to Face Conversation</i>													
Yes	N	28	7	<b>35</b>	13	23	<b>36</b>	26	11	<b>37</b>	31	6	<b>37</b>
	%	80.0	58.3	<b>74.5</b>	86.7	69.7	<b>75.0</b>	89.7	55.0	<b>75.5</b>	81.6	54.5	<b>75.5</b>
No	N	7	5	<b>12</b>	2	10	<b>12</b>	3	9	<b>12</b>	7	5	<b>12</b>
	%	20.0	41.7	<b>25.5</b>	13.3	30.3	<b>25.0</b>	10.3	45.0	<b>24.5</b>	18.4	45.5	<b>24.5</b>
<b>Total</b>	<b>N</b>	<b>35</b>	<b>12</b>	<b>47</b>	<b>15</b>	<b>33</b>	<b>48</b>	<b>29</b>	<b>20</b>	<b>49</b>	<b>38</b>	<b>11</b>	<b>49</b>
	<b>%</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-Square</b>	25%<5			25%<5			25%<5			25%<5			
<i>Telephone</i>													
Yes	N	11	4	<b>15</b>	5	10	<b>15</b>	10	5	<b>15</b>	10	5	<b>15</b>
	%	31.4	33.3	<b>31.9</b>	33.3	30.3	<b>31.2</b>	34.5	25.0	<b>30.6</b>	26.3	45.5	<b>30.6</b>
No	N	24	8	<b>32</b>	10	23	<b>33</b>	19	15	<b>34</b>	28	6	<b>34</b>
	%	68.6	66.7	<b>68.1</b>	66.7	69.7	<b>68.8</b>	65.5	75.0	<b>69.4</b>	73.7	54.5	<b>69.4</b>
<b>Total</b>	<b>N</b>	<b>35</b>	<b>12</b>	<b>47</b>	<b>15</b>	<b>33</b>	<b>48</b>	<b>29</b>	<b>20</b>	<b>49</b>	<b>38</b>	<b>11</b>	<b>49</b>
	<b>%</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-Square</b>	25%<5			25%<5			0.501			25%<5			
<b>Probability</b>							0.479						

Key: N – Number; % – Percentage

**Table 8-21 Group Informal Network Information Type and Explicit-based Dissemination (cross-tabulation and chi-square)**

<b>EXPLICIT-BASED</b>		<b>TECHNICAL</b>			<b>MANAGERIAL</b>			<b>STRATEGIC</b>			<b>LOCAL</b>		
		Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
<i>Written Documents</i>													
Yes	N	22	6	<b>28</b>	8	20	<b>28</b>	16	12	<b>28</b>	22	6	<b>28</b>
	%	62.9	50.0	<b>59.6</b>	53.3	60.6	<b>58.3</b>	55.2	60.0	<b>57.1</b>	57.9	54.5	<b>57.1</b>
No	N	13	6	<b>19</b>	7	13	<b>20</b>	13	8	<b>21</b>	16	5	<b>21</b>
	%	37.1	50.0	<b>40.4</b>	46.7	39.4	<b>41.7</b>	44.8	40.0	<b>42.9</b>	42.1	45.5	<b>42.9</b>
<b>Total</b>	<b>N</b>	<b>35</b>	<b>12</b>	<b>47</b>	<b>15</b>	<b>33</b>	<b>48</b>	<b>29</b>	<b>20</b>	<b>49</b>	<b>38</b>	<b>11</b>	<b>49</b>
	<b>%</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-Square</b>	25%<5			0.224			0.113			25%<5			
<b>Probability</b>				0.636			0.737						
<i>Electronic Mail</i>													
Yes	N	28	9	<b>37</b>	13	25	<b>38</b>	25	13	<b>38</b>	33	5	<b>38</b>
	%	80.0	75.0	<b>78.7</b>	86.7	75.8	<b>79.2</b>	86.2	65.0	<b>77.6</b>	86.8	45.5	<b>77.6</b>
No	N	7	3	<b>10</b>	2	8	<b>10</b>	4	7	<b>11</b>	5	6	<b>11</b>
	%	20.0	25.0	<b>21.3</b>	13.3	24.2	<b>20.8</b>	13.8	35.0	<b>22.4</b>	13.2	54.5	<b>22.4</b>
<b>Total</b>	<b>N</b>	<b>35</b>	<b>12</b>	<b>47</b>	<b>15</b>	<b>33</b>	<b>48</b>	<b>29</b>	<b>20</b>	<b>49</b>	<b>38</b>	<b>11</b>	<b>49</b>
	<b>%</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Chi-Square</b>	25%<5			25%<5			25%<5			25%<5			

Key: N – Number; % – Percentage

In summary, sub-sections 8.4.1 to 8.4.2 reveal that knowledge resources were made available to respondents based on their networking practices and therefore these resources contributed to their innovative capability. These findings are similar to other authors' findings that support the view of network structure fostering information transmission capacity and knowledge capture (Santoro et al., 2006; Schilling and Phelps, 2007). In particular business networking practices resulted in information advantages of obtaining statistically significantly more strategic and managerial information. Locating information is also important to support innovative capability (Sherif and Xing, 2006). Respondents within the individual personal network type obtained an information advantage in regard to strategic and local information and therefore these information types were being shared through face to face conversations which resulted in the creation of more tacit knowledge. Group networking practices seemingly did not result in an information advantage.

#### **8.4.5 Network Type, Information Content and Dissemination**

This section summarises the data analysed in sub-sections 8.4.1 through to 8.4.4 in order that a clear picture is provided in regard to the different forms of information which flowed through the different network types. Responses indicated by respondents within each network type, for both the type of information and communication method, were recorded. Respondents indicated a yes or no as to whether they received a particular type of information. The dissemination methods were also recorded and a tick indicated a 'yes', a particular communication method was used. Once the communication method was not ticked this was recorded as a 'no.' Analysis involved recording the number of 'yes' responses indicated by respondents. Statistical analysis was not conducted since the data were multiple responses. As a result, any comment of a difference between the percentages is very tentative. Nonetheless, these analyses were conducted to clarify the type of information and dissemination practices within the different network types.

**Table 8-22 Network Types and Type of Information (count and percentage of responses)**

<i>Type of Information</i>	<i>Type of Network</i>							
	IB		IP		GF		GI	
	N	%	N	%	N	%	N	%
Technical	39	27.3	33	27.7	15	31.3	35	<b>29.9</b>
Managerial	17	11.9	17	14.3	5	10.4	15	<b>12.8</b>
Strategic	34	23.8	28	23.5	10	20.8	29	<b>24.8</b>
Local	53	37.1	41	34.5	18	37.5	38	<b>32.5</b>
<b>Total</b>	<b>143</b>	<b>100.0</b>	<b>119</b>	<b>100.0</b>	<b>48</b>	<b>100.0</b>	<b>117</b>	<b>100.0</b>

Key: N – Number; % – Percentage; IB – Individual Business; IP – Individual Personal;  
GF – Formal Group; GI – Informal Group

In terms of the proportion, respondents in the group formal network received mostly technical and local information, whereas managerial information was received mostly by respondents in the individual personal network. Group informal network agents received proportionally more strategic information as compared with the other network types. Nonetheless, within all network types, local information was predominantly received although respondents in both types of informal networks were received proportionally less local information.

**Table 8-23 Network Types and Type of Dissemination Method (count and percentage of responses)**

<i>Dissemination Method</i>	<i>Type of Network</i>							
	IB		IP		GF		GI	
	N	%	N	%	N	%	N	%
Face to Face	49	28.7	53	43.4	6	12.8	37	<b>30.8</b>
Telephone	35	20.5	30	24.6	3	6.4	15	<b>12.5</b>
Written	30	17.5	11	9.0	16	34.0	29	<b>24.2</b>
E-Mail	57	33.3	28	23.0	22	46.8	39	<b>32.5</b>
<b>Total</b>	<b>171</b>	<b>100.0</b>	<b>122</b>	<b>100.0</b>	<b>47</b>	<b>100.0</b>	<b>120</b>	<b>100.0</b>

Key: N – Number; % – Percentage; IB – Individual Business; IP – Individual Personal;  
GF – Formal Group; GI – Informal Group



Within the individual personal network, face to face conversation was the dominant method of communication whereas written documents recorded a low proportional value as a method of communication. On the other hand, electronic mail and written documents were the predominant methods of communication within the group formal network. Telephone use had a proportionally higher percentage within both individual networks as compared with group networking practices.

#### **8.4.6 Network Type and Outcomes**

In the previous chapter an analysis was conducted on the statistically significant differences between owners and managers for some of the outcome variables (Sub-section 7.3.4). In this chapter, the analysis was conducted based on network type. Respondents were asked to consider the outcomes of their business and personal networks and to indicate agreement with seven outcomes' statements. The outcomes' statements were:

1. 'Social networking has improved the decisions I have made in the past to a great extent' (*Decision Making*);
2. 'My network of social relations has contributed to my beliefs and attitudes about how to operate my business' (*Contribution to Beliefs and Attitudes*);
3. 'Social networking is the best means for me to know exactly what is happening to assist me in operating my business' (*Knowledge of Happenings*);
4. 'The main benefit of my social networking is information receiving' (*Information Receiving*);
5. 'Social networking provides a great deal of social support for me' (*Social Support*);
6. 'I rely on my social network for general information on the 'goings on' to assist me in operating my business' (*Reliance for General Information*);
7. 'I sometimes apply best practices that I learn from my social network' (*Apply Best Practices*).

**Table 8-24 Network Types and Information Benefit (central tendency and Mann-Whitney *U* test of responses)**

TYPE OF NETWORK		STATISTICS							
		N	MV	ME	MR	U	z	p	r
<b>Information Receiving</b>									
IB	Yes	96	3.78	4.00	102.08				
	No	89	3.49	4.00	83.21				
<b>Total</b>		<b>185</b>	<b>3.64</b>	<b>4.00</b>		3400.500	-2.690	<b>0.007</b>	<b>0.198</b>
IP	Yes	84	3.82	4.00	102.64				
	No	98	3.49	4.00	81.95				
<b>Total</b>		<b>182</b>	<b>3.64</b>	<b>4.00</b>		3180.000	-2.965	<b>0.003</b>	<b>0.220</b>
GF	Yes	41	3.68	4.00	95.85				
	No	143	3.64	4.00	91.54				
<b>Total</b>		<b>184</b>	<b>3.65</b>	<b>4.00</b>		2794.000	-0.515	0.607	
GI	Yes	59	3.83	4.00	105.23				
	No	125	3.56	4.00	86.49				
<b>Total</b>		<b>184</b>	<b>3.65</b>	<b>4.00</b>		2936.500	-2.506	<b>0.012</b>	<b>0.185</b>
<b>Knowledge of Happenings</b>									
IB	Yes	96	3.27	3.00	101.36				
	No	89	2.96	3.00	83.98				
<b>Total</b>		<b>185</b>	<b>3.12</b>	<b>3.00</b>		3469.500	-2.322	<b>0.020</b>	<b>0.171</b>
IP	Yes	84	3.26	3.00	99.57				
	No	98	2.98	3.00	84.59				
<b>Total</b>		<b>182</b>	<b>3.11</b>	<b>3.00</b>		3438.500	-2.012	<b>0.044</b>	<b>0.149</b>
GF	Yes	41	2.90	3.00	79.77				
	No	143	3.17	3.00	96.15				
<b>Total</b>		<b>184</b>	<b>3.11</b>	<b>3.00</b>		2409.500	-1.827	0.068	
GI	Yes	59	3.49	4.00	114.52				
	No	125	2.93	3.00	82.11				
<b>Total</b>		<b>184</b>	<b>3.11</b>	<b>3.00</b>		2388.500	-4.054	<b>0.000</b>	<b>0.299</b>
<b>Reliance for General Information</b>									
IB	Yes	97	3.42	4.00	99.08				
	No	91	3.02	3.00	89.62				
<b>Total</b>		<b>188</b>	<b>3.23</b>	<b>3.00</b>		3969.000	-1.297	0.195	
IP	Yes	83	3.37	3.00	100.43				
	No	102	3.08	3.00	86.95				
<b>Total</b>		<b>185</b>	<b>3.21</b>	<b>3.00</b>		3616.000	-1.853	0.064	
GF	Yes	43	3.12	3.00	97.94				
	No	144	3.24	3.00	92.82				
<b>Total</b>		<b>187</b>	<b>3.22</b>	<b>3.00</b>		2926.500	-0.592	0.554	
GI	Yes	59	3.46	4.00	99.82				
	No	128	3.10	3.00	91.32				
<b>Total</b>		<b>187</b>	<b>3.22</b>	<b>3.00</b>		3432.500	-1.087	0.277	

**Key:** *N* – Number of respondents; *MV* - Mean Value; *ME* - Median; *MR* - Mean Rank; *U* - Mann-Whitney *U* value; *z* - *Z* value; *p* - Probability value; *r* - *r* value; *IB* – Individual Business; *IP* – Individual Personal; *GF* – Formal Group; *GI* – Informal Group

The statements were grouped according to those relating to information benefit, those relating to business performance and social support. Values were assigned to the scale and ranged from 1 for strongly disagree, 2 for disagree, 3 for neither agree nor disagree, 4 for agree and 5 for strongly agree. Mean, median, and Mann-Whitney  $U$  values were calculated (Tables 8-24, 8-25 and 8-26). Respondents were statistically significantly different in both individual networks in regard to their capability to receive information (Table 8-24). As a result, individual networking practices provided greater opportunities for information exchange but at the same time group informal networking practices resulted in the same benefits. Respondents were statistically significantly different in the group informal network in regard to their agreement concerning receiving information and knowledge of happenings (Table 8-24). This finding is an indication of the level of social capital which was provided through group informal networking practices. Nevertheless, this finding seem to contradict earlier findings that an information advantage was not obtained through group informal networking practices and therefore the structure of the group informal network should be examined to find an explanation (Tables 8-20 and 8-21).

Within three network types, the exception being the group formal network, respondents obtained a benefit of improved decision making (Table 8-25). Informal networking practices, both with an individual and a group, also contributed to a difference in regard to making a contribution to beliefs and attitudes about business operation and therefore business people benefited from information flows outside the business. These findings broaden our understanding of how a competitive advantage is obtained through non-information technology processes. In addition, those respondents within informal individual and group networks were statistically significantly different in terms of agreeing with the statement 'Social networking provides a great deal of social support for me' (Table 8-26).

**Table 8-25 Network Types and Business Performance**  
(central tendency and Mann-Whitney *U* test of responses)

TYPE OF NETWORK		STATISTICS							
		N	MV	ME	MR	U	z	p	r
<b>Decision Making</b>									
IB	Yes	96	3.39	3.50	102.75				
	No	90	3.09	3.00	83.63				
<b>Total</b>		<b>186</b>	<b>3.24</b>	<b>3.00</b>		3432.000	-2.599	<b>0.009</b>	<b>0.191</b>
IP	Yes	84	3.40	3.00	102.13				
	No	99	3.08	3.00	83.40				
<b>Total</b>		<b>183</b>	<b>3.23</b>	<b>3.00</b>		3307.000	-2.561	<b>0.010</b>	<b>0.189</b>
GF	Yes	42	3.21	3.00	90.61				
	No	143	3.25	3.00	93.70				
<b>Total</b>		<b>185</b>	<b>3.24</b>	<b>3.00</b>		2902.500	-0.354	0.724	
GI	Yes	59	3.42	4.00	105.64				
	No	126	3.16	3.00	87.08				
<b>Total</b>		<b>185</b>	<b>3.24</b>	<b>3.00</b>		2971.000	-2.359	<b>0.018</b>	<b>0.173</b>
<b>Contribution to Beliefs and Attitudes</b>									
IB	Yes	95	3.49	4.00	100.06				
	No	90	3.27	3.00	85.55				
<b>Total</b>		<b>185</b>	<b>3.38</b>	<b>4.00</b>		3604.500	-1.981	<b>0.048</b>	<b>0.146</b>
IP	Yes	84	3.56	4.00	102.38				
	No	98	3.21	3.00	82.17				
<b>Total</b>		<b>182</b>	<b>3.37</b>	<b>4.00</b>		3202.000	-2.777	<b>0.005</b>	<b>0.206</b>
GF	Yes	42	3.24	3.00	84.15				
	No	142	3.43	4.00	94.97				
<b>Total</b>		<b>184</b>	<b>3.39</b>	<b>4.00</b>		2631.500	-1.244	0.214	
GI	Yes	59	3.66	4.00	105.81				
	No	125	3.26	3.00	87.00				
<b>Total</b>		<b>184</b>	<b>3.39</b>	<b>4.00</b>		2675.500	-3.229	<b>0.001</b>	<b>0.238</b>
<b>Apply Best Practices</b>									
IB	Yes	96	3.52	4.00	99.27				
	No	90	3.34	3.00	87.35				
<b>Total</b>		<b>186</b>	<b>3.44</b>	<b>4.00</b>		3766.500	-1.650	0.099	
IP	Yes	84	3.58	4.00	100.08				
	No	99	3.32	3.00	85.14				
<b>Total</b>		<b>183</b>	<b>3.44</b>	<b>4.00</b>		3479.000	-2.083	<b>0.037</b>	<b>0.154</b>
GF	Yes	42	3.50	4.00	97.29				
	No	143	3.42	4.00	91.74				
<b>Total</b>		<b>185</b>	<b>3.44</b>	<b>4.00</b>		2823.000	-0.645	0.519	
GI	Yes	59	3.64	4.00	105.81				
	No	126	3.34	3.00	87.00				
<b>Total</b>		<b>185</b>	<b>3.44</b>	<b>4.00</b>		2961.000	-2.437	<b>0.015</b>	<b>0.179</b>

**Key:** *N* – Number of respondents; *MV* - Mean Value; *ME* - Median; *MR* - Mean Rank; *U* - Mann-Whitney *U* value; *z* - *Z* value; *p* - Probability value; *r* - *r* value; *IB* – Individual Business; *IP* – Individual Personal; *GF* – Formal Group; *GI* – Informal Group

**Table 8-26 Network Types and Social Support (central tendency and Mann-Whitney U test of responses)**

TYPE OF NETWORK		STATISTICS							
		N	MV	ME	MR	U	z	p	r
<b>Social Support</b>									
IB	Yes	96	3.08	3.00	97.78				
	No	89	2.91	3.00	87.84				
<b>Total</b>		<b>185</b>	<b>3.00</b>	<b>3.00</b>		3813.000	-1.330	0.183	
IP	Yes	84	3.19	3.00	101.14				
	No	98	2.85	3.00	83.24				
<b>Total</b>		<b>182</b>	<b>3.01</b>	<b>3.00</b>		3306.500	-2.408	<b>0.016</b>	<b>0.179</b>
GF	Yes	41	2.88	3.00	85.06				
	No	143	3.03	3.00	94.63				
<b>Total</b>		<b>184</b>	<b>3.00</b>	<b>3.00</b>		2626.500	-1.069	0.285	
GI	Yes	59	3.27	3.00	108.49				
	No	125	2.87	3.00	84.95				
<b>Total</b>		<b>184</b>	<b>3.00</b>	<b>3.00</b>		<b>2744.000</b>	<b>-2.950</b>	<b>0.003</b>	<b>0.218</b>

*Key: N – Number of respondents; MV - Mean Value; ME - Median; MR - Mean Rank; U - Mann-Whitney U value; z - Z value; p - Probability value; r - r value; IB – Individual Business; IP – Individual Personal; GF – Formal Group; GI – Informal Group*

## 8.5 Conclusion

Information content of shared information, which was used to build up knowledge, between people in the tourism sector were analysed in this chapter. This information content was obtained largely based on business development reasons. By far, the majority (61.5%) of business people within the tourism sector were engaged in inter-organisational relationships in which they received information. The majority of the information was local (84.0%) and the majority of respondents received information through electronic mail (79.5%). Managers received statistically significantly more strategic information and the type of information received was also related to particular communication methods as for instance, strategic information was related to face to face conversation.

The type of networking practice, whether individual or group, formal or informal was also important. Individual business network agents received statistically significantly more strategic and managerial information and individual personal networkers received statistically significantly more strategic and local information. Group networking practices were not beneficial in that respondents did not obtain an information advantage although there is a contradiction which suggests that group informal networkers were statistically significantly different in regard to 'Social networking is the best means for me to know exactly what is happening to assist me in operating my business.' In addition, respondents who engaged in an informal group networking practice obtained an information advantage in terms of strategic and managerial information. Primarily the group networking practices as compared with the individual networking practices were less tacit-based.

As a result of the types of network, types of information and communication methods there were resulting outcomes. Individual business networkers benefited from receiving information, however, respondents who engaged in informal networking practices benefited more from a contribution to the performance of their business and social support. These findings demonstrated how information advantages of strategic, managerial and local information contributed towards improved business performance. Following this analysis of information content and mode of dissemination the following chapter presents an analysis of the network structure within which information was received and potentially shared, that is characteristics of embeddedness, structural influence and innovation.

## CHAPTER 9 NETWORKING

### 9.1 Introduction

Social networks are frequently a medium for communication. The basic social structure involves two nodes (persons), which is a dyad and these two nodes (persons) may have no communication, one-way communication or two-way communication. As a result, of the flow of communication there are connections and these connections can be mapped. Mapped network connections are the data used to perform social network analysis. Social network connections form a network structure which can be analysed to show inter-relationships. These structures can then be interpreted to understand how inter-organisational networks of knowledge sharing operate, in this instance within a tourism destination.

This chapter considers the structural characteristics of knowledge sharing through social networks in the selected tourism destination. There are two main sub-sections: (1) networking practices of the owners and managers of tourism and hospitality businesses; and (2) networking practices of individual and group networks. In order to interpret the network structures of people working in tourism and hospitality businesses the networks were mapped. Data were then analysed based on four network types: individual business, individual personal, group formal and group informal networks. For both sub-sections analyses were conducted based on the elements of embeddedness, structural influence and innovation. A conclusion identifies the key findings relating to the networks studied.

## 9.2 Networking Practices of Owners and Managers

The primary purpose of this section is to examine the network structures through which knowledge sharing between people in tourism and hospitality businesses takes place. Business people in the tourism sector were asked for the names of businesses in the tourism sector that they received information from that was or will be important to the effective and efficient operation of their businesses. These names were used to map network connections. Respondents were asked to freely name these information receiving relationships using a name generator question similar to that developed by Burt (1984; 1997b). Networking practices were analysed based on three network characteristics: embeddedness, structural influence and innovation.

### 9.2.1 *Embeddedness*

Network embeddedness means that network agents are fixed with a structure which may provide capabilities. The main features of embeddedness are density, transitivity and clustering. Details of these characteristics were provided in 6.7.2.3.1 in chapter 6. Embeddedness facilitates the network's overall capability to share knowledge. This means that based on a business person's knowledge network density, transitivity and clustering, their actual and potential knowledge sharing practices can be examined. Density indicates the volume of activities that are taking place between agents within a defined boundary and therefore density is based on the actual number of information ties as compared to potential number of information ties. Denser networks will therefore have a greater number of ties and as suggested by Rowley (1997) and denser networks facilitate the diffusion of knowledge. Transitivity is based on the mutuality of relationships and is an indication of the network's potential reciprocal practices and therefore the strength of ties. Transitivity means that there are more reciprocal ties (A shares with B and B also shares with A). Clustering is the joining of the nodes together into sub-groups.

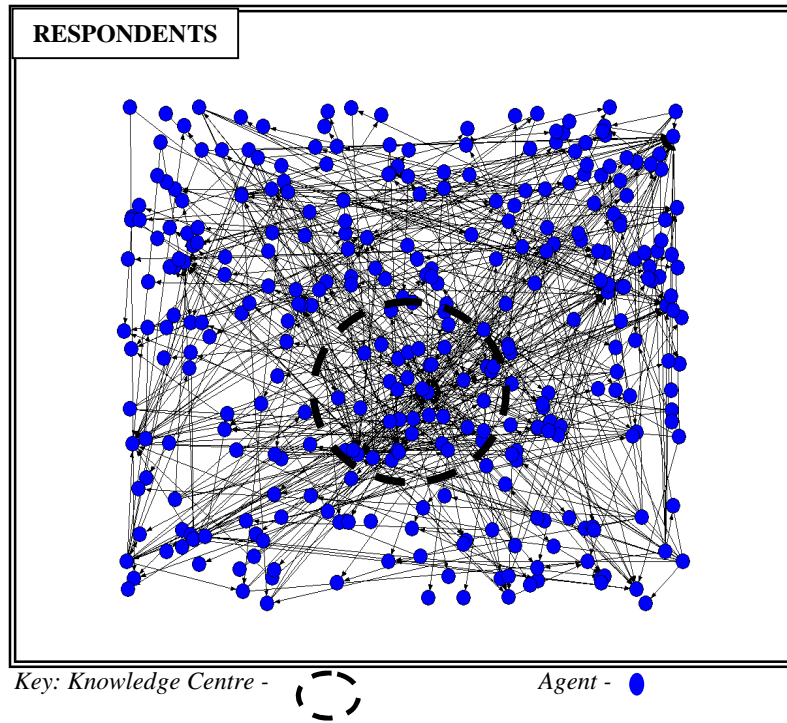


### 9.2.1.1 Density

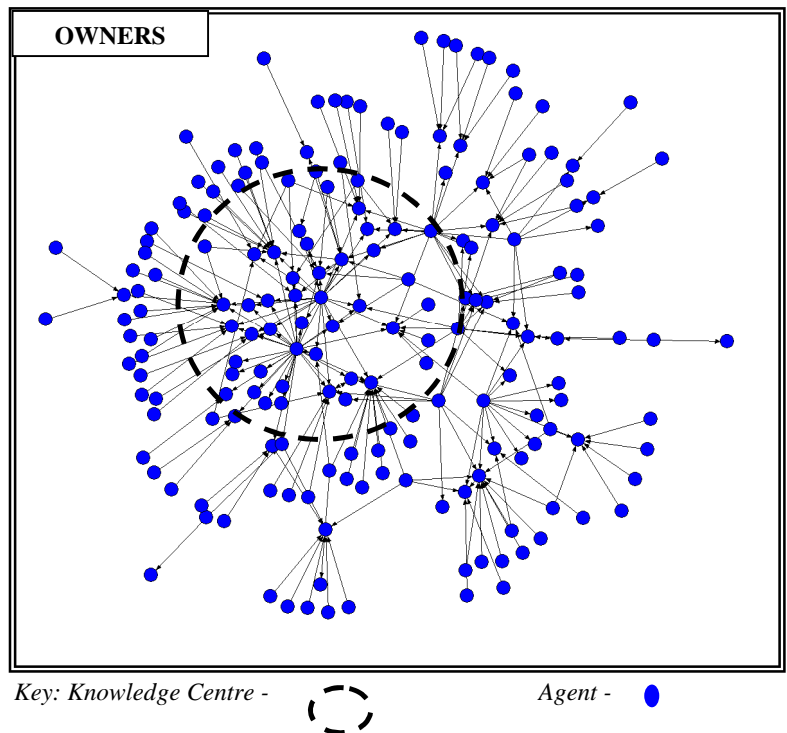
Density is an important characteristic of network embeddedness. Density is the ratio of the number of present ties divided by all possible ties (Hanneman and Riddle 2005). Density of valued data is not a percentage but the average strength of ties across all possible ties. Valued data means that if ego received information from an alter several times, that is once within each type of network, the value of the tie will be the total number of times information was received. Before characteristics of density, transitivity and clustering were analysed for the three network types, respondents' (Figure 9-1), owners' (Figure 9-2) and managers' (Figure 9-3) networks were constructed. These diagrams show that owners and managers across the conurbation have inter-related knowledge sharing relationships within a main component (Figure 6-9 in chapter 6 explains network components). An ego received information and alters shared information. These egos and alters, which are jointly referred to as agents were embedded in a knowledge network structure of information sharing.

The respondents' network takes the form of a block pattern (Figure 9-1). The block pattern can be viewed as a multi-dimensional image with nodes at the core or periphery depending on their network connections. Intuitively Borgatti and Everett (2000) suggested that a network's core can be derived by identifying nodes near the centre of the diagram. In view of this, a knowledge centre was identified on the diagram as the densest area of nodes and ties. Within the knowledge centre there were inter-locking ties and the closeness of the nodes (the geodesic distance) suggests that the paths between each ego and his/her alters are relatively short. A short geodesic distance means that each ego can reach the source of information within one or two other egos or alters.

**Figure 9-1 Respondents' Inter-organisational knowledge sharing within the Bournemouth, Poole and Christchurch conurbation**

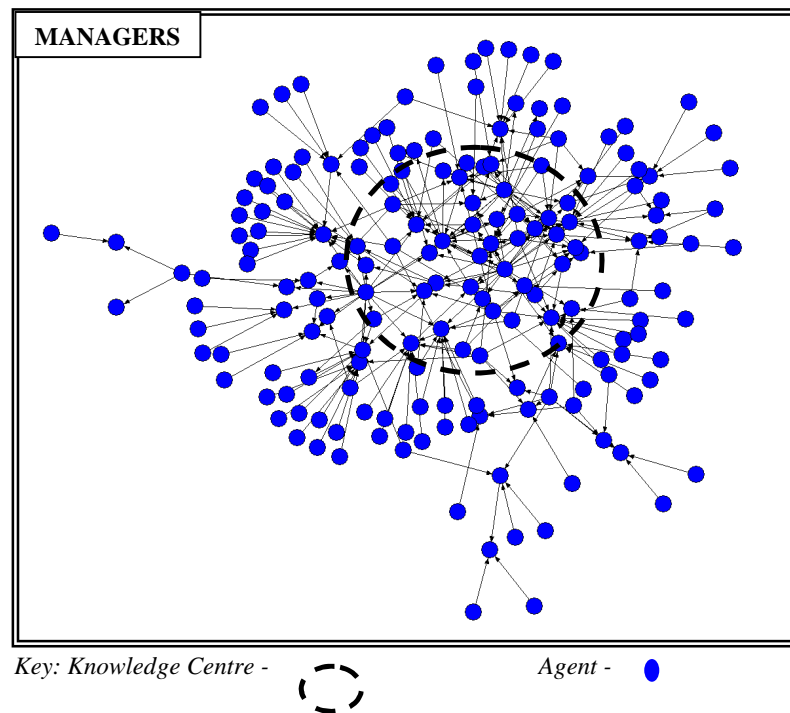


**Figure 9-2 Owners' Inter-organisational Knowledge Sharing within the Bournemouth, Poole and Christchurch conurbation**



The illustrated main component owners' network involved 74 egos (respondents) (Figure 9-2). The owners' network had one main knowledge centre which has been pointed out on the diagram. Information flows from the isolated agents towards the agents within this knowledge centre, which is circular in shape. On the other hand, the main component of the managers' network includes 66 egos (Figure 9-3) which is 10.81% points lower than the main component owners' network. Based on visual evidence the knowledge centre is circular and seemingly comprised closer nodes. The results of calculations of the respondents', owners' and managers' network densities are presented at Table 9-1. Although the owners' and managers' network density figures were similar the managers' density network figure was slightly less indicating that managers had on average fewer ties when compared with owners, and were therefore less dependent.

**Figure 9-3** Managers' Inter-organisational Knowledge Sharing within the Bournemouth, Poole and Christchurch conurbation



**Table 9-1 Inter-organisational Knowledge Sharing (density overall)**

	<i>DENSITY (AVERAGE VALUE)</i>	<i>STANDARD DEVIATION</i>	<i>NUMBER OF AGENTS</i>	<i>INFORMATION TIES</i>
<b>Respondents</b>	1.2593	0.5581	330	536
<b>Owners</b>	1.2619	0.5222	184	252
<b>Managers</b>	1.2590	0.5918	178	278

In Table 9-1, the owners' and managers' values do not add up to the respondents' value since when the owners' and managers' networks were combined there was greater network connectivity as compared to when the respondents' network was separated (Appendix VII).

#### 9.2.1.2 Transitivity

Transitivity relates to the strength of ties (Granovetter, 1973). A transitive network means that agents are capable of obtaining resources from another agent within their triad and as a result, agent A can obtain resources from agent C through agent B since B and C are connected. Hanneman and Riddle (2005) suggest that triads allow for a wider range of relationships. This is because, if A directs a tie to B, and B directs a tie to C, then A also directs a tie to C (Hanneman and Riddle, 2005). As a result, A, B and C are in a transitive triad. Two types of transitivity calculations were performed: adjacency and strong. Adjacency means that if AB and BC exist then AC is also present and strong means that AC is stronger than the minimum value for a strong tie (Hanneman and Riddle, 2005).

**Table 9-2 Inter-organisational Knowledge Sharing (transitivity)**

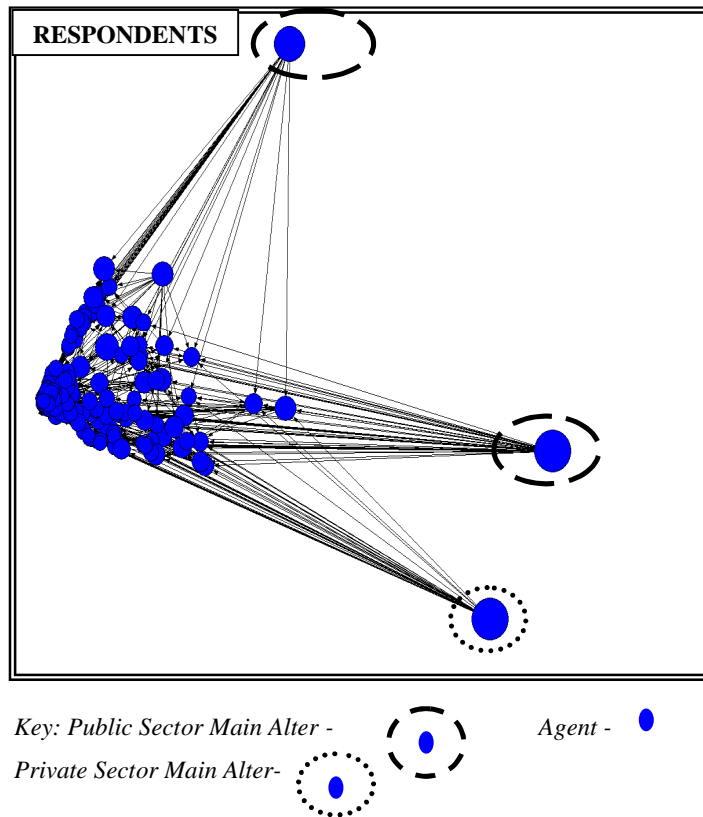
	<i>ADJACENCY</i>	<i>STRONG</i>
<b>Respondents</b>	65	63
<b>Owners</b>	18	18
<b>Managers</b>	29	29

Overall, the respondents' network had 65 adjacent triads and therefore there are 65 instances where if AB and BC are present, then AC is also present (Table 9-2). There were however, two weak transitive ties (non-mutual) hence the reason for 63 strong transitive ties within the respondents' network. As the respondents' network was split when analysing owners' and managers' networks separately, some connecting ties are lost in these analyses and therefore the numbers of transitive triads were reduced within the owners' and managers' networks. The figure for the managers' network was 61.11% more than the owners' network. As a result, the managers' network acts as a potential medium for knowledge networking more than does the owners' network since 'manager agents' were more likely to obtain resources from more than one direction. Managers were therefore more likely to learn socially from their networks.

### 9.2.1.3 Clustering

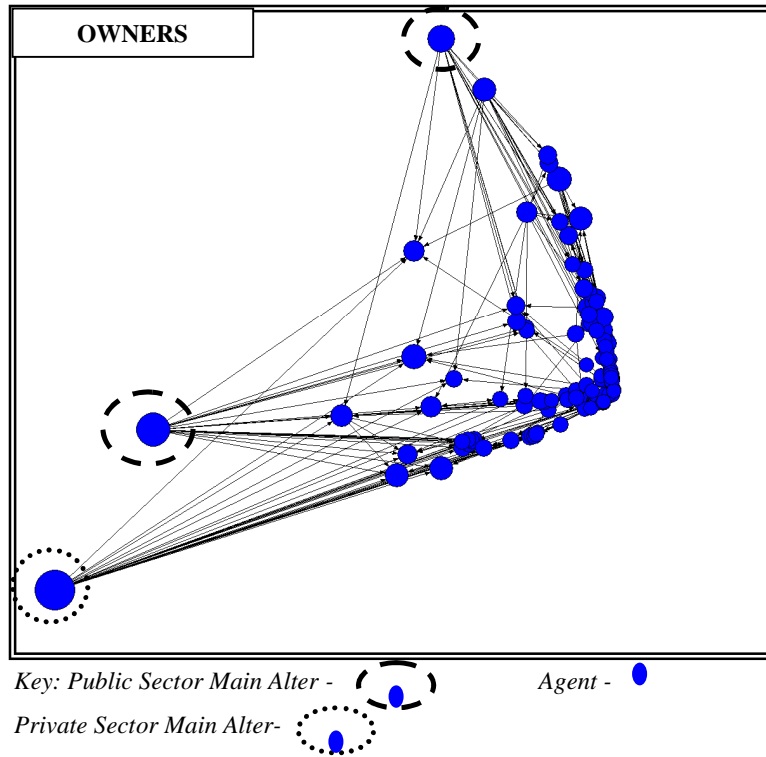
A network's clustering co-efficient measures the degree of cohesiveness within the network since clustering joins together nodes into a distinctive group. Agents are joined in clusters when they are positioned together, that is, they have similar patterns of ties. The clustering patterns and co-efficient values were constructed and calculated respectively for the respondents', owners' and managers' networks. Node sizes were drawn in proportion to the size of the ego-network. Circles were drawn within the cluster diagrams to separate main alters which were the public sector and the private sector agents (and therefore lie outside the focus of this study). Principal Component's layouts which are used to show the positioning of similar agents were used to show the clustering patterns within respondents', owners' and managers' networks (Figures 9-4, 9-5 and 9-6).

**Figure 9-4 Respondents' Inter-organisational Knowledge Sharing Clusters within the Bournemouth, Poole and Christchurch conurbation (Principal Components)**

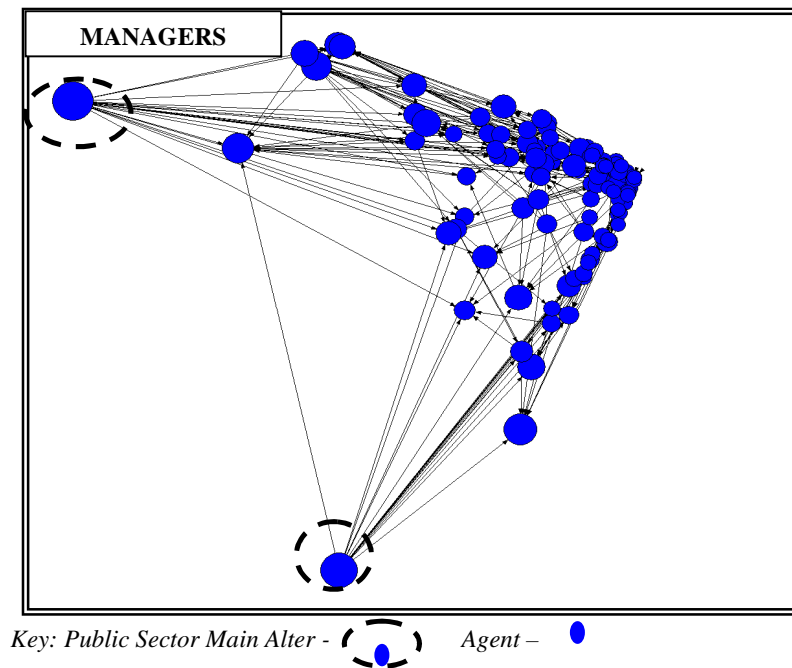


The clustering co-efficient for the owners' network was 4.3% and the clustering co-efficient for the managers' network was 7% and therefore the knowledge resources within the manager's network is more of a public good (collective consumption) (3.3.1.2.1). For the overall respondents' network, the clustering co-efficient was 8.7% since the combination of the two networks (owners and managers) increased network connectivity. Consequently, managers were more likely to be able to share knowledge as compared with owners since 'manager agents' were closer together in ego-network neighbourhoods that potentially share information. The orientation of the knowledge sharing clusters are different and this is because of the positioning of main alters (circled) in the networks. Within the owners' network the clustering is pinned to the main private sector alter whereas in the managers' network the clustering is pinned to main public sector alters. The clusters were therefore orientated towards the main sources of information and as suggested by Marwell and Oliver (1993) main alters can be viewed as 'network organisers' if these alters can contact enough people.

**Figure 9-5** Owners' Inter-organisational Knowledge Sharing Clusters within the Bournemouth, Poole and Christchurch conurbation (Principal Components)



**Figure 9-6** Managers' Inter-organisational Knowledge Sharing Clusters within the Bournemouth, Poole and Christchurch conurbation (Principal Components)



## 9.2.2 Structural Influence

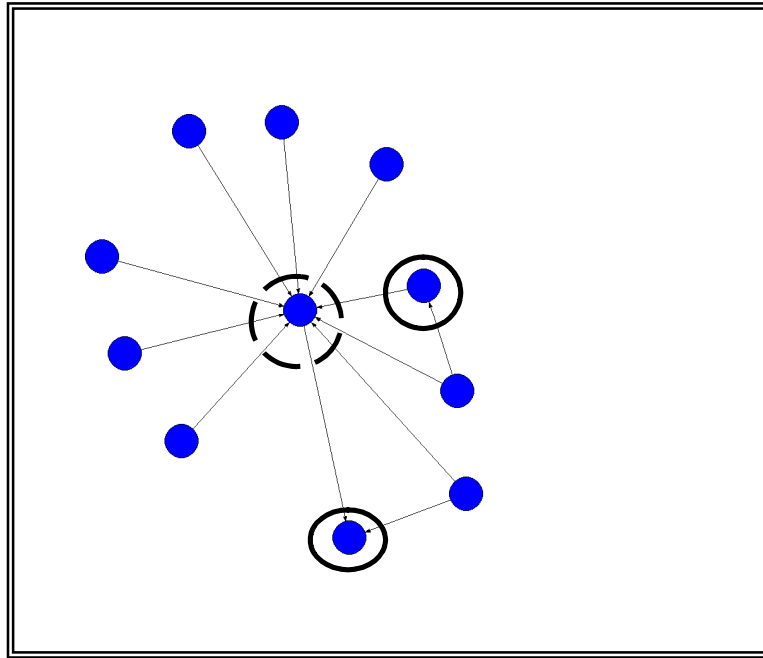
Structural influence means that an ego's positioning within a network of agents allows that ego to obtain different resources based on their network position (Burt, 1982). A structural influence means that as a result of the dyadic (two nodes) and triadic (two nodes plus one) ties an ego is enabled or constrained when seeking to make use of network resources. These resources, which in this case are information resources, therefore influence the behaviour of ego. As a result, structural influences facilitate inter-organisational knowledge sharing and the main characteristics are strength of ties, centrality and cliques. These three characteristics are discussed in this sub-section.

### 9.2.2.1 Strength of Ties

The strength of a tie is a structural influence since as suggested by Granovetter (1973) weaker ties provide new resource benefits and the removal of the average weak tie damages transmission possibilities. Basically, weak ties improve transmission of non-redundant (new) information (Granovetter, 1973). An ego-network's size indicates the number of weak ties. There were 330 egos and alters (agents) in the respondents' network which included both owners and managers. The sizes of the respondents' ego-networks ranged from 1 to 45 agents (Appendix VII). The size of the ego-network provides an indication of the extent to which an ego, networks with people in other tourism and hospitality businesses. For the owners' network the size of each ego-network ranged from 1 to 31 agents and in the managers' network the ego-network sizes ranged from 1 to 22. Thus, the maximum size of a manager's ego-network was 40.9% less than the owners' network and therefore, 'owner agents' were more likely to have weaker ties than 'manager agents.'



**Figure 9-7 Poole Attraction Agent in Respondents' Network (ego-network neighbourhood)**



Key: Focal Agent -  Alters -   
 Otherwise Connected Agent - 

Another measure of ego network cohesion is the number of weak components. A weak component arises when an agent (ego or alter) is only connected to one alter in the ego-network. In other words, in the case of the respondents' network, a Poole attraction (dashed circled ego in Figure 9-7) ego-network of 10 agents had 8 weak components (which according to Granovetter (1973) are weak ties); therefore there were 10 minus 8, or 2 agents (bold circled) who were otherwise connected. Consequently, the number of weak components measures information dependent alters. The maximum values of the numbers of weak components within the respondents', owners' and managers' networks were derived (Table 9-3). The minimum value was not calculated since this value would always be 1, at least one tie. The results show that primarily smaller properties, small hotels and bed and breakfast properties had the largest number of weak components (Table 9-3). In view of this, these properties, as compared with other property types, were capable of obtaining non-redundant information through their network ties.

**Table 9-3 Inter-organisational Knowledge Sharing Weak Components (maximum values)**

<b>TYPE OF BUSINESS</b>	<b>RESPONDENTS (N)</b>	<b>OWNERS (N)</b>	<b>MANAGERS (N)</b>
	Max	Max	Max
<b>Large Hotels</b>	9.00	6.00	9.00
<b>Small Hotels</b>	13.00	11.00	13.00
<b>Campsite</b>	5.00	2.00	4.00
<b>Guesthouses</b>	9.00	10.00	1.00
<b>Bed and Breakfast properties</b>	13.00	13.00	10.00
<b>Self Catering establishments</b>	8.00	8.00	3.00
<b>Attractions</b>	11.00	3.00	11.00
<b>TOTAL</b>	13.00	13.00	13.00

*Key: Max – Maximum; N – Number of Weak Components*

‘Two-step reach’ measures, the number of nodes an ego can potentially share resources with as a percentage of the total number of agents in the network. That is whether an ego can get a message to all other agents within a ‘friend-of-a-friend’ distance. ‘Two-step reach’ values for respondents’, owners’ and managers’ networks were calculated. The maximum and minimum ‘two step reach’ values within each business type are shown (Table 9-4). Business people within particular types of businesses were more capable of disseminating information than other business people in certain business types. For instance, in the respondents’ and owners’ networks, small hotels had the highest ‘two-step reach’ values whereas in the managers’ network an attraction had the highest ‘two-step reach’ value. These results indicate the potential disseminative capability of particular types of businesses, as in this case, smaller establishments and attractions were key potential knowledge sharers.

**Table 9-4 Inter-organisational Knowledge Sharing ‘Two-step reach’ (maximum and minimum percentages)**

<i>TYPE OF BUSINESS</i>	<i>RESPONDENTS (%)</i>		<i>OWNERS (%)</i>		<i>MANAGERS (%)</i>	
	Max	Min	Max	Min	Max	Min
<b>Large Hotels</b>	27.36	1.22	23.50	2.19	27.12	1.69
<b>Small Hotels</b>	35.87	1.22	37.16	2.19	28.81	5.08
<b>Campsite</b>	14.29	1.52	4.37	3.83	16.95	6.78
<b>Guesthouses</b>	26.14	0.61	28.96	1.09	1.69	1.69
<b>Bed and Breakfast properties</b>	29.79	0.91	34.43	1.64	25.99	7.91
<b>Self Catering establishments</b>	35.56	0.91	37.16	1.09	25.42	1.69
<b>Attractions</b>	32.52	0.91	7.10	1.09	32.20	1.69
<b>TOTAL</b>	35.87	0.61	37.16	1.09	32.20	1.69

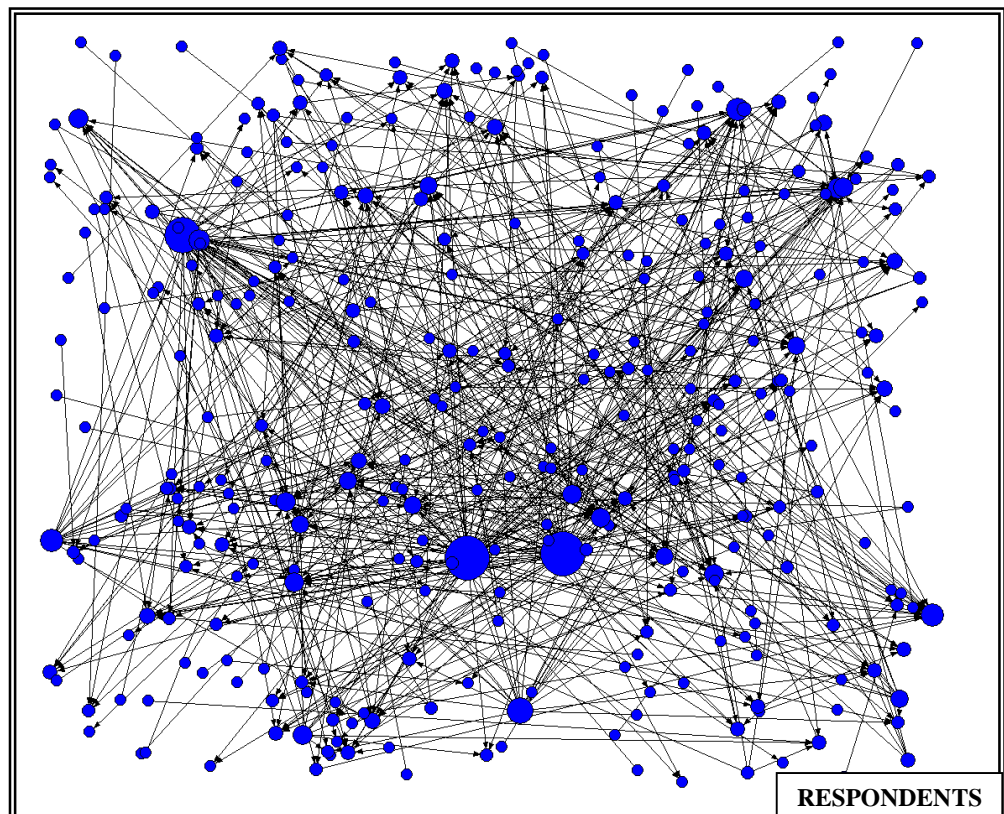
*Key: Max – Maximum; Min – Minimum*

### 9.2.2.2 Centrality

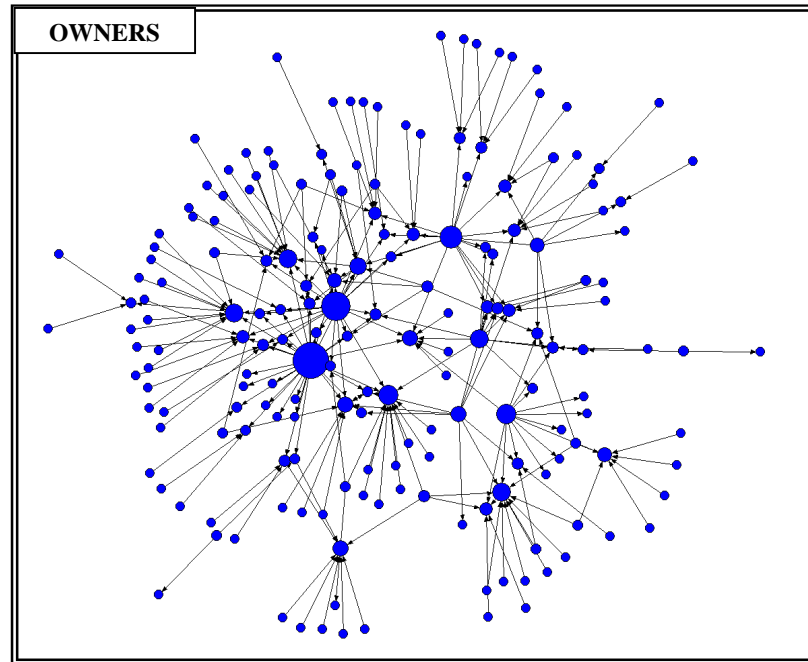
Centrality as a measure identifies important network agents (Everett and Borgatti, 2005) since a central position in theory provides greater access to network resources (Sparrow, 2001). As a result, centeredness of an agent indicates that an agent is in a structural position that is an advantage over other agents. Centrality of an agent can be measured in different ways including degree, closeness and betweenness. Degree centrality relates to the number of ties an agent has. For instance if three alters are only connected to one ego, then the ego has a degree centrality of 3 and each alter has a degree centrality of 1. Closeness centrality measures as a proportion the node distances in relation to the entire network's distance and betweenness measures the node distances that the focal agent is a link between other network agents. Based on these centrality measures, the agents' capabilities to share network resources can be determined.

Network diagrams of respondents, owners and managers, which represented the degree centrality values were therefore constructed (Figures 9-8, 9-9 and 9-10). These diagrams are different from the previous ones since the sizes of the nodes are based on the degree centrality values. Accordingly, agents with relatively larger nodes have more nodes connected with them and therefore were recipients and also potential sources of more information ties. Based on visual evidence, there was a similar pattern of larger and smaller nodes within the respondents' and owners' network. In comparison, the centrality of agents within the managers' network was seemingly more distributed since more nodes as compared with the respondents' and owners' networks were larger in size. This pattern is an indication of the distributive capability within the managers' network since more 'manager agents' had relatively central positions within their network.

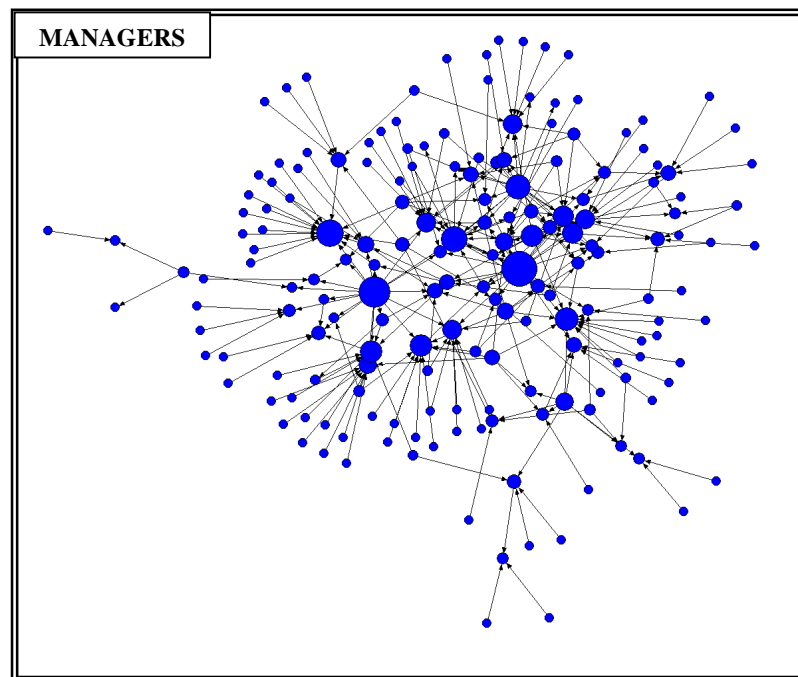
**Figure 9-8 Respondents' Inter-organisational Knowledge Sharing Centrality within the Bournemouth, Poole and Christchurch conurbation (Freeman degree centrality)**



**Figure 9-9 Owners' Inter-organisational Knowledge Sharing Centrality within the Bournemouth, Poole and Christchurch conurbation (Freeman degree centrality)**



**Figure 9-10 Managers' Inter-organisational Knowledge Sharing Centrality within the Bournemouth, Poole and Christchurch conurbation (Freeman degree centrality)**



Centralisation of the network can also be determined and is a measure which expresses the extent network agents revolve around the most central agent (Everett and Borgatti, 2005). The higher the centralisation value the more agents within that network are dependent on the most central agent. The network with the highest centralisation was the owners' network, followed by the respondents' network (Table 9-5). This means that the managers' network was least dependent on its most central agent for potential knowledge resources flowing through the network.

The respondents' network had the highest value for average degree centrality and this figure was higher than the two component network parts, owners' and managers' networks, since there were more connected nodes in the combined respondents' network. Additionally, a large standard deviation indicates a few large numbers. The standard deviation value for the respondents' network was higher than the owners' and managers' networks and therefore there were some larger than average ego-networks within the respondents' network. This result concurs with the finding that the size of ego-networks within the respondents' network ranged from 1 to 45 agents.

**Table 9-5 Inter-organisational Knowledge Sharing (Centrality)**

	<i>NETWORK DEGREE CENTRALISATION (%)</i>	<i>DEGREE (MEAN)</i>	<i>STANDARD DEVIATION</i>	<i>IN CLOSENESS (MEAN)</i>	<i>BETWEENNESS (MEAN)</i>
<b>Respondents</b>	5.04	4.085	6.913	0.307	4.585
<b>Owners</b>	5.74	3.446	5.241	0.548	0.217
<b>Managers</b>	4.01	3.933	5.005	0.574	3.820

Since the network is constructed using graph theory path lengths can be calculated. A path length is a geodesic distance between two nodes and it is calculated based on the shortest length (Hanneman and Riddle, 2005). For example, if the geodesic distance between two nodes is 3, there are three intervening nodes between these two nodes' path length.

Hanneman and Riddle (2005) noted that closeness centrality is the ability to reach other agents across shorter path lengths and thus such reachable agents have favoured positions. As such, closeness centrality indicates the expected time of arrival of a resource flowing through the network will reach a particular node (Borgatti et al., 2002; Glossary). Closeness may be measured in two ways, in and out closeness and in and out farness. The average 'incloseness' value was calculated since this value represents the sum of geodesic distances from other agents to the central agent within the network divided by the number of agents within the network. Thus, the value indicates how close agents within the network were to obtain information from the main agent (the most central node). The higher the 'incloseness' value the shorter the arrival time. Egos in the managers' network recorded the highest value for mean 'in-closeness' and therefore 'manager agents' were more likely to be capable of capturing network knowledge resources fastest.

Betweenness is another centrality measure. An ego is 'between' when its structural position lies in the path of two other agents. A between agent is less dependent on one path to obtain network resources and therefore other agents can go through a between agent to reach other agents' network resources. Betweenness is also related to the concept of brokerage since a between ego is in a position to share resources with other agents across the network. Betweenness is determined by measuring the path distances that are solely dependent on an agent for resource flows. In the respondents' network, the mean betweenness value was the highest as compared with both owners' and managers' networks (Table 9-5). The low betweenness value for the owners' network means that no one owner had information control within the network. The average betweenness value for the managers' network was greater than that of the owners' network and as a result, 'manager agents' had greater capability to share network resources with each other. Thus, 'manager agents' had greater capability of controlling the information flow within the network. Certain key 'manager agents' had control over the potential flow of network resources and this is the structural influence.

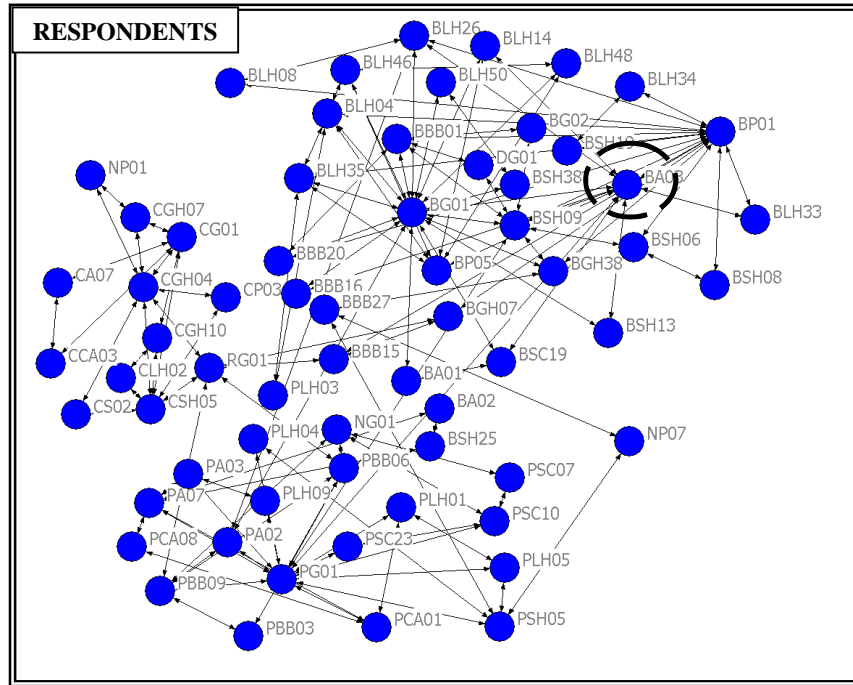
### 9.2.2.3 Cliques

A clique is a sub-structure containing a group of agents that display dense connections and thus in this case the potential for rich information flows. In other words, cliques may result in reciprocal, actual and potential ties between the agents of the clique. A clique was defined as three connecting nodes. In total there were 63 cliques in the overall respondents' network (Figure 9-11). These cliques form an integrated structure which included agents in Bournemouth, Poole and Christchurch. The clique sub-group in Christchurch included agents that were mostly small hotel and guesthouse properties. In comparison the clique sub-group in Poole included mostly attractions and bed and breakfast properties. The Bournemouth clique structure was dominated by large hotels with particularly important small hotels and guesthouses and this was a reflection of the sample (Table 6-2 in methodology chapter). A Bournemouth attraction was also important in the main clique since BA03 (circled) was included in seven cliques, two with large hotels, three with private sector alters, one with a self catering ego and another with a small hotel ego (Figure 9-11).

There were 16 cliques in the owners' network (Figure 9-12). Membership in each clique was once again three agents. There were two main cliques, one based on a combination of Bournemouth and Poole agents and the other based on Christchurch agents. Eight (8) cliques contained governmental alters. Cliques were dominated by smaller properties including bed and breakfast properties, guest houses and small hotels. For the managers' network there were three integrated cliques (Figure 9-13). The main clique contained both Bournemouth and Poole agents and was centred on Bournemouth tourism. Altogether there were twenty-nine (29) cliques. Of the 29 cliques, 17 cliques (58.6%) contained governmental agents and as a result, governmental agents were important as knowledge sources for the managers' network.

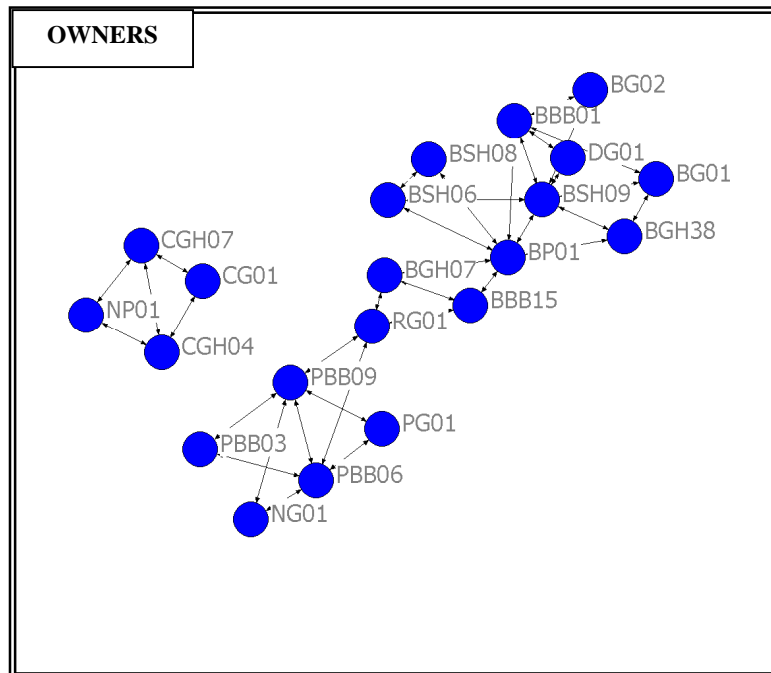


**Figure 9-11 Respondents' Cliques within the Bournemouth, Poole and Christchurch conurbation**

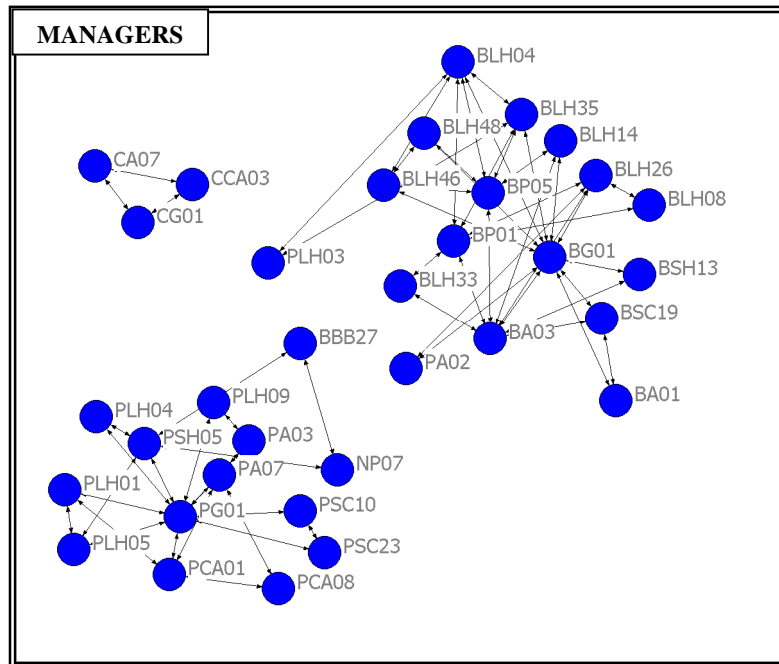


Key: Attraction in 7 cliques -

**Figure 9-12 Owners' Cliques within the Bournemouth, Poole and Christchurch conurbation**



**Figure 9-13 Managers' Cliques within the Bournemouth, Poole and Christchurch conurbation**



### 9.2.3 Innovation

Innovation means that there is a capability within the network to obtain, particularly useful information which can be used to create knowledge. In view of this, innovation is based on the characteristics of structural holes and brokerage opportunities within the network. Innovation and its relatedness to social network theory were explained previously (Section 3.2.4). It is posited that innovation is facilitated by structural characteristics such as clustering. However, social capital theory is also needed to understand how and why innovation works. While embeddedness and structural influence explain what is happening in the networks these characteristics do not explain how new knowledge, which builds innovative practices, can be obtained. An analysis in regard to the underlying influences on the innovative capability provided by the networks is discussed in this subsection.

### 9.2.3.1 Structural Holes

Innovative capability is built through structural holes since the hole provides a positional competitive advantage for an individual whose relationships span the structural holes (Burt, 2004). Spanning a structural hole provides social capital since Burt (1992) theorises that holes provide non-redundant (new) information. The main measures are effective size and constraint. The effective sizes of structural holes were calculated as the number of alters minus the average number of ties that each alter has to other egos and alters (Hanneman and Riddle, 2005) (Table 9-6). Minimum values were not included in the table since these values are always 1.000. Based on the maximum values of structural holes within the respondents' network, smaller establishments dominated in terms of the largest structural holes. In addition, the largest structural hole in the owners' network was 20.14% less than the largest structural hole in the manager's network. This is an indication of the potential reduction in innovative capability within the owners' network. In addition, attractions played a more prominent role, based on the size of the largest structural hole, in the managers' network as compared with the owners' network.

**Table 9-6 Inter-organisational Knowledge Sharing Structural Holes (effective sizes)**

<i>TYPE OF BUSINESS</i>	<i>RESPONDENTS (N)</i>	<i>OWNERS (N)</i>	<i>MANAGERS (N)</i>
	Max	Max	Max
<b>Large Hotels</b>	9.500	6.000	9.500
<b>Small Hotels</b>	15.618	11.000	15.618
<b>Campsite</b>	5.000	2.000	4.000
<b>Guesthouses</b>	11.589	11.735	1.000
<b>Bed and Breakfast properties</b>	13.000	13.000	5.667
<b>Self Catering establishments</b>	8.000	8.000	3.286
<b>Attractions</b>	14.355	3.000	11.000
<b>TOTAL</b>	15.618	13.000	15.618

*Key: N – egos minus the average number of ties alter has with others; Max - Maximum*

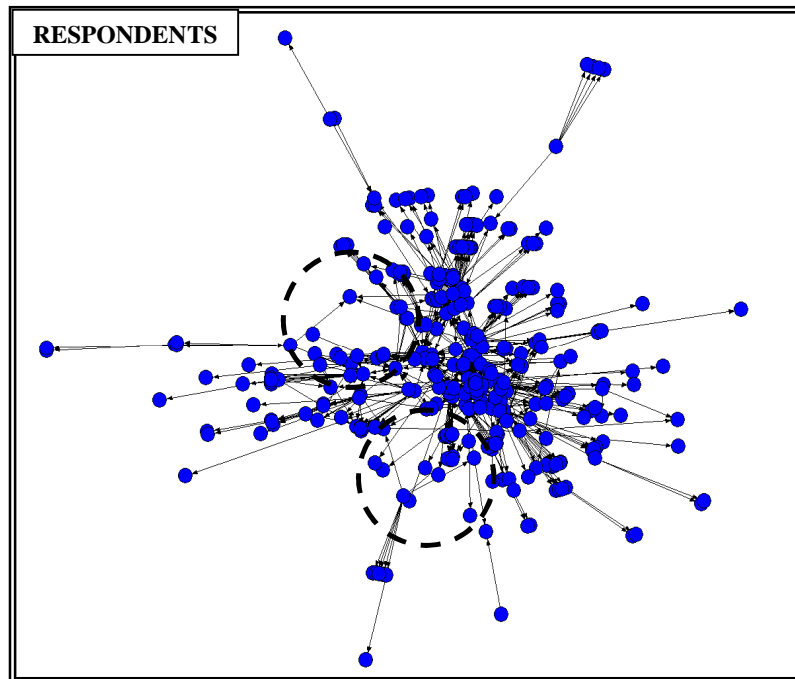
Constraint is another measure of structural holes. Hanneman and Riddle (2005) view constraint as the ability of an ego to have more than one source of information (Glossary). The more sources of information, the less an ego is constrained. The more ties an ego has and in turn the more ties those agents have, then the less that ego is constrained and therefore the lower the constraint value and the more an ego can act. Overall, within the respondents', owners' and managers' networks bed and breakfast properties and small hotels recorded the lowest constraint values and therefore these business types were capable of obtaining information from multiple sources and also potentially innovate their business practices. In addition, there were distinctive patterns in terms of the business types within the owners' network as compared with those business types within the managers' network that recorded lowest constraint values. Small hotels and attractions were least constrained in the managers' network whereas bed and breakfast and small hotel establishments were least constrained within the owners' network. These different types of businesses seemed to be particularly important or unimportant based on whether the respondent was an owner or manager.


**Table 9-7 Inter-organisational Knowledge Sharing Structural Holes (constraint)**

<i><b>TYPE OF BUSINESS</b></i>	<i><b>RESPONDENTS</b></i>		<i><b>OWNERS</b></i>		<i><b>MANAGERS</b></i>	
	Max	Min	Max	Min	Max	Min
<b>Large Hotels</b>	1.389	0.124	1.000	0.185	1.125	0.124
<b>Small Hotels</b>	1.000	0.095	1.000	0.101	1.000	0.095
<b>Campsite</b>	1.000	0.200	1.000	0.500	1.125	0.250
<b>Guesthouses</b>	1.000	0.153	1.000	0.128	1.000	1.000
<b>Bed and Breakfast properties</b>	1.389	0.086	1.125	0.086	1.000	0.251
<b>Self Catering establishments</b>	1.000	0.139	1.000	0.139	1.000	0.375
<b>Attractions</b>	1.000	0.101	1.000	0.375	1.000	0.101
<b>TOTAL</b>	1.389	0.086	1.125	0.086	1.125	0.095

*Key: Max – Maximum; Min – Minimum*

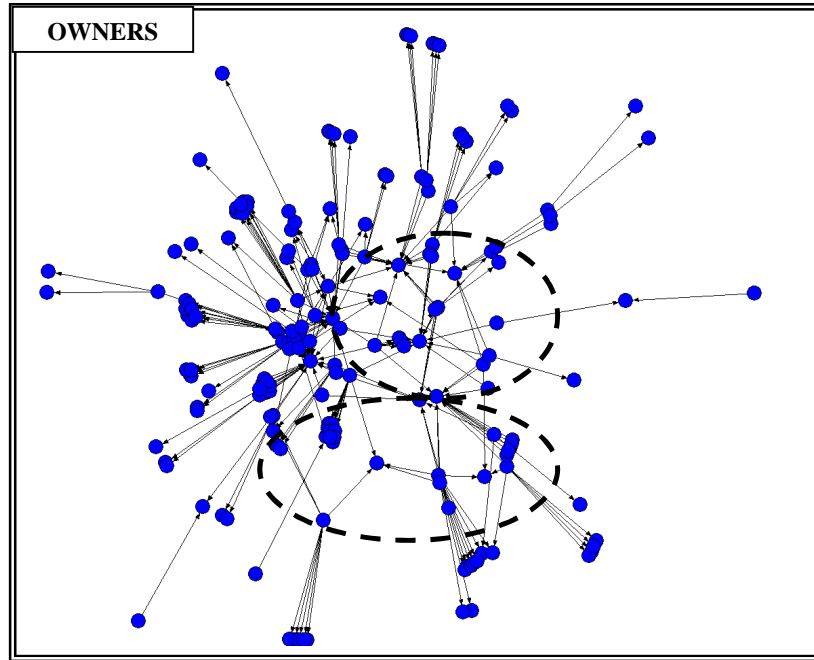
**Figure 9-14 Respondents' Inter-organisational Knowledge Sharing Structural Holes within the Bournemouth, Poole and Christchurch conurbation (Multi-dimensional scaling)**




Key: Structural hole - 

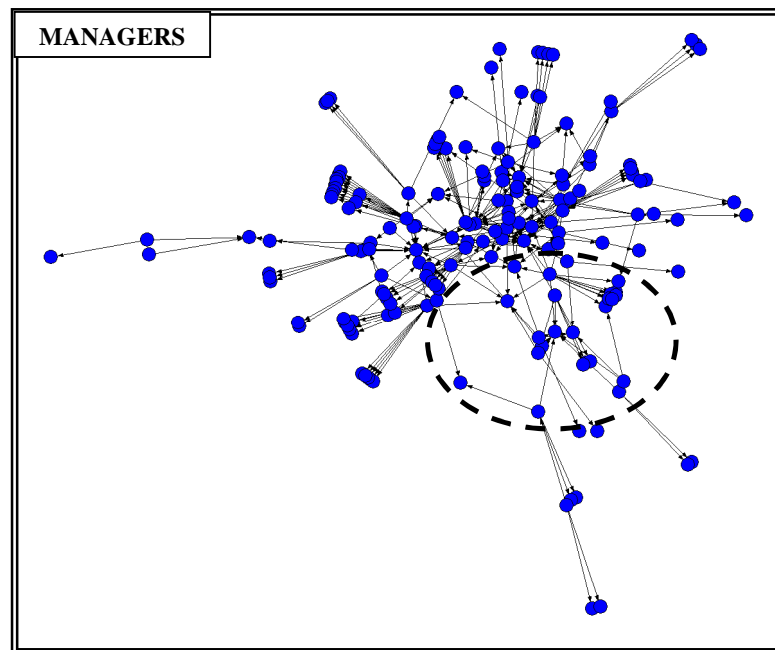
Multi-dimensional scaling is used to construct diagrams showing structural holes since this technique brings together similar agents and thereby reduces the number of nodes in the diagram. Separations can be observed as structural holes. For instance, in the respondents' network there was a large structural hole to the centre left of the diagram (Figure 9-14). Within the owners' network there were several structural holes to the right hand side and below the main cluster to the left and within the managers' network there were fewer structural holes and these were mainly on the down side of the diagram (Figures 9-15 and 9-16). As a result, it can be argued that there was a greater possibility that the 'owners agents' had received more non-redundant (new) information compared with the 'managers agents.'


**Figure 9-15** Owners' Inter-organisational Knowledge Sharing Structural Holes within the Bournemouth, Poole and Christchurch conurbation (Multi-dimensional scaling)



Key: Structural hole - 

**Figure 9-16** Managers' Inter-organisational Knowledge Sharing Structural Holes within the Bournemouth, Poole and Christchurch conurbation (Multi-dimensional scaling)

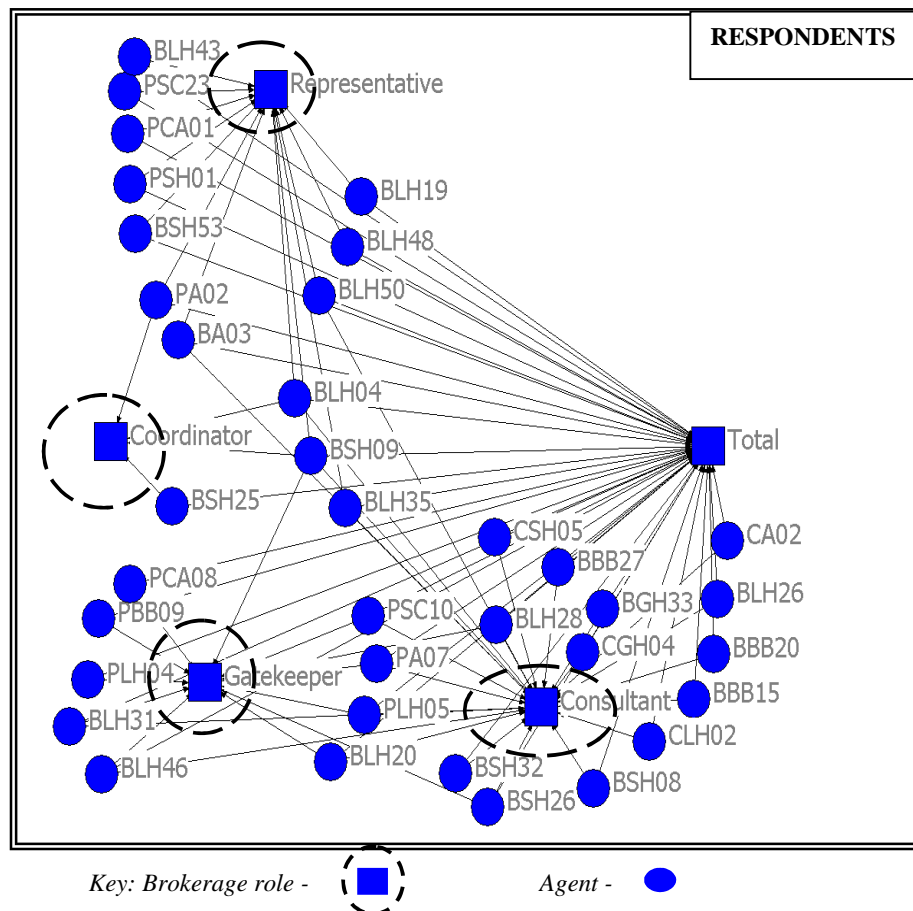


Key: Structural hole - 

### 9.2.3.2 Brokerage

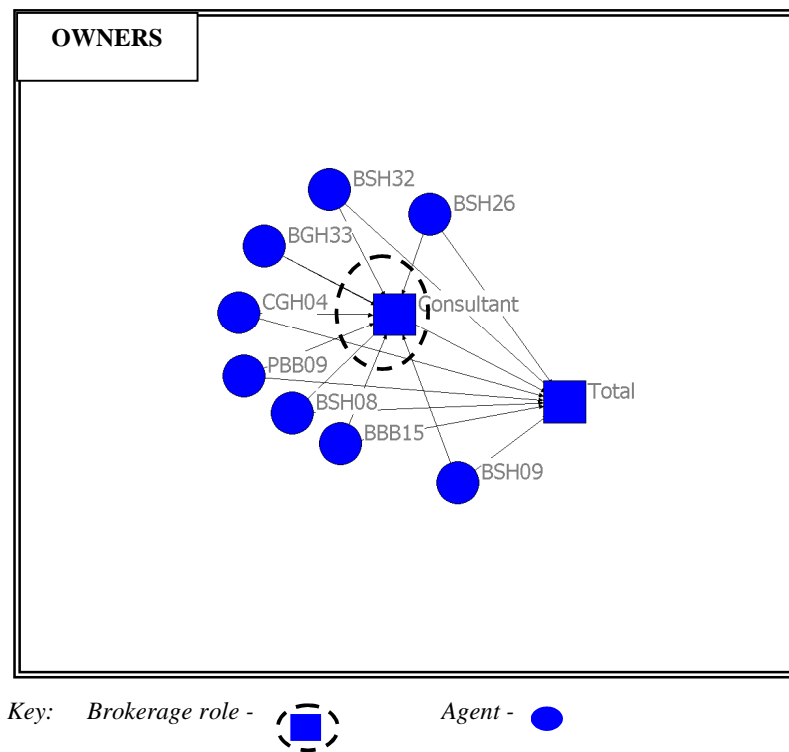
Brokerage means an ego acts as an intermediary to share network resources with agents who may be otherwise unconnected. The brokerage roles of respondents', owners' and managers' were calculated, based on Gould and Fernandez (1989) brokerage roles, by uploading the networks' main component into Gould and Fernandez item in UCINET 6.232 and partitioning brokerage scores by the relative brokerage (6.7.2.3.3 in chapter 6). The brokerage role is derived based on the number of pairs directly connected to ego. The diagrams show brokerage roles as squares and egos playing particular roles are connected as nodes to the squares (Figure 9-17, 9-18 and 9-19).

**Figure 9-17 Respondents' Inter-organisational Knowledge Sharing Brokerage Roles within the Bournemouth, Poole and Christchurch conurbation (G&F Brokerage Roles)**



The respondents' network showed four brokerage roles (shown as dash-circled boxes): representative, co-ordinator, gatekeeper and consultant (Figure 9-17). The most frequent role is that of a consultant and represents 24 nodes (egos). A consultant is an ego who belongs to a different group and shares information between two other agents that belong to the same group. There were several gatekeepers (12) who obtained information from another group and shared this information with an ego in their group and therefore these gatekeepers were particularly important. Several representatives (13) had the capability of receiving information from their group and then moving this information to another group. Lastly, there were four co-ordinators in the respondents' network and these co-ordinators (4) belonged to the same group and can therefore potentially share the same information.

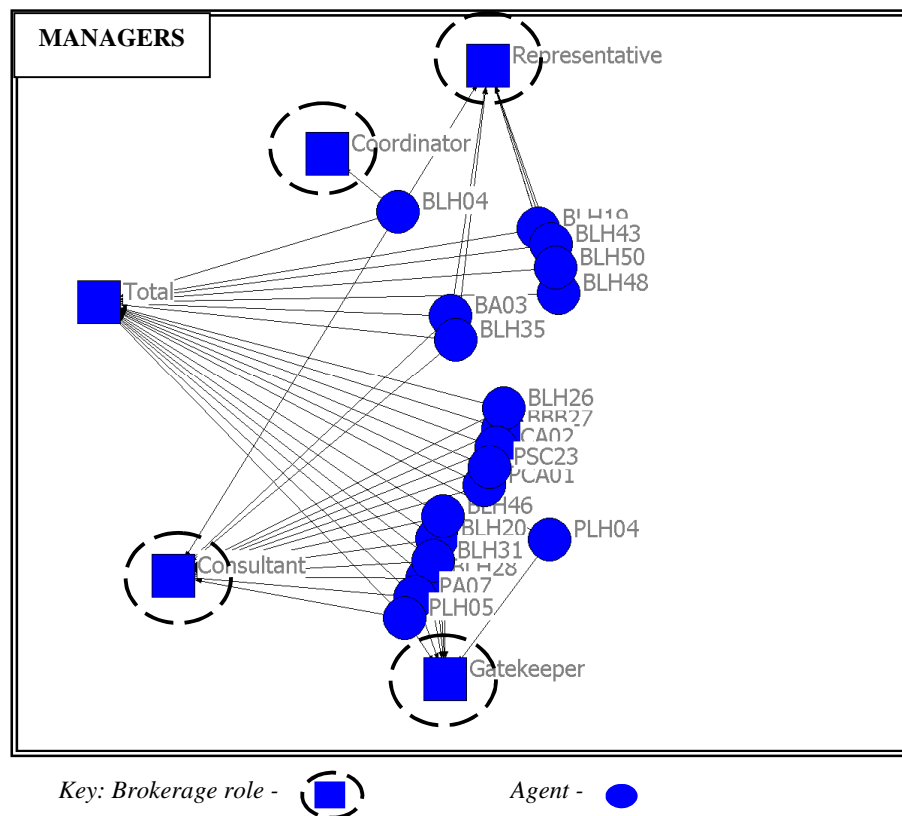
**Figure 9-18 Owners' Inter-organisational Knowledge Sharing Brokerage Roles within the Bournemouth, Poole and Christchurch conurbation (G&F Brokerage Roles)**





In the owners' network, there were eight (8) information brokers and these were all consultants (Figure 9-18). As a result, this role played by owners largely involved egos being potential sources of information between two different groups. In comparison to the owners' network, the managers' network recorded four roles, gatekeeper, consultant, representative and co-ordinator (Figure 9-19). In the managers' network the broker who shared the most information acted mostly as a consultant for 15 agents and as a representative for 5 agents. There were 7 gatekeepers, who were gatekeepers since they potentially obtained information from a different group and provided information to their group. As indicated previously, gatekeepers can prevent the flow of information. Six (6) of the gatekeepers were also consultants. Consultants are brokers of information even though they belong to a different group. With the various roles in the managers' network, particularly the gatekeeper role, innovative capability may be hampered.

**Figure 9-19 Managers' Inter-organisational Knowledge Sharing Brokerage Roles within the Bournemouth, Poole and Christchurch conurbation (G&F Brokerage Roles)**



### 9.3 Networking Practices of Individual and Group Networks

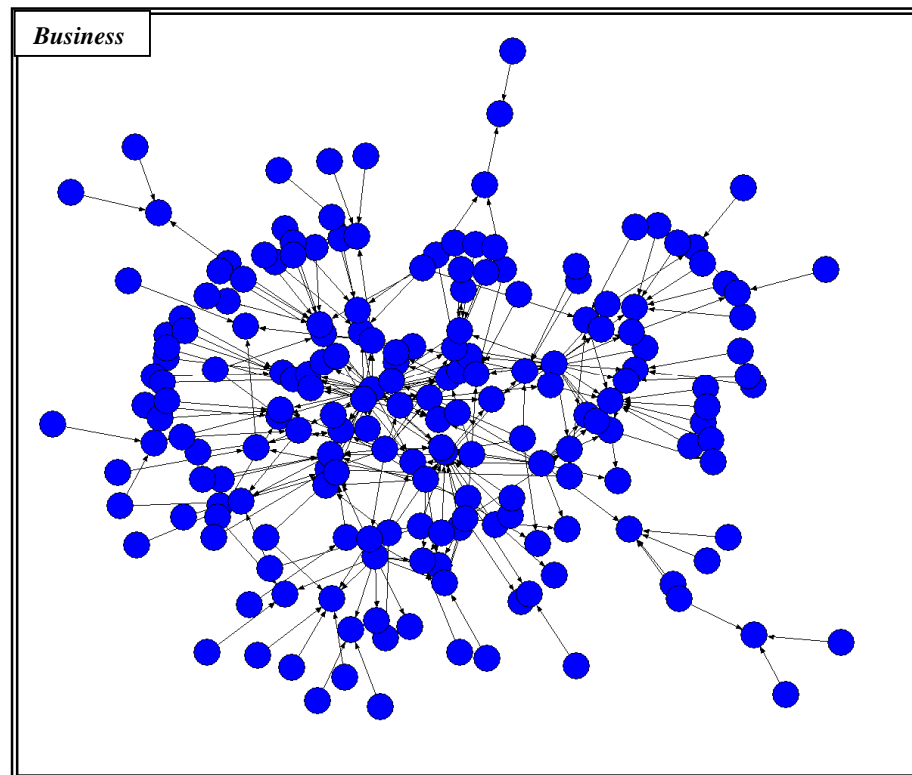
This section is based on individual and group networking practices and, as in the previous section, the characteristics of embeddedness, structural influence and innovation were examined. The networking activities of individuals and groups can be based on business (formal) and personal (informal) practices. A formal practice is based on some instrumental reason for conducting business such as a business call, promotion or purchasing and a personal practice is based on friendship and through friendship business may be conducted.

The elements of individual and group networking were examined to understand how different types of networking practices resulted in certain inter-organisational knowledge sharing outcomes. There were four network types examined: (1) individual business network; (2) individual personal network; (3) group formal network; and (4) group informal network. Based on individual and group networking practices respondents indicated the perceived outcomes of these practices and these network outcomes were analysed (Sub-section 8.3.4). Generally, group informal networking resulted in a contribution to beliefs and attitudes and knowledge of 'goings on.' Both individual personal and group informal networking resulted in information being received and social support being provided.

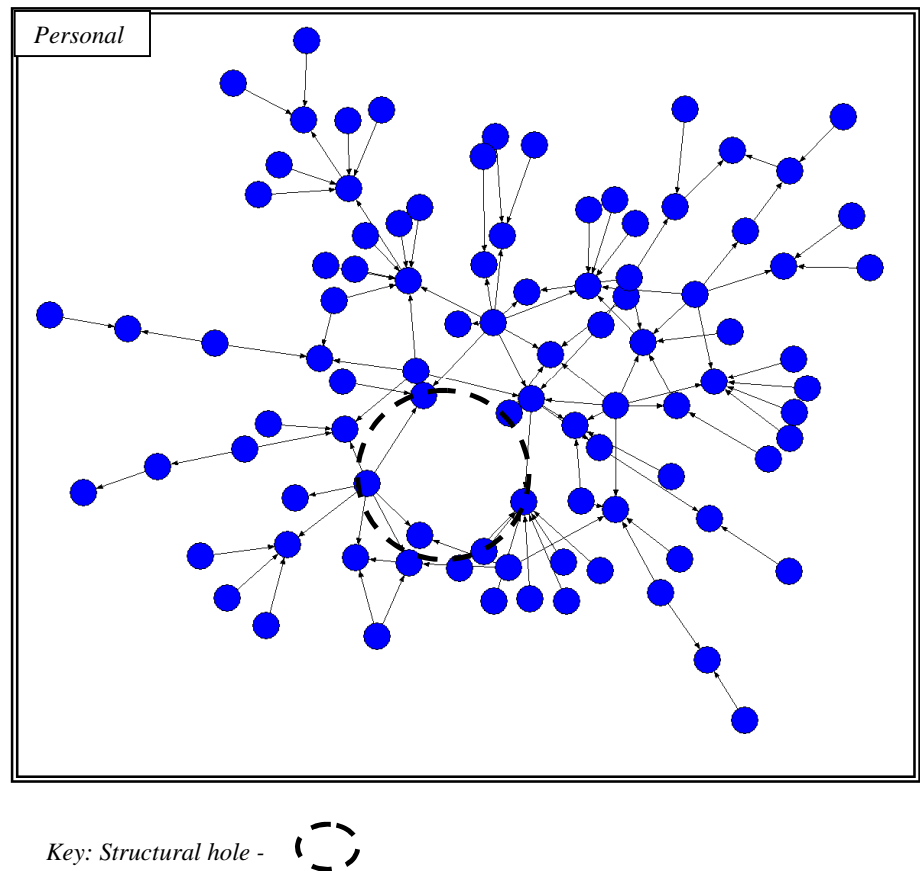
### 9.3.1 Embeddedness

Embeddedness can be examined using network characteristics of density, transitivity and clustering. Business networking by an individual has a distinctive circular pattern with nodes clustered to the centre and waves of nodes aligned around a circular pattern (Figure 9-20). In geomorphologic terms the business network may be viewed as a watershed while the individual personal network pattern (Figure 9-20) was sparser with a large structural hole in the middle of the diagram. There were many streams of information within the personal network. However, these streams had not been pooled together as seen by the large gap at the centre of the diagram (Figure 9-21). The gap was the result of a lack of connectivity of several egos and alters within the network's structure.

**Figure 9-20 Individual Business Network and Inter-organisational Knowledge Sharing (embeddedness)**

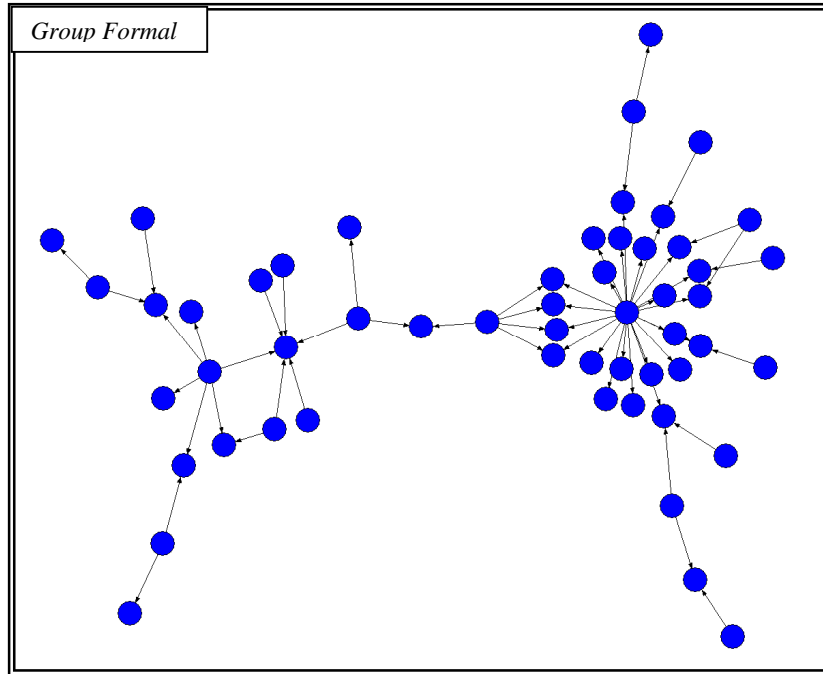


**Figure 9-21 Individual Personal Network and Inter-organisational Knowledge Sharing (embeddedness)**

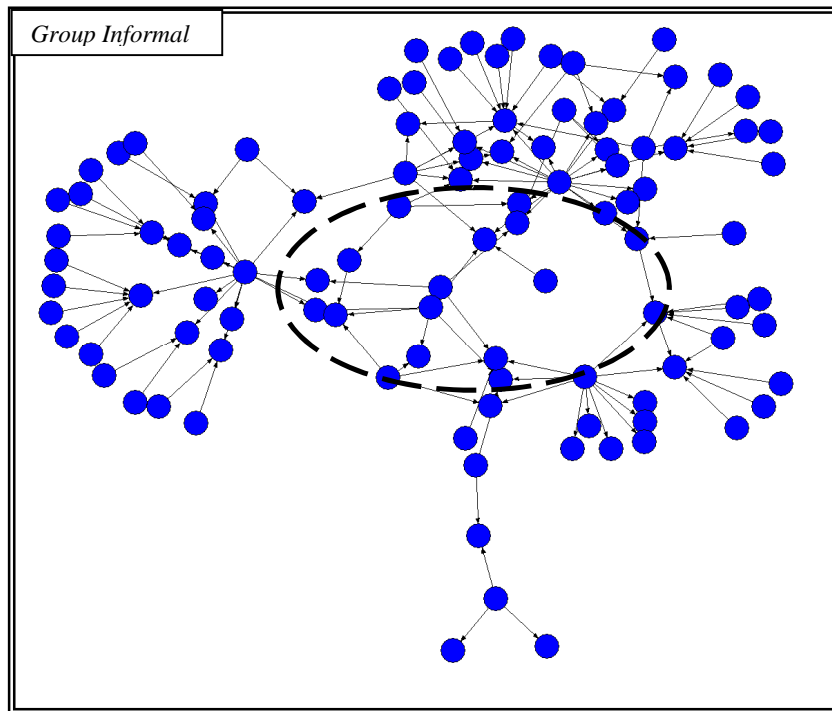



The group formal network structure had two separate sections (Figure 9-22). There was one main alter at the centre right of the diagram and through four egos information was potentially disseminated. This pattern means that several egos were dependent on one main alter for information. The group informal network had a 'tree' like pattern with four main branches (Figure 9-23). Also evident were several structural holes and several agents spanned the structural holes (circled). Within such a pattern the flow of information resources was not uniform since there were several main alters potentially driving the flow of information.

**Figure 9-22 Group Formal Network and Inter-organisational Knowledge Sharing (embeddedness)**



**Figure 9-23 Group Informal Network and Inter-organisational Knowledge Sharing (embeddedness)**



Key: Agents Spanning the Structural Hole - 

### 9.3.1.1 Density

The individual business network had an overall density which was 0.78% and represented 285 ties (Table 9-8). In other words, given a network of 192 agents (the number of egos and alters), the total possible number of ties would be 192 multiplied by 191 (192-1), or 36,672 ties and the density, expressed as a percentage is 285 ties divided by 36,672 ties multiplied by 100, a figure of 0.78%. Overall density of the individual personal network was higher than that of the individual business network and was a figure of 1.23%. Overall density for the group formal network was higher as compared with the values of the individual business network, 0.79% and the individual personal network, 1.3%. While the density values of both informal networks, individual and group were similar. Density is an indication of potential information flows based on the network's interconnectivity and therefore the group formal network had the greatest capability for information dissemination potential across the network. Nonetheless, the high standard deviation value for the group formal network means that there were several large values and therefore the information dissemination capability was based on some key agents.

**Table 9-8 Network Types and Inter-organisational Knowledge Sharing (density overall)**

	<i>DENSITY (PERCENTAGE/ AVERAGE VALUE)</i>	<i>STANDARD DEVIATION</i>	<i>NUMBER OF AGENTS</i>	<i>INFORMATION TIES</i>
<b>IB</b>	0.78%	0.0892	192	285
<b>IP</b>	1.23%	0.119	95	110
<b>GF</b>	2.03%	0.1515	54	58
<b>GI</b>	1.22%	0.1242	103	128
<b>TOTAL</b>	1.2590 *	0.5918	330	536

*Key: IB – Individual Business; IP – Individual Personal; GF – Formal Group; GI – Informal Group; AV – Average Value; \* The total density is an average value*

### 9.3.1.2 Transitivity

A triad count determines the extent of transitivity within the network. One transitivity value, adjacency, was determined for each network type because after conducting the analysis for ‘strong transitivity’ no transitive ties could be determined within the four network types. The individual business network had the highest number of triads a figure of 18 (Table 9-9). Both informal networks, personal and group had 5 and 4 triads respectively. As a result, there were fewer instances of A connected to B and B connected to C and therefore A was potentially connected to C relationships based on informal networking processes.

**Table 9-9 Network Types and Inter-organisational Knowledge Sharing (transitivity)**

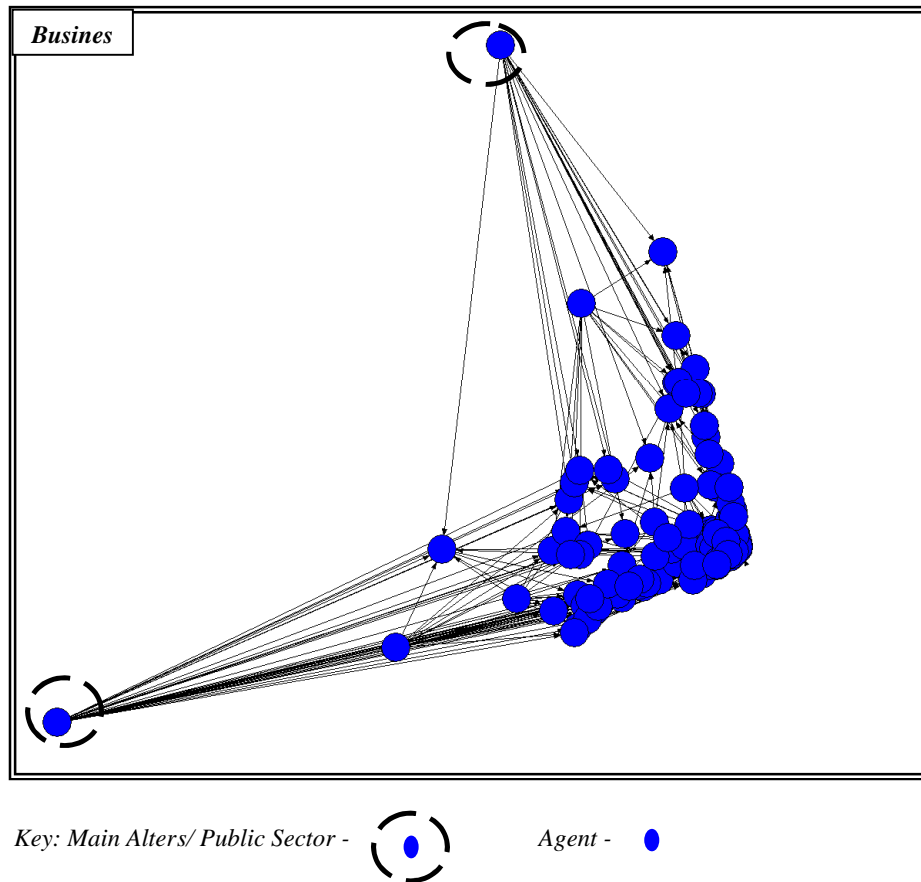
	<i>ADJACENCY</i>
<b>IB</b>	18
<b>IP</b>	5
<b>GF</b>	N/C
<b>GI</b>	4
<b>TOTAL</b>	65

*Key: IB – Individual Business; IP – Individual Personal; GF – Formal Group; GI – Informal Group; N/C – not calculated*

### 9.3.1.3 Clustering

The Principal Components layout can be used to examine the clustering patterns of the four network types. Based on the different number of agents within each network the weighted clustering co-efficient value was used for comparative purposes. Network clusters are regionally based (Michael, 2003) and therefore the network clusters that emerge within these diagrams are located in geographical areas within the conurbation. There were main alters organising each cluster and these alters were identified in the diagrams. Closeness of main alters are an indication that the same egos are connected with these alters. More distant main alters indicate different sets of egos were connected with main alters.

**Figure 9-24 Individual Business Network and Inter-organisational Knowledge Sharing (Principal Components layout)**

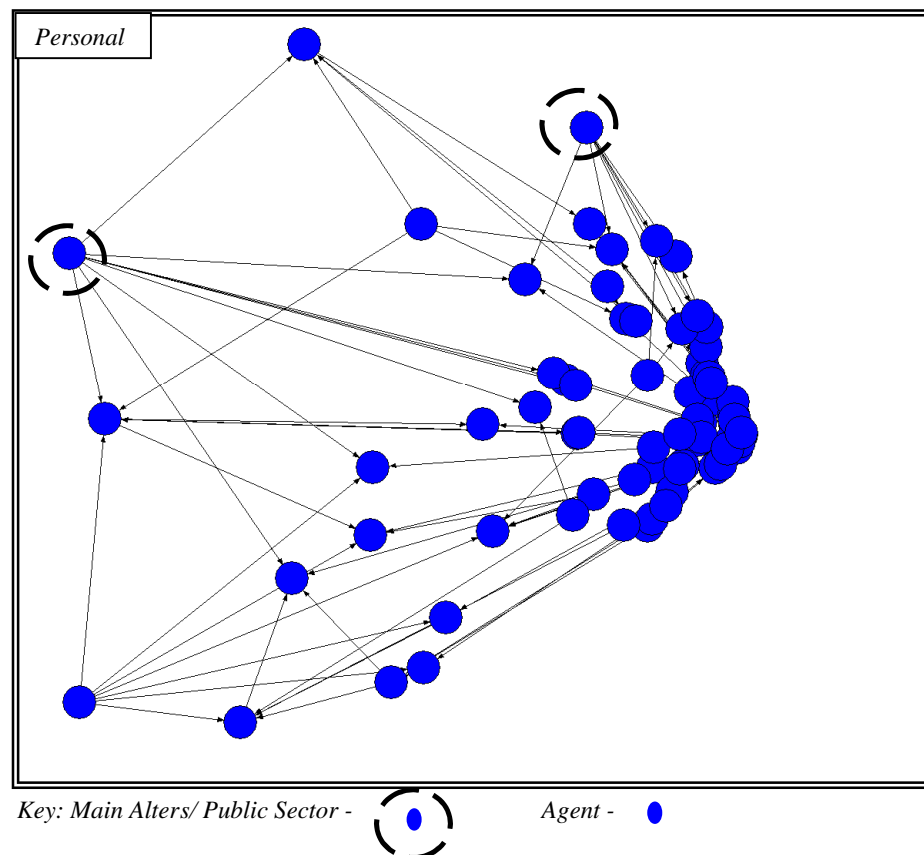


In the individual business network there were two main alters which were positioned at opposite ends to one another (Figure 9-24). The orientation of the diagram is an indication of the directed path of knowledge resources flows. For instance, clusters to the right indicated general flows from alter at left to egos at right. The two main alters (circled) were public sector bodies. The weighted clustering co-efficient for the individual business network was 1.5%. Positions that are closer together indicate that egos have similar information ties. Michael (2003) argues that clustering provides synergies that are additive by the acceleration of wealth creation. In theory therefore, within the individual business network, the synergies are promulgated by two main alters which are public sector entities. This means that knowledge resources made available through the public sector are likely to have a direct impact on the businesses within this network.



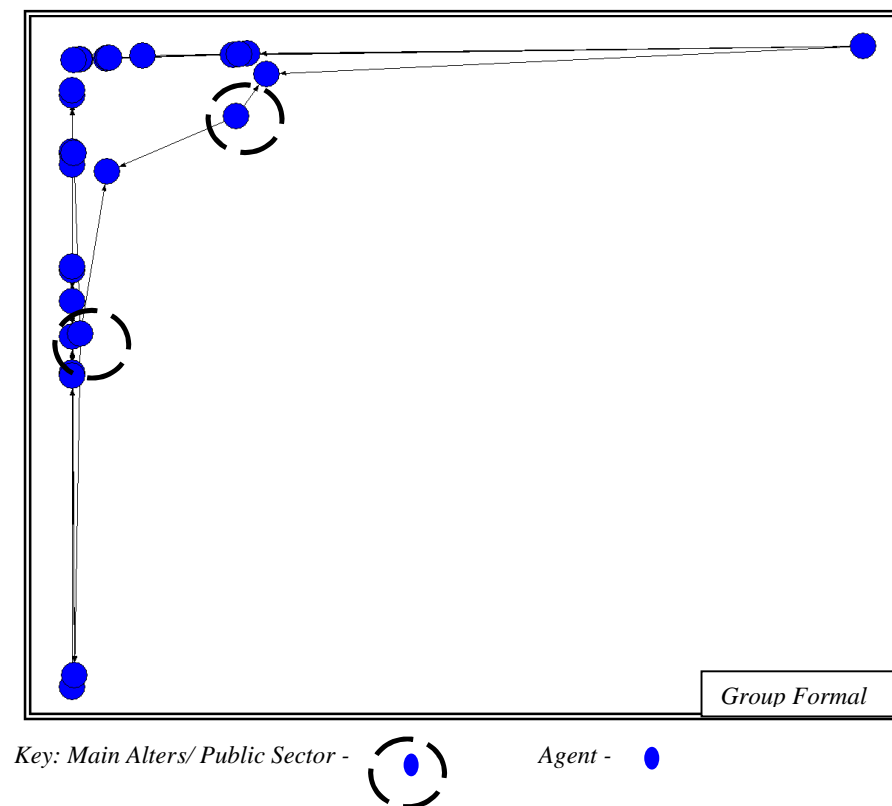
In the individual personal network information ties are more web-like and as a result, there were several main sources of information (Figure 9-25). The weighted clustering co-efficient was 2.3% for the individual personal network and this value was greater than that of the individual business network. As a result, there were more opportunities for business people within the individual personal network to connect with their counterparts and share information. Positions of the public sector alters (circled) were different in the individual personal network as compared with the individual business network and this means that resources shared by these public sector entities did not have the same potential impact upon the egos within the individual personal network. Rather, there were several other agents that held knowledge resources which can create synergies within the individual personal network and these agents were therefore potential support mechanisms for tourism growth and sustainability.

**Figure 9-25 Individual Personal Network and Inter-organisational Knowledge Sharing (Principal Components layout)**



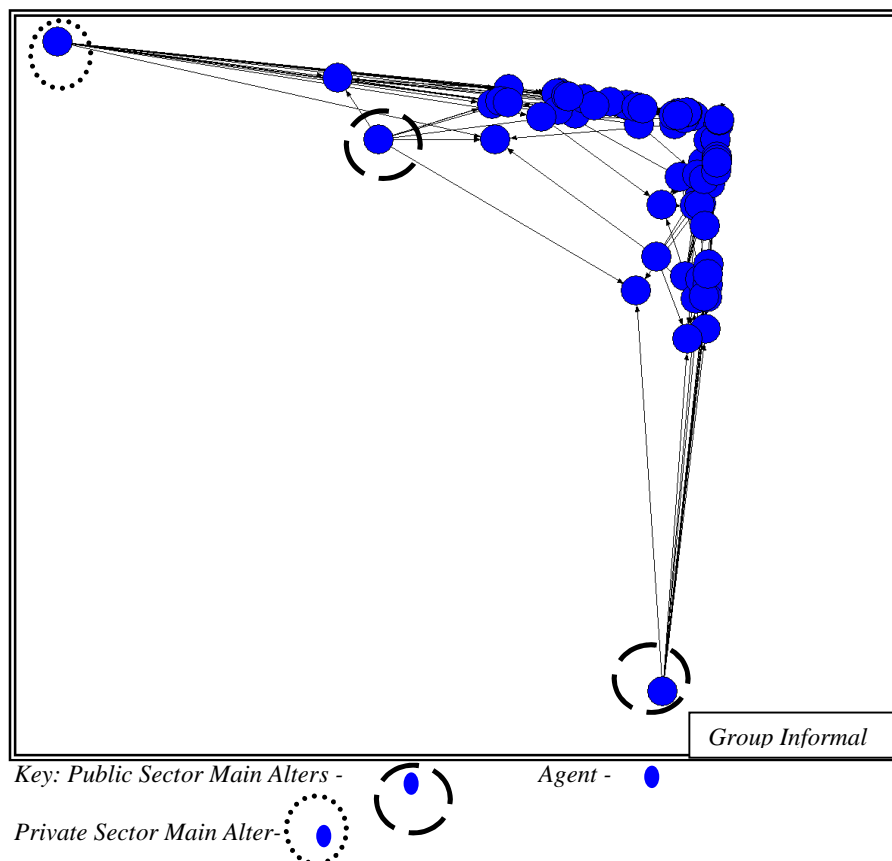
After performing a calculation, no clustering co-efficient result was obtained for the group formal network and this is because the network had two alters at right-hand angles to each other. Agents were not positioned close to one another and therefore the clustering pattern was rather sparse with an orientation to the left-hand side of the diagram (Figure 9-26). This means that egos within the formal group network were at poles with each other. As such, this pattern would not result in the inter-connectivity that can create synergies as agents share their knowledge resources and therefore it was likely that egos within formal group networks were not likely to benefit from clustering dynamics.

**Figure 9-26 Group Formal Network and Inter-organisational Knowledge Sharing (Principal Components layout)**



The pattern of the group informal network shows orientation on the right-hand side and the weighted clustering co-efficient was 1.1% (Figure 9-27). Based on the clustering co-efficient result, an observation can be made that individual networking practices, as compared with those of the group, result in greater clustering dynamics. This patterning either towards the left or right means that egos are information dependent on certain alters. There were two main alters within the informal group network, one in the private sector and the other in the public sector. In view of this finding, it can be observed that the informal group network is a partnership of sorts between the public and private sectors. Additionally, unlike the group formal network, there were larger clusters of egos receiving information from alters within the informal group network and therefore the knowledge resources became a public good.

**Figure 9-27 Group Informal Network and Inter-organisational Knowledge Sharing (Principal Components layout)**



### 9.3.2 **Structural Influence**

This sub-section regarding structural influence is divided into three parts: strength of ties, centrality and cliques. Networking practices of various types form a pattern which is a structure. The structure itself is not visible but because these practices are ongoing there is a duality of structure which influences behaviour (Giddens, 1984). In view of this, structural influence concerns the capability individual agents have, as a result of their network connections, to allocate network resources.

#### 9.3.2.1 Strength of Ties

The size of an ego-network is a measure of how frequently information can be obtained. Within the individual business network, the size of each ego-network ranged from 1 to 36 agents and for the individual personal network, the size of each ego-network ranged from 1 to 9 agents (Appendix VII). In view of this, ego-networks that are based on individual informal networking activities are considerably smaller. In the group formal network, the size of each ego-network ranged from 1 to 23 agents and within the group informal network, each ego's network size ranged from 1 to 18 agents. The maximum values for the number of weak components were derived (Table 9-10). There was a tendency for fewer information ties based on group networking practices. Generally, individual networks have larger numbers of weak components as compared with group networks and therefore, there are more potential sources of useful information within these individual networks.

**Table 9-10 Network Types and Inter-organisational Knowledge Sharing Weak Components (maximum values)**

<i>TYPE</i> <i>BUSINESS</i>	<i>OF</i>	<i>IB (N)</i>	<i>IP (N)</i>	<i>GF (N)</i>	<i>GI (N)</i>
		Max	Max	Max	Max
<b>Large Hotels</b>		7.00	6.00	3.00	4.00
<b>Small Hotels</b>		10.00	9.00	3.00	5.00
<b>Campsite</b>		3.00	2.00	0.00	4.00
<b>Guesthouses</b>		6.00	8.00	2.00	4.00
<b>Bed and Breakfast properties</b>		10.00	3.00	2.00	5.00
<b>Self Catering establishments</b>		4.00	4.00	6.00	2.00
<b>Attractions</b>		7.00	3.00	1.00	8.00
<b>TOTAL</b>		10.00	9.00	6.00	8.00

*Key: Max – Maximum; N – Number of Weak Components*

‘Two-step reach’ indicates the potential diffusion of information since the measure determines how far alters’ messages can reach across the network. When all four networks were compared, the highest ‘two step reach’ value was recorded within the group formal network and was followed by the individual personal network (Table 9-11). These findings mean that there may be a dominance of information from certain potential sources and therefore other egos became dependent on potential sources for information. In comparison, within the individual business and group informal networks, the likelihood of information dominance was reduced. Observations can also be made as to the particular business types that were prime potential sources of information. Large hotels had greater disseminative capability within group networks, both formal and informal, whereas, small hotels had greater disseminative capability in the individual personal network. Unlike the individual personal network, the disseminative capability within the individual business network was shared between several business types. This observation was made since the individual business network was structured more like a watershed rather than a stream.

**Table 9-11 Network Types and Inter-organisational Knowledge Sharing ‘Two-step reach’ (maximum and minimum percentages)**

<b>TYPE OF BUSINESS</b>	<b>IB (%)</b>		<b>IP (%)</b>		<b>GF (%)</b>		<b>GI (%)</b>	
	Max	Min	Max	Min	Max	Min	Max	Min
<b>Large Hotels</b>	30.89	1.05	22.34	3.19	49.06	45.28	28.43	3.92
<b>Small Hotels</b>	30.89	2.09	34.04	4.26	47.17	3.77	21.57	2.94
<b>Campsite</b>	12.04	1.57	6.38	2.13	N/F	N/F	16.67	16.67
<b>Guesthouses</b>	30.37	1.57	14.89	3.19	47.17	3.77	13.73	5.88
<b>Bed and Breakfast properties</b>	31.41	1.57	14.89	3.19	5.66	3.77	26.47	2.94
<b>Self Catering establishments</b>	31.41	2.62	11.70	2.13	47.17	5.66	17.65	9.80
<b>Attractions</b>	31.41	1.57	18.09	2.13	3.77	3.77	28.43	2.94
<b>TOTAL</b>	31.41	1.05	34.04	2.13	49.06	3.77	28.43	2.94

*Key: IB – Individual Business; IP – Individual Personal; GF – Formal Group; GI – Informal Group; Max – Maximum; Min – Minimum; N/F – not found*

### 9.3.2.2 Centrality

An ego becomes central in relation to the number of other egos and alters connected to the focal ego. Maximum centrality is achieved in a ‘star’ network in which an ego is at the centre of the network. Centrality scores were calculated for the four network types (Table 9-12). The network with the highest centralisation value was the group formal network in which several egos were dependent on one main alter. The network centralisation values for the individual business network and the group informal networks were similar. This means that these networks had egos that were engaged in similar information sharing practices between agents and therefore several agents were engaged with receiving information from several main sources, rather than a few dominant ones. Thus, there was greater cognitive consistency (similar attitudes and beliefs) within the individual business and group informal networks in regard to their information sharing activities. A lower network centralisation value for the individual personal network means that people in this network were least cognitively consistent.

**Table 9-12 Network Types and Inter-organisational Knowledge Sharing  
(Centrality)**

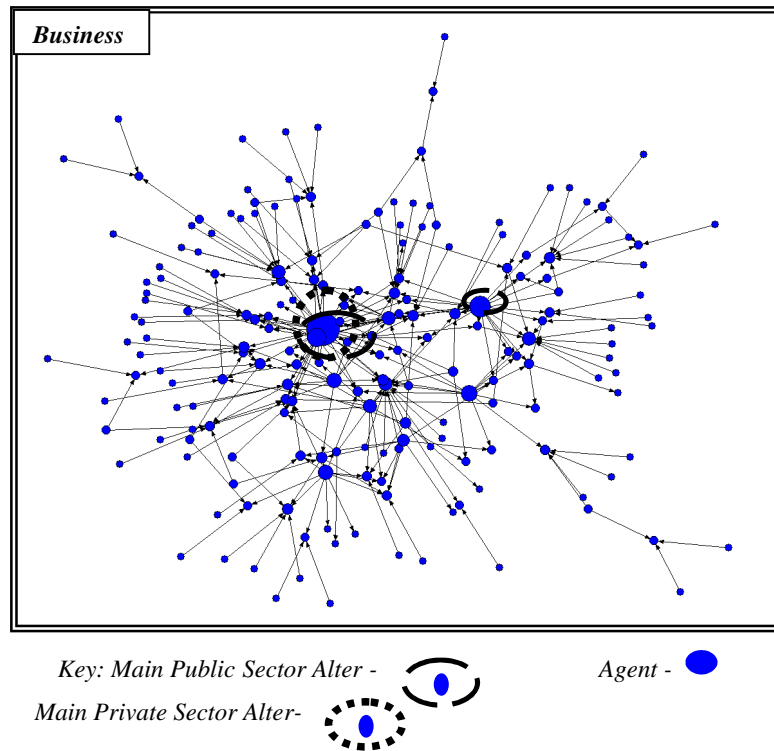
	<i>NETWORK DEGREE CENTRALI- SATION (%)</i>	<i>DEGREE (MEAN)</i>	<i>STANDARD DEVIATION</i>	<i>IN CLOSENESS (MEAN)</i>	<i>BETWEENNESS (MEAN)</i>
<b>IB</b>	8.99	3.000	3.794	0.527	0.583
<b>IP</b>	4.11	2.442	2.151	1.072	0.684
<b>GF</b>	21.30	2.259	3.261	1.901	0.000
<b>GI</b>	8.64	2.718	2.984	0.986	0.272
<b>TOTAL</b>	5.04	4.085	6.913	0.307	4.585

*Key: IB – Individual Business; IP – Individual Personal;  
GF – Formal Group; GI – Informal Group.*

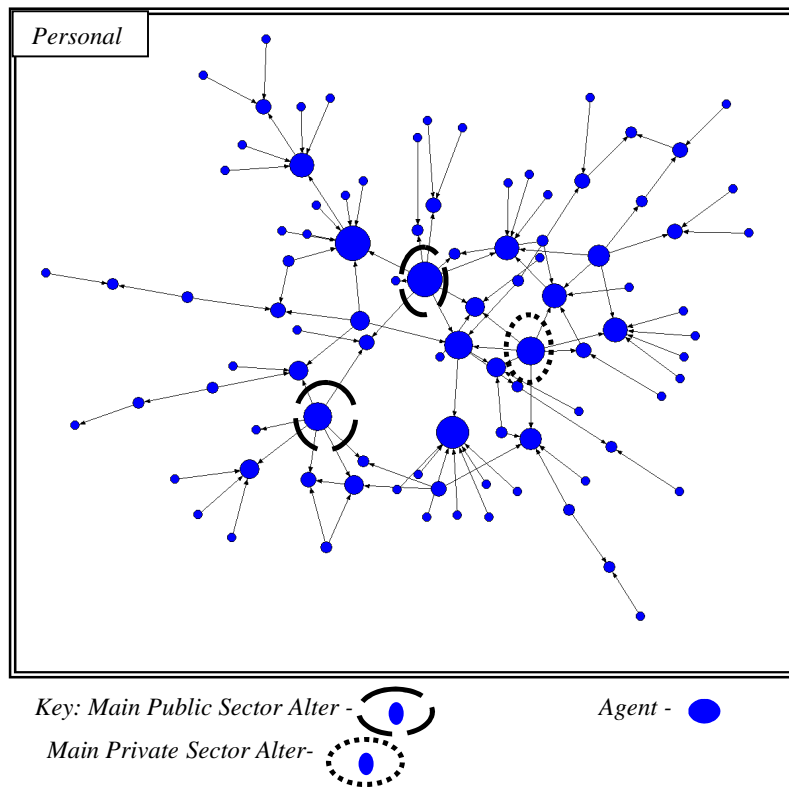
Closeness and betweenness centrality values were also calculated (Table 9-12). Network agents were closest within the individual business network and agents were most between in the group informal network. Based on these observations, there was greater information sharing capability within the individual business and group informal networks. This finding is confirmed by the comparatively higher mean degree centrality values. An illustration of the individual business network degree centralisation shows one large node to the left of the centre of the diagram, which was the most central alter and as a result, agents who were directly connected to this node obtained the core information resources (Figure 9-28). There was also greater ‘incloseness’ of agents surrounding the most central agent within the individual business network.

In comparison the individual personal network (Figure 9-29) had a larger value for mean ‘incloseness.’ The individual personal network structure shows a dispersion of egos around several central agents and therefore there was some extent of cognitive dissonance within the individual personal network. In theory, cognitive dissonance means that egos dissociated themselves from certain other agents and therefore this resulted in a relatively higher ‘incloseness’ value. This means that agents’ capability to access core network resources was unlikely and that a reduced number of agents were in ‘between’ positions.

**Figure 9-28 Individual Business Network and Inter-organisational Knowledge Sharing (Freeman Degree Centrality)**



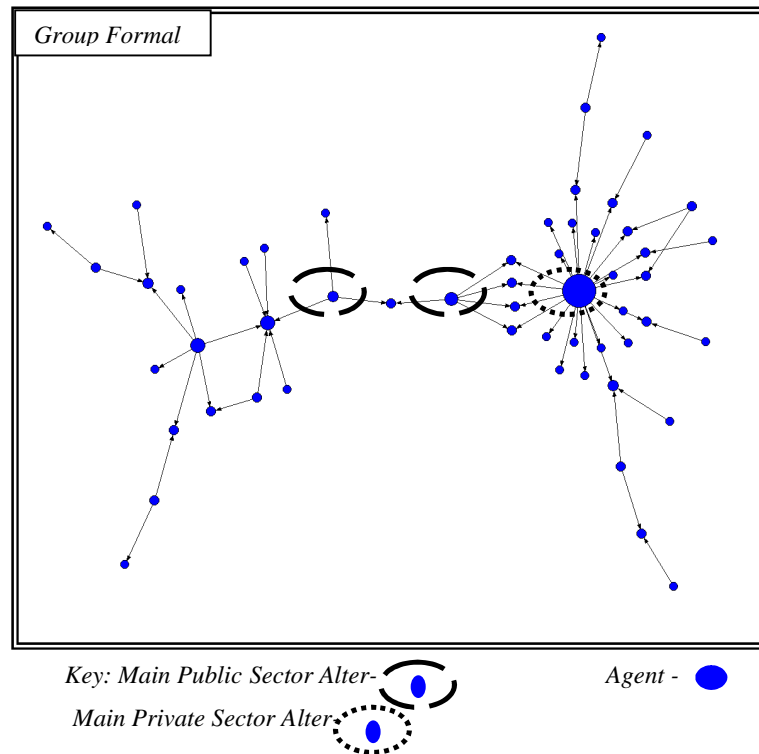
**Figure 9-29 Individual Personal Network and Inter-organisational Knowledge Sharing (Freeman Degree Centrality)**





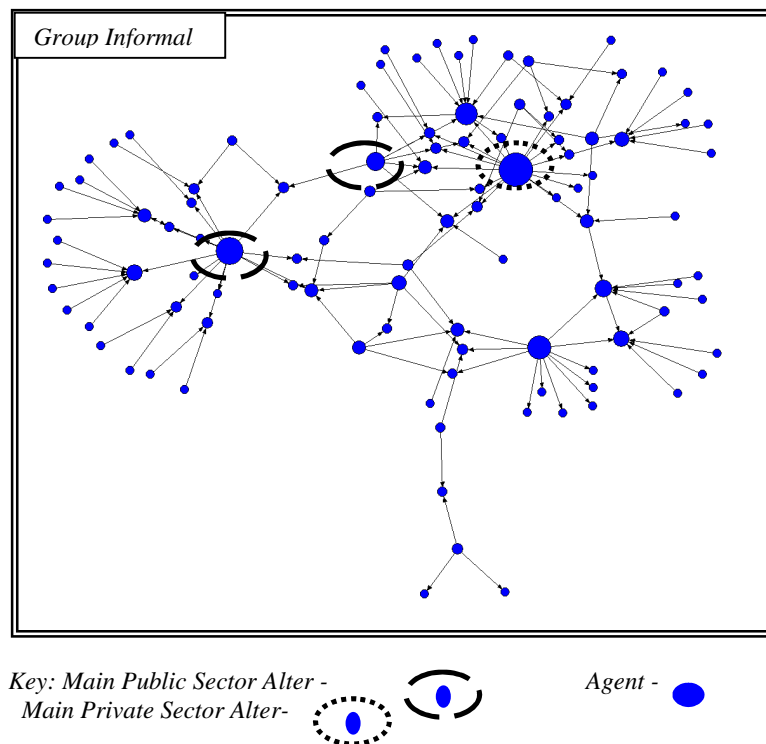
Within the group formal network, average degree centrality was 2.259 with a higher standard deviation of 3.261 and network centralisation of 21.30% (Table 9-12). As a result, there was a wide disparity in terms of the positioning of egos within the group formal network, in that some egos had considerably larger ego-networks than others. The ‘incloseness’ value was also comparatively higher. There were no between egos in the group formal network, only several connective alters, both private and public sector entities and considerably more egos received information from the private sector entity (Figure 9-30). In view of this, group formal networking practices were based largely in the private sector and as a result, there will be dependency on the private sector for knowledge resources.

**Figure 9-30 Group Formal Network and Inter-organisational Knowledge Sharing (Freeman Degree Centrality)**



There was less dependence on one main alter for knowledge resources within the group informal network since the network's centralisation was 8.64%. Within the group informal network, mean 'incloseness' was 0.986 and therefore egos were farther apart as compared with the individual business network. The 'incloseness' value means that an ego will have to move farther across the network to reach information from central agents and this movement means that egos need to initiate ties with between agents. As compared with the individual business network, information disseminated from main alters were within the closer reach of egos since the 'incloseness' value for the individual business network was 0.527. Thus, there were some egos within the informal group network that were structurally disadvantage. Nonetheless, the mean 'betweenness' value for the group informal network was considerably lower than that of the individual business network (Table 9-12). Accordingly, egos in the group informal network had a greater number of between pathways, in different directions, to connect with central alters.

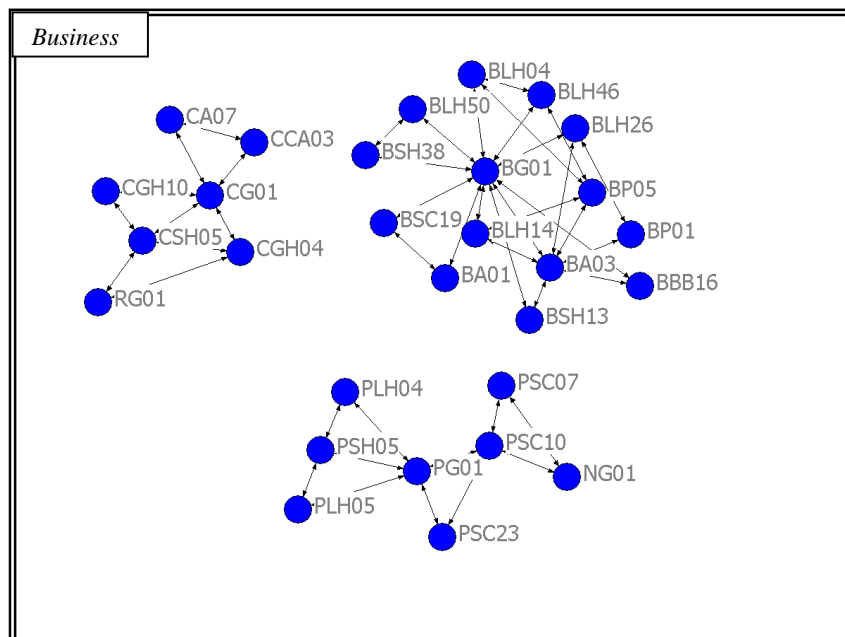
**Figure 9-31** Group Informal Network and Inter-organisational Knowledge Sharing (Freeman Degree Centrality)



### 9.3.2.3 Cliques

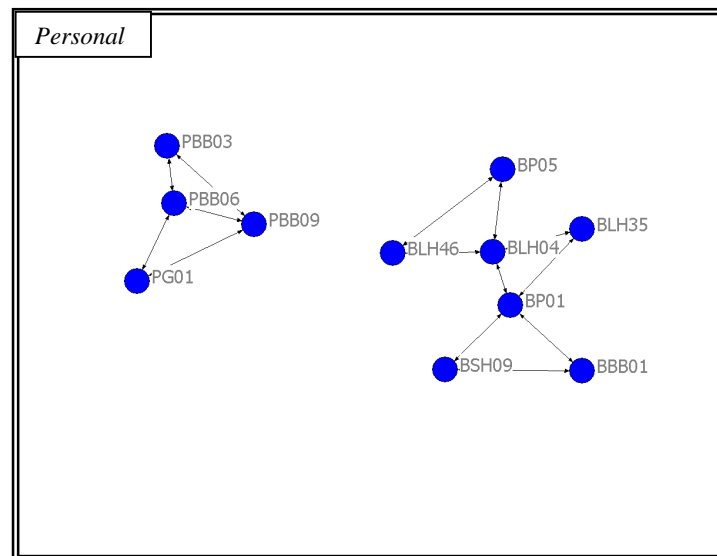
Cliques indicate that an ego is closely tied to other egos or alters. Members of a clique have all possible ties present (Hanneman and Riddle 2005). For the individual business network there were eighteen (18) cliques containing twenty-nine (29) agents (Figure 9-32). Membership in each clique was three agents (egos and/or alter). Within the individual business network there were three groups of cliques and these were based on the geographic areas of Bournemouth, Poole and Christchurch. Cliques were dominated by large hotels since fifty percent (50%) of cliques included a large hotel. There were three (3) instances where small hotels were included in a clique and in all three instances, a large hotel was also a member of the clique.

**Figure 9-32 Individual Business Network and Inter-organisational Knowledge Sharing (Cliques)**



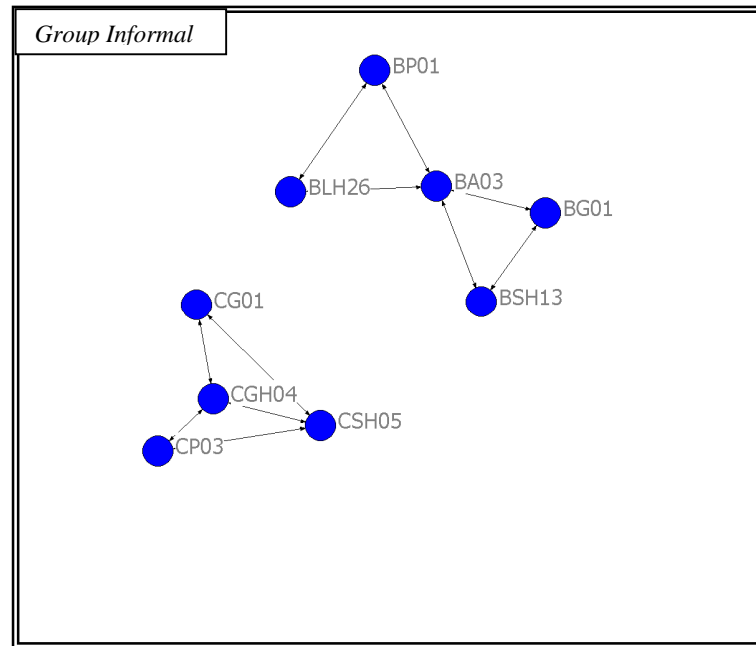
Within the individual personal network there were five (5) cliques and each clique contained three egos (Figure 9-33). Cliques comprised generally large hotels and bed and breakfast properties. The clique overlap was divided into two parts, a Bournemouth clique overlap and a Poole clique overlap. This finding is an indication of the lack of strong ties within the individual personal network. Although, there were strong ties between bed and breakfast properties in Poole and hence the personal networking practices were likely to be associated with homophily and proximity theories.

**Figure 9-33 Individual Personal Network and Inter-organisational Knowledge Sharing (Cliques)**



There were no cliques within the group formal network. In comparison with the individual personal network, for the group informal network, there were also two parts to the clique overlap, once again a Bournemouth clique overlap but the next clique overlap contained Christchurch agents. A Poole clique overlap did not emerge. There were in total four cliques in the group informal network and nine agents (Figure 9-34). On the other hand, the individual business network had the most cliques (18) followed by the individual personal network (5) cliques (Figures 9-32 and 9-33). Consequently, the potential to influence reciprocal exchange of information is greater in individual networks as compared with group networks.

**Figure 9-34 Group Informal Network and Inter-organisational Knowledge Sharing (Cliques)**



### 9.3.3 Innovation

Knowledge transfer within the tourism sector is important for innovation (Shaw and Williams, 2009) and therefore it is necessary to examine and explain how agents within tourism sector businesses obtain innovative capability. As with the previous section regarding innovation, this section is divided into two parts. The first part is about structural holes to determine the size and constraint of egos in the four network types. The second part concerns brokerage roles to determine the potential information sharing roles played by agents in the four network types. Structural holes and brokerage roles were used to explain the social capital which in this case was the knowledge resources that egos were enabled to obtain and therefore potentially innovate business processes (Sub-section 3.4.3).

### 9.3.3.1 Structural Holes

A structural hole is an opportunity to obtain non-redundant information and as a result there is potential for new information which is needed for innovation. Structural holes are spaces within which there are no ties or connections between nodes. For the individual business network there were several egos who recorded the larger structural holes as compared with egos within the other three network types (Table 9-13). Within the four network types smaller establishments dominated with large structural holes except in the instance of the group informal network in which attractions dominated. An observation was also made that self-catering establishments were the prime potential knowledge sharers within the group formal network. In view of this, smaller business establishments in the tourism sector play an important knowledge sharing role which should not be overlooked. These business people were important conduits of shared information which can be used to adjust business practices.

**Table 9-13 Network Types and Structural Holes (effective sizes)**

<b><i>TYPE OF BUSINESS</i></b>	<b><i>IB (N)</i></b>	<b><i>IP (N)</i></b>	<b><i>GF (N)</i></b>	<b><i>GI (N)</i></b>
	Max	Max	Max	Max
<b>Large Hotels</b>	7.000	6.000	3.000	4.000
<b>Small Hotels</b>	10.000	7.000	3.000	6.500
<b>Campsite</b>	3.500	2.000	-	4.000
<b>Guesthouses</b>	6.000	8.000	2.000	5.333
<b>Bed and Breakfast properties</b>	10.000	3.500	2.000	5.000
<b>Self Catering establishments</b>	10.000	4.000	6.000	2.000
<b>Attractions</b>	7.917	3.000	1.000	8.583
<b>TOTAL</b>	10.000	8.000	6.000	8.583

*Key: IB – Individual Business; IP – Individual Personal; GF – Formal Group; GI – Informal Group; Max – Maximum; N – egos minus the average number of ties alter has with others*

A lower constraint value for an ego means that ego is exerting greater constraint on other agents and that ego itself is not constrained to act. Business people within the individual business network recorded lowest constraint values and these business people were in smaller establishments: small hotels and bed and breakfast properties (Table 9-14). As a result, this research study shows the potential innovative capability of smaller hospitality establishments as compared with larger tourism businesses. Generally, there were lower constraint values for the individual networking practices as compared with group networking practices. This finding indicates that potential knowledge resources obtained through individual networks can enable an ego to act in regard to business performance improvement. On the other hand, egos within group networks were more constrained since there were fewer alternative sources of information and therefore in theory a reduced capability to act.

**Table 9-14 Network Types and Structural Holes (constraint)**

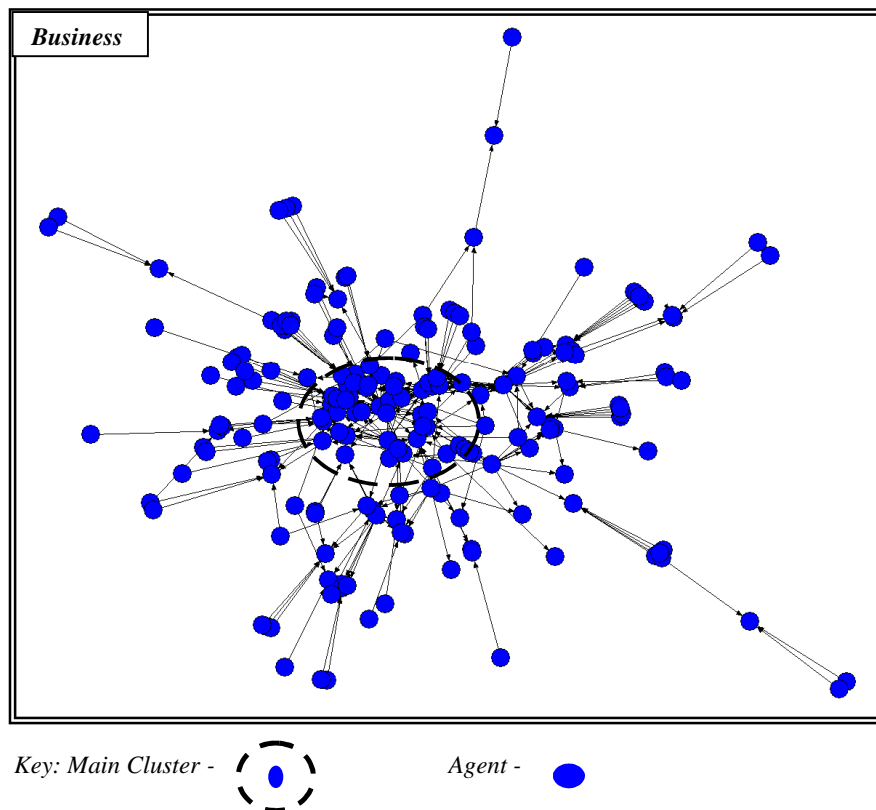
TYPE OF BUSINESS	IB		IP		GF		GI	
	Max	Min	Max	Min	Max	Min	Max	Min
<b>Large Hotels</b>	1.000	0.143	1.000	0.167	0.500	0.333	1.125	0.280
<b>Small Hotels</b>	1.125	0.100	1.000	0.111	1.000	0.500	1.125	0.227
<b>Campsite</b>	1.000	0.406	1.000	0.500	-	-	0.250	0.250
<b>Guesthouses</b>	1.000	0.167	1.000	0.125	1.000	0.500	1.000	0.293
<b>Bed and Breakfast properties</b>	1.125	0.100	1.125	0.406	1.000	0.500	1.000	0.200
<b>Self Catering establishments</b>	1.125	0.250	1.000	0.250	1.000	0.188	1.000	0.500
<b>Attractions</b>	1.000	0.143	1.000	0.333	1.000	1.000	1.000	0.184
<b>TOTAL</b>	1.125	0.100	1.125	0.111	1.000	0.188	1.125	0.184

**Key:** IB – Individual Business; IP – Individual Personal; GF – Formal Group;

GI – Informal Group; Max – Maximum; Min - Minimum

Based on visual evidence the structural holes within the individual business network were formed around the main cluster and as a result, this network had generative innovative capability (Figure 9-35). This means that there were several sources of potential new information which flowed from and into the main cluster of egos (circled in Figure 9-35). In that, knowledge resources obtained through these structural holes for a number of different business types (Table 9-13) can potentially remain within the network's structure and be able to generate more knowledge. In turn, this new knowledge can be potentially disseminated across the network. As it were, business people in smaller tourism establishments played key roles as potential knowledge sharers.

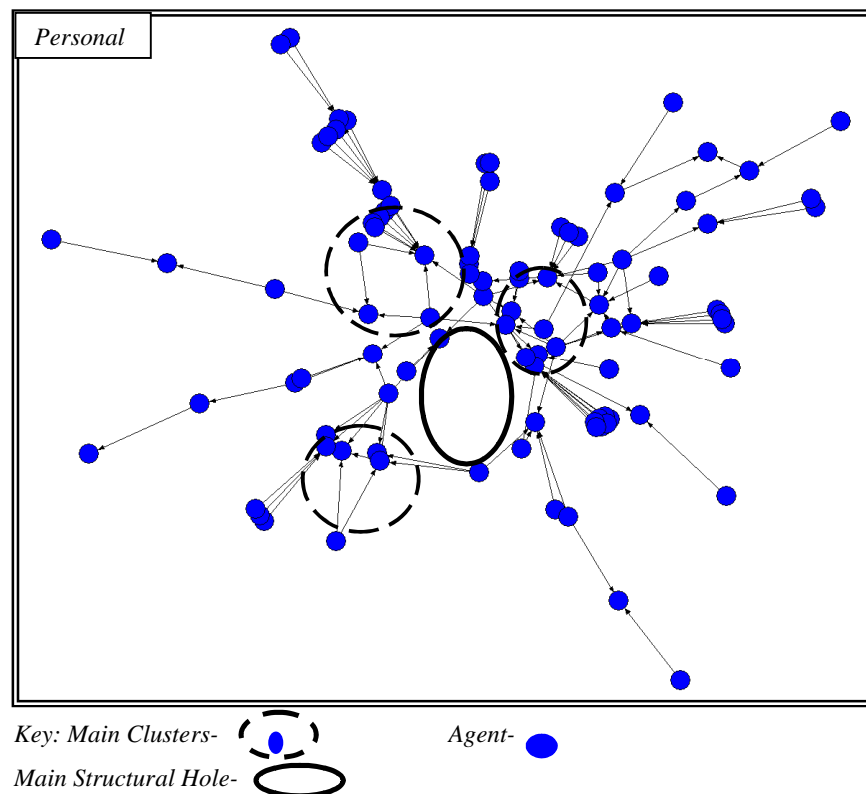
**Figure 9-35 Individual Business Network and Inter-organisational Knowledge Sharing (Structural Holes)**





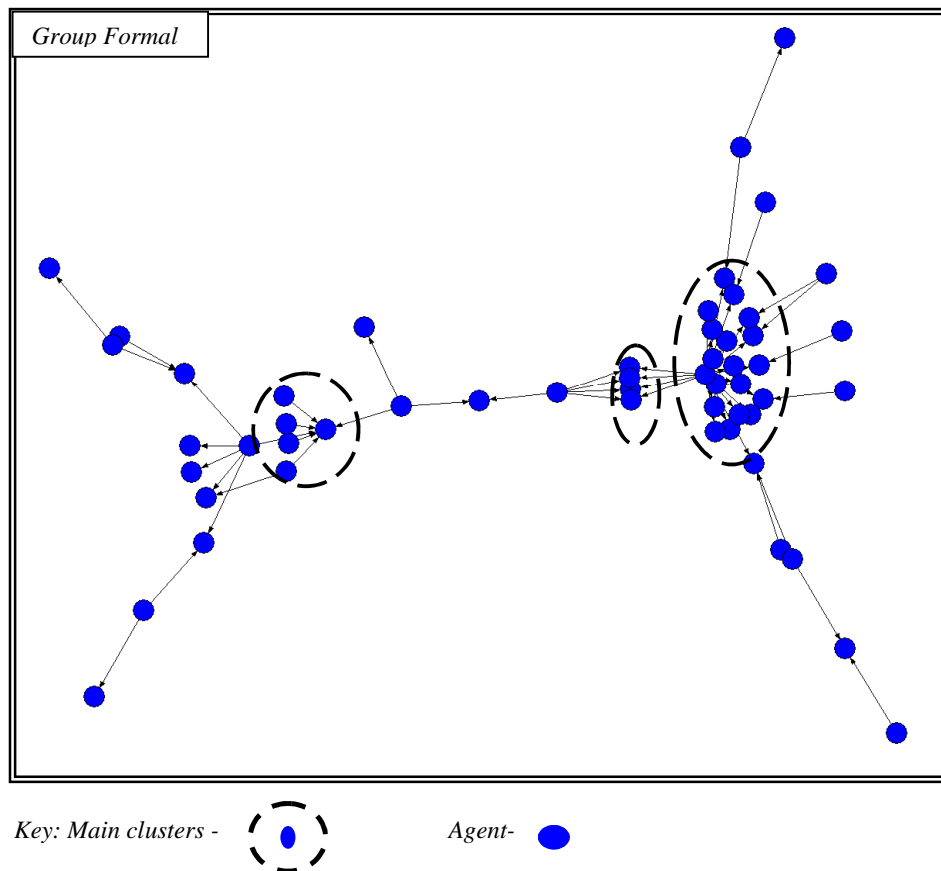
In the individual personal network there were several main clusters of business egos (Figure 9-36). There was evidently one large structural hole in the centre of the diagram and several smaller clusters of egos which emerged from this large structural hole. Accordingly, there was separation of the generative and disseminative capability of the different smaller clusters. These clusters seemed to be based on the main public and private sector entities (Figure 9-29) and therefore the social capital which emerged from the individual personal network was specific to the needs of the sub-groups within the network. Accordingly, the network as a whole may not readily access the generated knowledge within the individual personal network since many players were unevenly connected with one another. An uneven connection limits access, timing and referral of knowledge resources (Burt, 1992b). As a result, even though information is eventually received, this information may not be up-to-date (Table 8-22 in chapter 8).

**Figure 9-36 Individual Personal Network and Inter-organisational Knowledge Sharing (Structural Holes)**



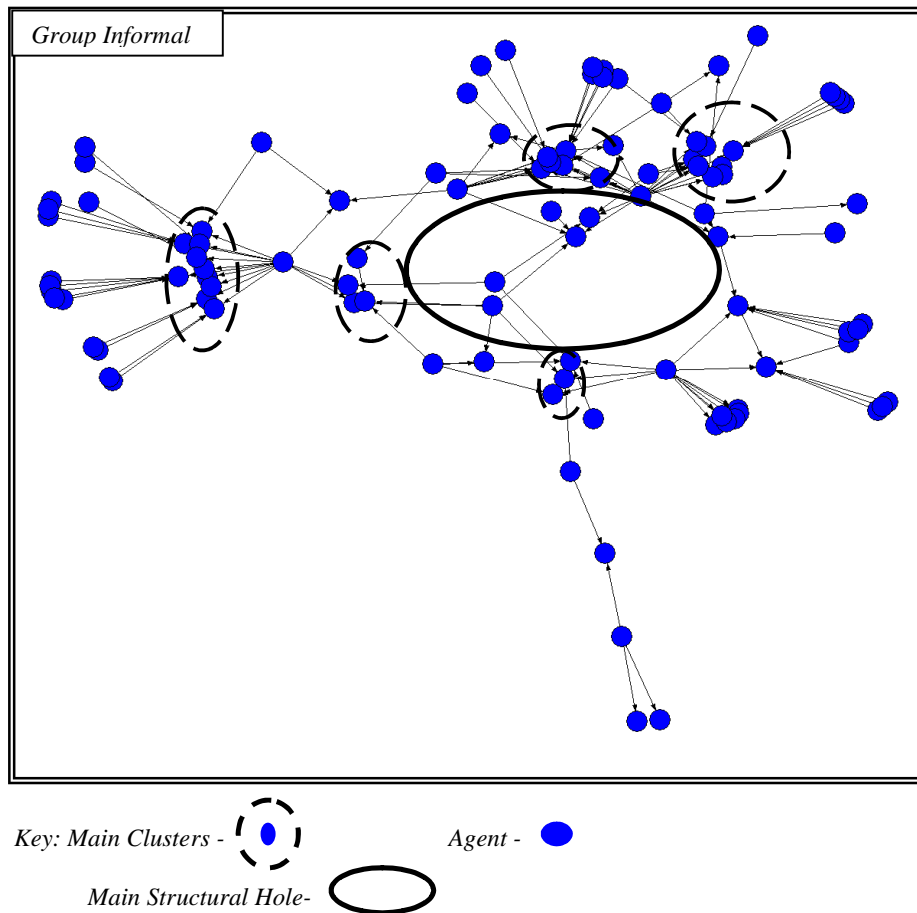
Agents within the group formal network were most constrained and the largest structural hole for a self catering establishment meant that this business had a greater capability to obtain knowledge resources and act (Table 9-13). The network's structure was shaped similar to an emerging stream with a large cluster of nodes to the right and two smaller clusters placed to the left of the large cluster (Figure 9-37). Although the largest cluster had the most egos a lack of structural holes surrounding the cluster potentially resulted in generation of redundant information. In addition, there was little evidence of structural holes across the group formal network and therefore the overall generative capability of this network is limited. The disseminative capability however was enabled since knowledge resources were potentially directed to move either to the left or right in a straight line (Figure 9-37).

**Figure 9-37 Group Formal Network and Inter-organisational Knowledge Sharing (Structural Holes)**



There was evidence of several clusters of egos within the group informal network (Figure 9-38). Although the diagram shows a huge structural hole in the middle, unlike the individual personal network, within the group informal network there were several egos spanning the structural hole. Spanning the structural hole, a concept introduced by Burt (1992b), means that these agents were in a position of competitive advantage. This positional advantage was derived from the capability of network agents to obtain several sources of non-redundant or new information from other network agents as seen from the connectivity with the five network clusters (Figure 9-38).

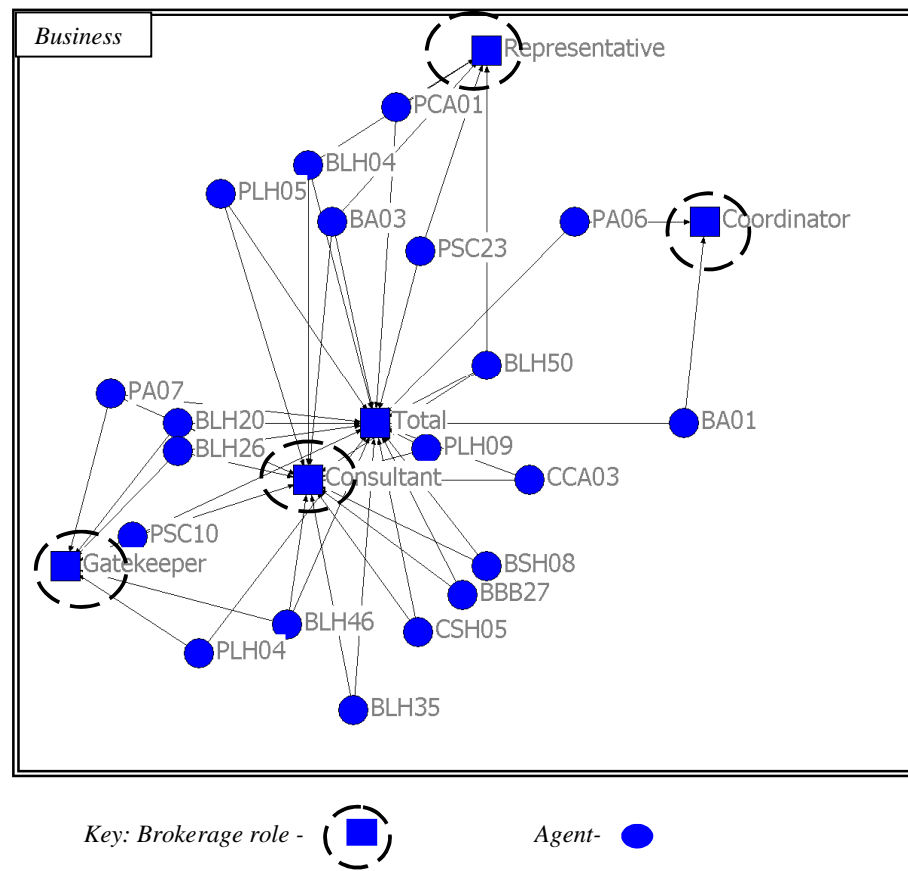
**Figure 9-38 Group Informal Network and Inter-organisational Knowledge Sharing (Structural Holes)**



### 9.3.3.2 Brokerage

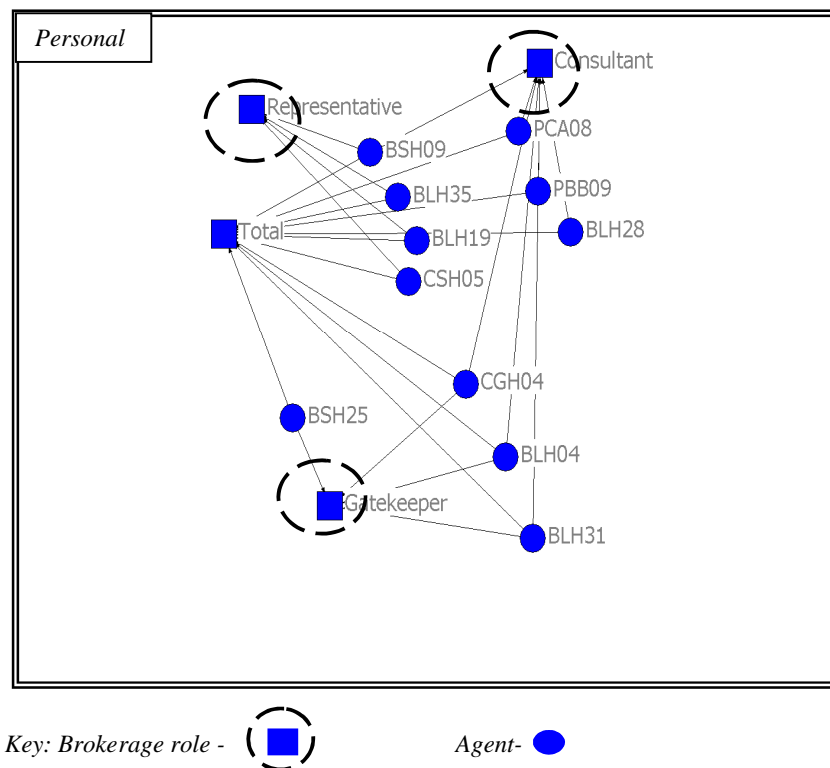
Innovative capability is also facilitated through the brokerage roles operating within the network. Brokerage means that an ego can potentially act as an information intermediary. The individual business network had the most brokerage roles consultants, gatekeepers, representatives and co-ordinators (Figure 9-39) and this finding explains the reason for an outcome of receiving information (Table 8-13). Accordingly, business people relied on their brokers for potential knowledge resources. The squares are the brokerage roles and the circles are the agents performing particular brokerage activity.

**Figure 9-39 Individual Business Network and Inter-organisational Knowledge Sharing (Brokerage)**



In the individual business network most egos were clustered around the consultant role and therefore there were several agents who belonged to a different group, brokered information between agents who belonged to the same group (Figure 9-39). The co-ordinators within the individual business network were both attractions and the main representatives were a large hotel and another attraction. Representatives have the capability of sharing information between two groups. Gatekeepers are particularly important since they can prevent the flow of information. Within the individual business network the main gatekeepers playing this role were predominantly large hotels and this means that the business people within these establishments may prevent the flow of information across the network. Innovative capability in the individual business network depended on the knowledge sharing roles within the network and these roles resulted in knowledge of happenings within the network.

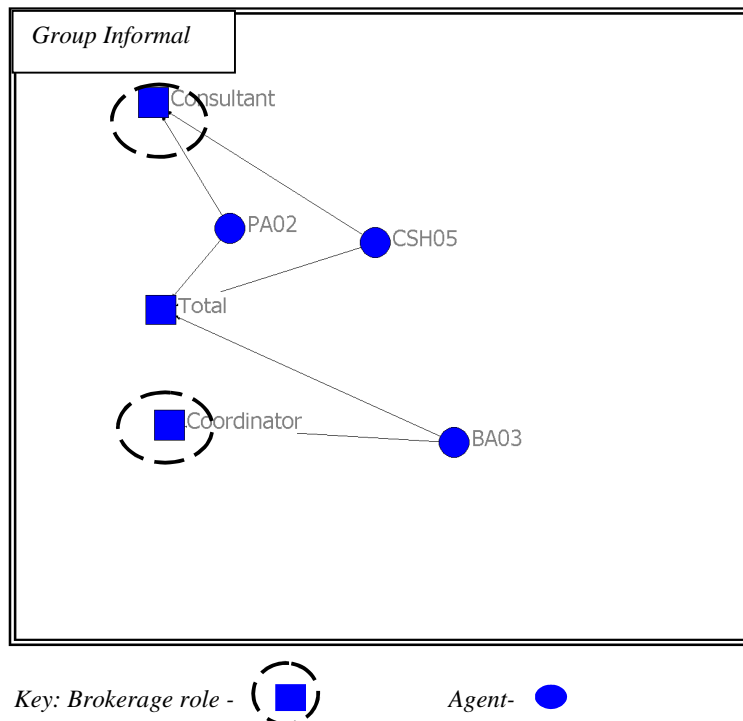
**Figure 9-40 Individual Personal Network and Inter-organisational Knowledge Sharing (Brokerage)**



There was an almost even distribution of gatekeeper, representative and consultant roles within the individual personal network (Figure 9-38). Unlike the individual business network, there was an even distribution of small and large properties that played the gatekeeper role. Hotels were predominantly representatives and a variety of business types acted as consultants. There were no co-ordinators in the individual personal network and also no agents who were attractions were brokers. As a result, there was no inter-group sharing of knowledge resources (co-ordination) within the individual personal network.

Brokerage was not evident in the group formal network since no agents were in a between position. This was not the case with the group informal network which had two roles being played: consultant and co-ordinator. Evidently, there were no gatekeeper roles being played and therefore access to knowledge resources within the group informal network was not being controlled.

**Figure 9-41 Group Informal Network and Inter-organisational Knowledge Sharing (Brokerage)**



## 9.4 Conclusion

Knowledge was shared between people in the tourism sector and their networking patterns were analysed. Owners and managers showed different networking characteristics with owners benefiting from slightly denser networking practices and managers benefiting from more transitive and clustered networks. The owners' network generally achieved greater reach and network centralisation as compared with the managers' network and there were greater numbers of cliques within the managers' network. The business types that benefited the most from structural ties were small hotels, attractions and bed and breakfast properties.

The four network types were also analysed to determine network characteristics. There were distinct patterns within individual and group networks. The individual business and group informal networks had the most information ties. Although the individual business network was more transitive the individual personal network was more clustered. Types of formal networks, individual business and group, had greater 'two-step reach' and network centralisation values. This means that there were important knowledge centres within these networks in which agents can potentially act as information disseminating alters. Although informal networking practices resulted in non-redundant information flows, based on the evidence of structural holes, these practices did not result in greater brokerage opportunities within the group informal network and therefore there were uneven generative and disseminative capacities.

The next chapter, Chapter 10 is an evaluation of the theoretical, methodological and analytical strategies of this thesis. The main theories and concepts were critically reviewed based on identified criteria. A new conceptual framework is proposed based on the research study's findings and the findings are evaluated.

## CHAPTER 10 DISCUSSION AND EVALUATION

### 10.1 Introduction

Information may be shared between tourism business people in an inter-organisational context. Such information sharing practices are related to the social interaction processes of social networking and assist in building up the knowledge stocks within a tourism destination. This research study examined inter-organisational knowledge sharing and involved an analysis of: dispositions and attitudes, information content, including dissemination of this content, social networking and knowledge sharing practices. Individual and group relationships of people in different tourism and hospitality businesses were examined to determine what type of information was shared and how and why these types of information were shared. This chapter focuses on a discussion and evaluation of the methodology and methods adopted in this research and on the findings produced by the research study. First, the conceptual and methodological approaches are discussed and evaluated based on the criteria of scientific research (Sekaran, 2003). Second, there is a discussion and evaluation of the research study's findings.

### 10.2 Evaluation of Conceptual and Methodological Approaches

This section evaluates the conceptual and methodological approaches used within the research study. The criteria used to evaluate the conceptual and methodological approaches were the principles of scientific research: purposiveness, generalisability, simplicity, rigour, confidence and testability (Sekaran, 2003). This evaluation of the conceptual and methodological approaches is divided into three parts: the design of the conceptual framework; the revised conceptual framework; and the choice of methodological approach.



### **10.2.1 The Design of the Conceptual Framework**

Theory is built through thinking about relationships in the world (van Maanen, Sorensen & Mitchell, 2007). Three main foci assist with understanding the relationships regarding inter-organisational knowledge sharing: people in tourism businesses; network structures; and concepts (ideas) and theories (propositions) relating to knowledge sharing. Variables were defined based on theories regarding networking (Monge and Contractor, 2003), knowledge sharing (Nonaka and Toyama, 2003; Awad and Ghaziri, 2004; Choi and Hilton, 2005), and the personality and identity of business people (Kalish and Robins, 2006).

Internally consistent relationships were built through the inter-relatedness of concepts and theories and predictions were tested through hypothesis tests. The initial conceptual framework was therefore designed in a manner to consider the research aim which was to examine inter-organisational knowledge sharing by considering relationships of business people in the tourism sector and focusing on the contribution of social networks to knowledge sharing. The initial conceptual framework: people in tourism and hospitality businesses; network structures of individual and group relationships; and knowledge sharing are discussed below.

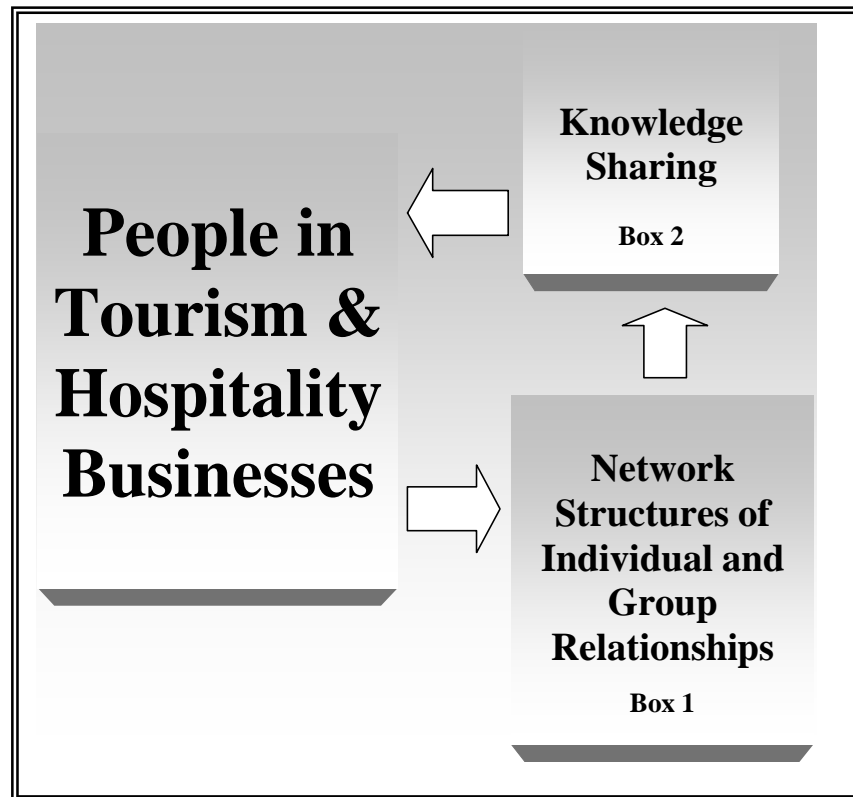
#### **10.2.1.1 Initial Conceptual Framework**

A conceptual framework adds rigour to a research study (Sekaran, 2003) and a sound conceptual framework is built from existing theoretical approaches. The initial conceptual framework of this study (Figure 10-1) emerged following the review of literature relating to social networking and knowledge sharing and the relationship of this literature to the tourism sector. This conceptual framework sets out three foci for the research: people in tourism and hospitality businesses, network structures and knowledge sharing with social network structures allowing information sharing between businesses through individual and group relationships.

It is important to note that this initial conceptual framework helped to simplify the inherent complexity in this research study. Such simplicity is needed according to Sekaran (2003) because it aids a good understanding of the important factors that influence the topic under study. This research study met the simplicity criterion since three foci were identified in the initial conceptual framework: people in tourism and hospitality businesses, network structures of individual and group relationships and knowledge sharing (Figure 10-1).

**Figure 10-1** Initial Conceptual framework of Inter-organisational Knowledge Sharing

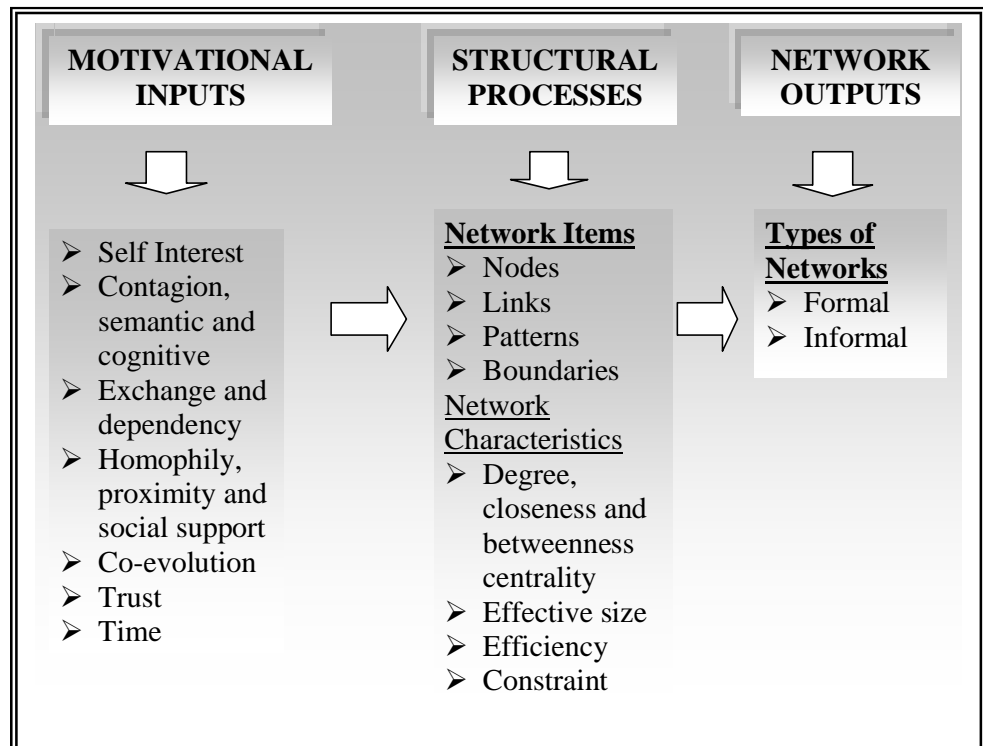
Source: Author



The initial conceptual framework was expanded through the specification of several variables that the literature suggested could be used to explain inter-organisational knowledge sharing (Figures 10-2 and 10-3). Social network theory (Wasserman and Faust, 1994; Wasserman and Galaskiewicz, 1994; Scott, 2000; Carrington, Scott and Wasserman, 2005) and its related theories of: structuration (Giddens, 1984) and communication networks (Monge and Contractor, 2003), along with the theory of knowledge creation (Nonaka and Toyama, 2003) have been combined to make a contribution to knowledge regarding inter-organisational knowledge sharing. Network structures of individual and group relationships set out the structural processes which result in certain knowledge structures, these structures can be measured in terms of their network characteristics and the outputs are determined by the type of network (Figure 10-2). Knowledge sharing is motivated by particular inputs which influence the knowledge content and knowledge creation processes (Figures 10-3).

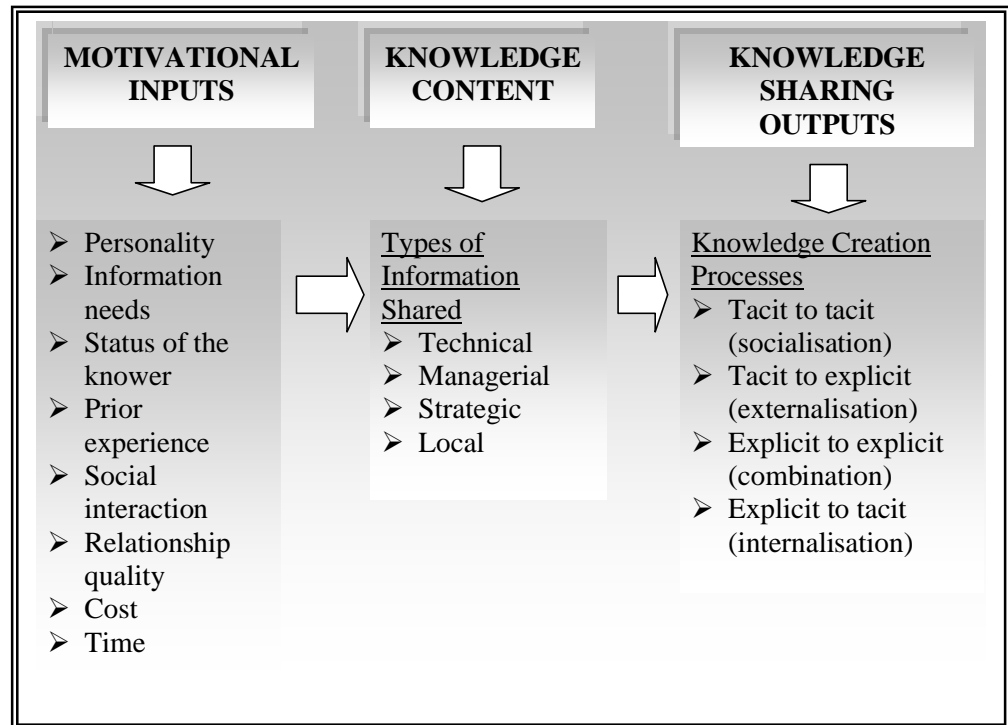
**Figure 10-2 Conceptual framework breakdown of Box 1 – Network structures of individual and group relationships**

Source: Author



**Figure 10-3 Conceptual framework breakdown of Box 2 – Knowledge sharing**

Source: Author



### 10.2.1.2 People in Tourism and Hospitality Businesses

The tourism system is viewed as a complex adaptive system: that is an organisational system that is open to information flows, a form of stimuli, and the system in turn adjusts processes and outcomes to suit the stimuli. Given the increasing complexity of the tourism sector, businesses are required to adapt or they will become irrelevant. Shared knowledge can be used to help these businesses adapt. By examining how and why information flows between people in different tourism sector businesses, the emergence and operation of inter-organisational knowledge sharing provides an understanding of its contribution to improving the competitiveness of tourism businesses. To help breakdown the complexity of the tourism system, the tourism sector was defined as a system consisting of agents, their attributes and their influencing relationships: with the latter including their knowledge sharing activities. The attributes relate to the motivational and behavioural aspects of business people. Adopting a system view allowed the influences of inter-dependent relationships to be examined.

### 10.2.1.3 Network Structures of Individual and Group Relationships

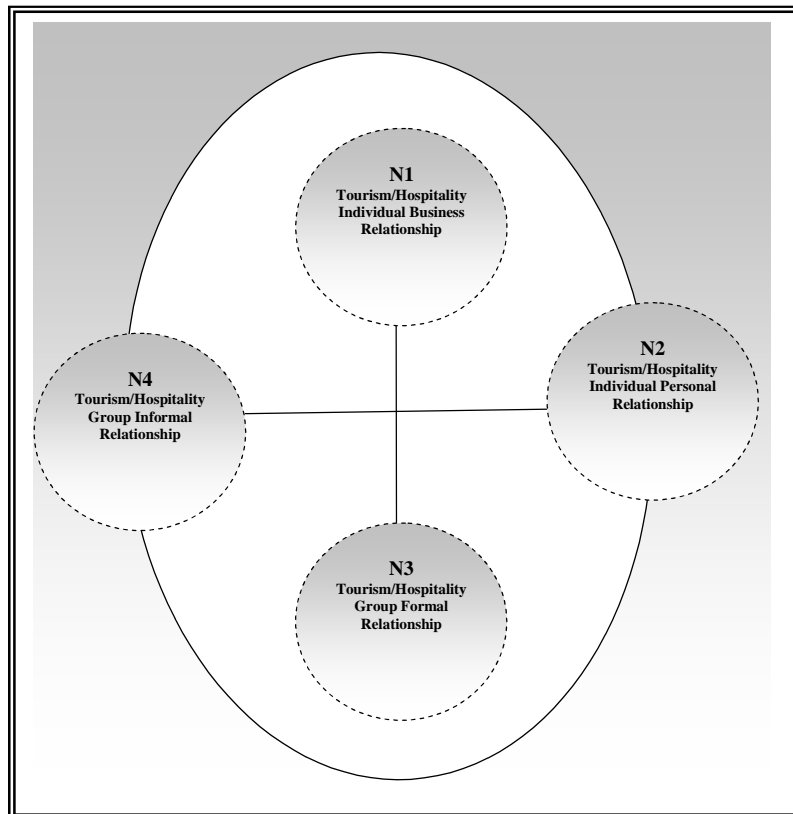
As discussed previously in chapter 1, knowledge is a competitiveness factor (Sub-section 1.2.1). On its own, knowledge will not result in tourism business competitiveness because there is a requirement for various processes to occur which can result in business competitiveness. However, knowledge is needed within businesses to improve business competitiveness and this has brought the concept of knowledge sharing to the forefront. This sharing can occur in a number of ways and one such mechanism is through social networks (Inkpen and Tsang, 2005): they are a facilitating mechanism for inter-organisational knowledge sharing. It is however not simply the mechanism but the structure of the mechanism that makes the system work and improves knowledge sharing. Thus networks, a key concept for this research study, is a means through which knowledge is shared, consequently, a networking perspective was used to model the relationships between business people.

In terms of social networks, Granovetter's (1973) strength of weak ties concept, Giddens' structuration theory (1984), Burt's (1992b) structural hole concept and Monge and Contractor's (2003) multi-theoretical, multi-level framework were the main sources. A network comprises nodes linking people, objects and events (Borgatti and Foster, 2003; Novelli et al., 2006). Network links are formed through social interaction and as a result of social interaction knowledge is shared and hence the reason a network perspective was used to examine inter-organisational knowledge sharing. In addition, the characteristics of a network provide a measuring tool for studying knowledge sharing processes in the tourism sector. For instance, the interactional (frequency, content, reciprocity and strength of ties) and structural (size, density, distance/proximity, centrality, clustering and network roles) characteristics (Stokowski, 1994) of a network provide a measuring tool for studying knowledge sharing processes through the network.

Social networks operate between business people in the tourism sector and as a result of these networks business people form invisible social structures which may exert influence on behaviour (Stokowski, 1994). As there are different types of network relationship it was important that the relationships' construct recognised and incorporated the types and characteristics of the relationships that business people have in the tourism sector. First, it was recognised that relationships are either with an individual or a group (Nadel and Fortes, 1957). Second, it was recognised that these relationships can either be for business purposes (instrumental reasons) or for socialisation (non-instrumental reasons) (Marouf, 2007). Businesses within the tourism sector were therefore examined based on conditions of business and personal individual and formal and informal group networks (Figure 10-4) in order to understand the characteristics of inter-organisational knowledge sharing.

**Figure 10-4 Four Network Types**

Source: Author



#### 10.2.1.4 Knowledge Sharing

The initial conceptual framework was developed in order to explain what, how and why knowledge is shared through social networks and therefore it was important to clearly define the concepts of knowledge sharing. In terms of knowledge sharing some of the main sources were Nonaka and Toyama's (2003) knowledge creation theory, Awad and Ghaziri's (2004) knowledge management and Choi and Hilton's (2005) trust based exchange and gift economy. Variables were developed for each concept. In order to clarify, the knowledge sharing construct, a clear distinction was made between the terms, data information and knowledge. Data are facts, information is transformed data which is communicated to a receiver and knowledge is a mix of data and information which is interpreted to give meaning. The main theory that was applied to inter-organisational knowledge sharing was Nonaka and Toyama's (2003) knowledge creation theory and this theory explains how knowledge is shared by cyclical conversion from tacit to explicit forms.

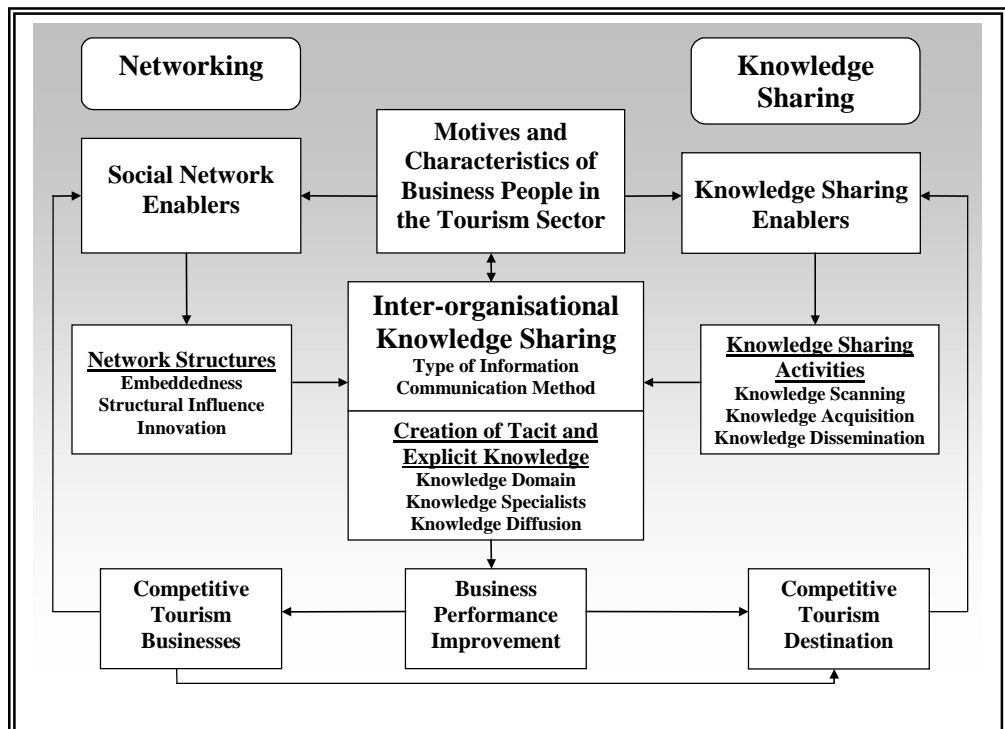
For this research study it was decided to examine tacit and explicit forms of knowledge in relation to relevant communication methods since the type of communication method potentially determines the form and information richness of shared knowledge (Daft and Lengel, 1984; Chua, 2001). For example, a tacit-based form of communication is face to face conversation (communication method). It made sense to relate the type of communication method to the form of knowledge, tacit or explicit, since type of communication method may increase or decrease information diffusion (Boisot, 1998). For instance, based on material constraints a business person may be limited in the number of face to face conversations they can have (diffusion decreases) but a business person may have a computer which can be used to readily send electronic mail (diffusion increases). In addition, the type of information exchange potentially influences behaviour (Rogers, 2003). In this respect, there are four types of information which can be considered: technical, managerial, strategic and local and a business leader may be interested in one type more than another.

### 10.2.2 The Revised Conceptual Framework

The initial conceptual framework was revised following the analysis of the primary data collected in the survey of tourism and hospitality businesses. The need for a conceptual framework to understand the inter-organisational dynamics of knowledge transfer and sharing has been suggested by several authors (Chen, Duan, Edwards and Lehane, 2006; Cooper, 2006; Shaw and Williams, 2009). Inter-organisational knowledge sharing is re-conceptualised as a result of the findings from this research study which considers the inputs (motives and enablers of networking and knowledge sharing), processes (knowledge sharing activities and communication methods), content (network structures and information types), outputs (creation of tacit and explicit knowledge) and outcomes (business performance improvement) of inter-organisational knowledge sharing (Figure 10-5).

Figure 10-5 Revised Conceptual Framework of Inter-organisational Knowledge Sharing

Source: Author





Inter-organisational knowledge sharing can be explained by the network structures, creation of tacit and explicit knowledge and knowledge sharing processes. The inter-organisational knowledge sharing motives are enabled by the social network and knowledge sharing components. The creation of tacit and explicit knowledge, which involves knowledge specialists diffusing knowledge within the knowledge domain result in improved business performance and business performance, contributes to competitive tourism businesses within a competitive tourism destination.

This revised conceptual framework differs from previously conceptualised inter-organisational knowledge sharing frameworks. For instance, Easterby-Smith et al. (2008) conceptualised inter-organisational knowledge transfer as factors relating to the donor firm, nature of knowledge, inter-organisational dynamics and the recipient firm. Knowledge sharing factors are important and there is need to re-conceptualise what are the structures and mechanisms of inter-organisational dynamics and these structures and mechanisms were re-conceptualised within this research study as characteristics of embeddedness, structural influence and innovation. In addition, the characteristics of knowledge sharing activities were also re-conceptualised (knowledge scanning, acquisition and dissemination) and therefore it may be argued that this research study has advanced knowledge regarding inter-organisational knowledge sharing.

Both knowledge transfer and knowledge sharing aspects of knowledge management are important to businesses within any sector, including tourism. This revised conceptual framework is particularly important, not only for businesses in the tourism sector, but for understanding knowledge sharing between small firms generally. According to Shaw and Williams (2009) little emphasis has been placed on knowledge transfer between small firms and therefore the revised conceptual framework within this research study can set a new research agenda regarding knowledge management in the tourism sector.

### **10.2.3 The Choice of the Methodological Approach**

This sub-section considers and evaluates the methodological approach and discusses: the research approach, the research plan and the research implementation. The research study adopted the positivistic paradigm in terms of identifying, analysing and evaluating inter-organisational knowledge sharing within a defined geographical area. Positivism is guided by scientific rules (Jennings, 2001) and these rules were followed to discover empirical facts. An empirical gap regarding inter-organisational knowledge sharing existed and filling this empirical gap provided an opportunity for a contribution to be made towards revised knowledge regarding inter-organisational knowledge sharing and a contribution to understanding knowledge dissemination and diffusion within the tourism sector.

#### **10.2.3.1 Research Approach**

The research approach was positivistic. The ontology of positivism relates to a belief that truth can be found and the epistemology of positivism relates to the discovery of truth through scientific processes. Given the positivistic way of thinking the chosen research strategy was a quantitative study using quantitative methods of data collection and analysis. Under this research method the answers to research questions are derived from the data by a deductive process (Bryman, 2008). This research study therefore sought empirical facts to meet the information needs derived from the initial conceptual framework in order to explain the why, how and what regarding inter-organisational knowledge sharing within the tourism sector.

During a review of the possible approaches to this thesis a constructivist's view (an interpretive research paradigm) was identified as a possibility. A constructivist approach aims to understand and illuminate phenomena whereas a positivistic approach aims to show evidence of underlying relationships (Easton, 1995). However, a constructivist perspective would not provide measurements of how and why inter-organisational knowledge sharing practices emerge and operate within tourism destinations since such an approach may not be representative of the population (Bryman, 2008).

In addition, there was already some existing evidence in regard to the research subject area, although this existing evidence was based largely on intra-organisational research (Sub-section 1.2.3). As a result, rather than pass over this evidence, it was decided to make use of such evidence and this research study applied and expanded on existing understanding about knowledge sharing to an inter-organisational context. The idea was to build on an existing foundation of knowledge as suggested by Sekaran (2003).

#### 10.2.3.2 Research Plan

This part sets out an evaluation of the performance of the research plan. There are six discussion points: (1) research aim and objectives; (2) location selection; (3) survey method; (4) population selection; (5) questionnaire; and (6) pilot. To achieve the aim, and associated objectives, the primary research study was based on a systematic and structured research planning process which involved: location selection, survey method, population selection, questionnaire design and pilot study leading to a major episode of data collection. The research aim and objectives provided a guide for determining the plan and implementation of the research study. The selected location was considered in terms of the feasibility of achieving the research aim and objectives. The survey method, selected population, questionnaire and pilot study influenced the success of the research study and therefore care was taken to improve these activities.

### **10.2.3.2.1 Research Aim and Objectives**

The research study was planned in accordance with the research study's aim and objectives. The purposiveness of the research is its aim (Sekaran, 2003) which sets out the clear purpose of the study and that clear purpose keeps the study on track. The main aim of this research study was: *to examine inter-organisational knowledge sharing, by considering the individual and group relationships of business people in different tourism and hospitality businesses and focusing on the contribution of social networks to this knowledge sharing.*

The objectives of the research study were:

- 1) To identify gaps in the literature by a selective review and systematic synthesis of the literature concerning knowledge management, knowledge sharing and social networks, and the relationship of these theories and concepts to the tourism sector.
- 2) To examine concepts and their relationships in regard to why, why not, how and what inter-organisational knowledge sharing practices take place within the tourism sector.
- 3) A critical examination of inter-organisational knowledge sharing within a tourist destination using both attribute and relational data.
- 4) To make a contribution towards building an awareness and understanding of the mechanisms of inter-organisational knowledge sharing within the tourism sector.

### ***10.2.3.2.2 Location Selection***

Location selection was particularly important since replication was a consideration when selecting the research study's location. Replication is a principle of generalisability. Conditions in a replicated study must be precisely the same as those of the original study (Bryman, 2008). While this research study was specific to the Bournemouth, Poole and Christchurch conurbation, there were three conditions within the conurbation which can apply to any tourism destination (Sub-section 6.5.1). The first condition was a substantial tourism sector. The second condition was contiguous area. The third condition was evidence of existing networks. Different results may be obtained if one of these conditions is missing.

### ***10.2.3.2.3 Survey Method***

In addition, the conurbation was selected because of the practicability of performing the survey method. This research study conducted within the conurbation was economical (overall cost), efficient (cost per questionnaire), practical to implement and ethical (confidentiality of sensitive information). The overall cost was economical since the travel distances were not great and therefore the cost of reaching respondents was reduced. The cost per returned questionnaire was efficient since respondents in some instances returned questionnaires in the post and while another batch of questionnaires were delivered, previously delivered questionnaires were collected. The research study was practical to implement since the number of tourism businesses in the conurbation was sufficient to conduct a feasible study and as noted the travel distances were quite short. The study was ethical since anonymity was preserved through use of a number rather than the respondent's or business's name.

Initially a phased survey method approach was considered as one possibility. In such an approach the first phase of the fieldwork would have collected relational data that could be used to map networks and their characteristics. Relational data are the contacts, ties and connections through which one agent relates to another (Scott, 2000). This data is provided by informants and constructed as a structural map (Scott, 2000; Stokowski, 1994). For instance, relational data methodology was utilised by Pavlovich (2003) to study tourism networks in New Zealand. The second phase of the survey would have involved a survey to collect data regarding inter-organisational knowledge sharing. While this was a possibility the choice was made to combine both sets of data into one structured questionnaire. The first part of the questionnaire collected the relational data and the second part of the questionnaire collected the attribute data. Such an approach enabled cross-comparisons of data using the same sample of business people in the tourism sector. The survey method was therefore simplified by combining relational and attribute data into one questionnaire.

#### ***10.2.3.2.4 Population Selection***

The actual population contained accommodation and attraction sub-sectors and as a result the sample also contained these sub-sectors. The population was selected based on a list of registered hospitality and tourism businesses within the conurbation. The original list was provided by South West Tourism. While conducting the research study, there were indications that the information on the list was outdated. For instance, several establishments indicated that they had not been in business for several years and several site visits revealed new constructions and deserted buildings. As a result, the list was amended using additional information from local and official tourist guides, such as the Automobile Association (AA) and Good Hotel tourist guides. In addition, the yellow pages or the telephone directory lists or another regularly updated list could have been initially used but was not because one advantage of using the South West Tourism list was that the business establishments were categorised by type of business and information such as the number of rooms assisted with distinguishing between small and large hotels.

### **10.2.3.2.5 Questionnaire**

The questionnaire design process included its design and pre-testing. The questionnaire was constructed in order to provide information in regard to inter-organisational knowledge sharing. For instance, several researchers proposed that knowledge sharing occurs through network structures of groups and individuals (Cross et al., 2001; Pena, 2002; Santoro et al., 2006; Liebowitz, 2007) and that in the tourism sector, formal and informal networking practices exist (Ingram and Roberts, 2000; Pavlovich, 2003; Morrison et al., 2004). The personality and identity traits of business people were studied using Kalish and Robin's (2006) study of psychological pre-dispositions and network structure.

Effective responses were obtained since the selected location is a premier coastal tourism destination on the south coast of England with existing tourism networks and the questionnaire design process was detailed. Rigour was established through tracking the theories and concepts using research questions, the conceptual framework and research objectives (Appendix I sets out the links between conceptual framework and the final main survey questionnaire). Thus, the first part of the questionnaire had three parts, which focussed on individual business and personal and group formal and informal networks. The second part focussed on the perceptions and expectations of respondents in regard to their social networking and knowledge sharing practices, and their personality and identity. The questionnaire was constructed bearing in mind the choice of first question, numbering, formatting, wording, and ordering of questions.

### **10.2.3.2.6 Pilot**

The questionnaire content and layout were validated through a pilot exercise conducted using face to face interaction which allowed clarification of questions and highlighted issues with wording of questions (Appendix II, piloted face to face interview questionnaire, Appendix III, pre-test administered questionnaire and Appendix IV, final main survey questionnaire and sample letters). Such clarification was used to revise specific questions in a manner that allowed the respondent to consistently understand what was being asked. Consequently, it is believed that relevant data was collected and differences in terms of understanding and the meaning of words were reduced.

In summary, this research study was conducted using a survey research method. The research plan was aimed at collecting sample data that could be used to achieve the research aim and associated objectives. Ongoing improvements were undertaken during the research planning process and these improvements included revision of the survey method approach, revision of the list of business establishments and revision of the questionnaire.

### **10.2.3.3 Research Implementation**

There were technical issues, in regard to the best survey practice, and practical issues, regarding the limitations, with the implementation of the research plan. Implementation of the research study involves two processes: data collection and data analysis. The main concern with the data collection process was the quantity and quality of usable returned questionnaires and the main concern with the data analysis process was the accuracy of test results. The practical issues were: the access to respondents, the time and the cost considerations. This part regarding research implementation is divided into two main parts: the data collection process, and the data entry, cleaning and analysis processes. The data analysis process is further divided into statistical and social network analyses.



### **10.2.3.3.1 Data Collection Process**

The data collection process was implemented to achieve effectiveness and efficiency in terms of the number of usable returned questionnaires and in order to increase the response rate of the survey. Following a period when a postal survey was trialled, the drop and collect method was adopted. The drop and collect method had certain challenges such as location of the business, access to the correct respondent to leave the questionnaire with and agreement to respond and collection date although in many ways, such as being able to establish who would complete the questionnaire at the drop stage, the drop and collect method was superior to the postal method. Nonetheless, there was a need for as many as five (5) follow-up contacts to obtain some questionnaires. Ongoing follow-up visits were necessary since the sample needed to be representative of the population and such a representative sample was achieved through the use of a stratified sampling frame of business people in the tourism sector. A representative sample is important since according to Bryman (2008) it is one of the fundamental principles of achieving generalisability.

Through use of a stratified sampling frame and repeat visits, questionnaires were completed by setting appointments and during these appointments business people self-completed the questionnaire. It was therefore necessary to implement different administration methods to increase the questionnaire response rate and the use of an appointment technique ensured the collection of questionnaires and therefore was more cost effective. Thus, while the initial mail out was most cost efficient in terms of delivering questionnaires, the setting of appointments with business people was cost effective in the return of questionnaires. Mail, electronic-mail and telephone reminders were also employed. In the end, business people in the tourism sector of the Bournemouth, Poole and Christchurch conurbation provided a dataset that achieved a response rate of 64.5% (Sub-section 6.6.3). In total 211 questionnaires were returned and 200 were usable.

### **10.2.3.3.2 Data Entry, Cleaning and Analysis Processes**

This part discusses three aspects of the analytical approach: data entry and cleaning, statistical analysis and social network analysis which were the two analytical approaches used within this doctoral thesis. First, statistical analysis involved descriptive and inferential statistics and Principal Components Analysis (PCA). Descriptive statistics were used to determine the frequency percentages and central tendency of the data. Inferential statistics were used to test the null hypothesis that there were no statistically significant differences between the groups. PCA is a multi-variate technique that was used to reduce the data into independent components. Second, social network analysis (SNA) was conducted to demonstrate patterns and measure network characteristics of the relational data including consideration of network structures, positions and roles.

#### **10.2.3.3.2.1 Data Entry and Cleaning**

The SPSS database was set up by first defining variable and value labels. Missing values were also defined. Newly created variables included recoding some of the demographic classification data to conduct cross-tabulations. Data entry started with the coding of the questionnaires. The group networks were defined as those respondents who did not attend meetings (formal network) and those respondents who attended meetings (informal network). Thereafter, each case was examined using classification data (type of business, membership, area, number of years in area, number of years in industry, gender, position and education). The first run of the data served to identify any errors so that the data could be cleaned. Data cleaning also involved coding the list of business names using a developed code guide (6.7.2.1). A number of businesses were not on the original list and as a result, additional codes were developed for those business names. Exploratory data analysis which included, correlation analysis was also conducted.

#### 10.2.3.3.2.2 Statistical Analysis

The evaluation of the statistical analysis conducted within this research study involves two aspects: (1) the questions to be answered and (2) choosing the right statistic. Data were selected for analysis in relation to an overarching research proposition that social networking influence the decision to share knowledge. The choice of statistic was based on whether the data was nominal, ordinal or scale. Within the dataset there were largely nominal and ordinal data and as a result, non-parametric statistical techniques were performed. Statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS) version 16.

Descriptive statistical analysis involved the calculation of averages and frequencies. Inferential tests were also conducted. In order to interpret the results of the inferential analysis of the Likert scale data a zoned scale of averages (Vaughan, 2007) was used to evaluate whether, if the mean was being used in a descriptive way, the average was high, medium or low and this proved to be effective in identifying that the mean for the serendipity variable was high and the mean values for social support and trust were medium. In addition, testable hypotheses were developed and implemented to identify the statistically significant differences between practices of owners and managers and network types. Hypothesis tests conducted were: the chi-square and the Mann-Whitney *U*.

Data was analysed to achieve confident and precise estimates. It is usual to make estimations within a 95% confidence level. Consequently, the null hypothesis is rejected if a probability value of 0.05 or less was recorded for hypothesis tests (Pallant, 2007). Testability relates to employing statistical tests and statistical tests can be used to establish reality but there are two types of errors: Type I and Type II errors (Field, 2005). These types of error were important since a sample was used to make inferences about the population. A Type I error occurs when there is belief of an effect in the population when there is no such effect and a Type II error occurs when there is belief that there is no effect in the population and in reality there is an effect. When the probability of a Type I error increases the probability of a Type II error decreases. Although in effect it is more important not to make a Type I error (there is an effect) (Field, 2005).

Controlling the possibility of both types of error involves the research study's sample size, effect size and alpha level (probability value) (Pallant, 2007). Use of an alpha level of 0.05% reduces the likelihood of a Type I error (Field, 2005). This study used the benchmark of a 95% confidence level for rejecting the null hypothesis and interpreting findings. Selection of a 90% confidence level would have resulted in more variables being considered statistically significantly different (where this relates to the reliability that the statistical differences identified are reliable) in understanding inter-organisational knowledge sharing. Networking variables that could have been statistically significantly different include: proximity of owners; managers application of best practices; greater social support for managers. Knowledge sharing variables that could have been statistically significantly different include: owners sharing information on a one to one basis; and managers have many more opportunities to receive business information. However, these statements were not statistically significant at a 95% confidence level. Although, these variables did not explain differences between owners and managers, these variables were part of the explanation of the social networking and knowledge sharing components which are the enablers of inter-organisational knowledge sharing but are not potential explanations of why owners and managers behaved differently.

Principal Components Analysis (PCA) was the multivariate technique used and it was conducted to discover the latent variables within the dataset. PCA reduces the data by deriving highly inter-related sets of variables and producing these as components. An oblique rotation method was initially used and the results obtained from using the 'DOBLIMIN' (direct OBLIMIN) method resulted in all negative loadings within several components and similarly named components. For instance, when the 'DOBLIMIN' method was employed on the knowledge sharing variables, variables relating to altruism and serendipity loaded in separate components. Based on these observations and the need for accuracy with interpreting the findings, the 'VARIMAX' rotation method was employed since this method obtains distinct components within the dataset and therefore inter-relatedness of the components (as with the 'DOBLIMIN' method) was nullified. In addition, a search within the Journal of Travel Research revealed that 3 out of 4 articles used 'VARIMAX' rotation for performing PCA.

### 10.2.3.3.3 Social Network Analysis

Network studies have been critiqued (Curran, Jarvis, Blackburn & Black 1993). Curran et al. (1993) suggested that networks be viewed as cultural phenomena and that meanings are more important than the behavioural correlates. On the other hand, it has been recommended that network analysis be used since agents' behaviour can be captured and counted (Lynch, 2000). Notably,

*'the idea of a network, or web of relationships, became useful when traditional approaches to studying bounded groups in society failed to describe adequately the reality of relational ties among people. ... Though social networks may be invisible even to the participants related within the structures, researchers believe that networks exert influence directly and indirectly on social behaviour'* (Stokowski 1994:56-57).

Since social network analysis (SNA) can be used to study behavioural outcomes, and therefore determine the structural dynamics of the subject area, SNA has been an important analytical technique to understand inter-organisational knowledge sharing in the tourism sector.

Despite the usefulness of network studies there are challenges particularly relating to network sampling. Network theorists seek to obtain network censuses rather than samples (Wasserman and Faust, 1994). As a result, a snowballing technique, reviewed by several authors, can be used to collect network data (Johnson, Boster and Holbert, 1989; Frank and Snijders, 1994). Such a technique involves asking the informant for their network ties and in turn asking those named agents for their network relationships. While a snowballing technique can be used to identify the population the method is based on each ego knowing about each other ego's contact pattern (Frank and Snijders, 1994). As a result, the entire population is determined based on informant data. Thereby, an informant in a snowball sample will inadvertently attribute certain agents to their group and therefore the population is defined by informants rather than any particular boundary.

While the snowball method has its merits, the method used within this thesis, that of identifying ego-networks, yielded several waves of egos (Figure 9-2 for example). A wave is the placement of agents along the same circular pattern within the network. Rather than obtain network ties of an entire population, a sample of egos, an ego-network approach, within the population can be obtained. An ego-centred approach to network study is a focused one (McCarty, Bernard, Killworth, Shelley and Johnsen, 1997). Ego-centred networks consist of focal egos with ties to alters (Wasserman and Faust, 1994). The focal ego is asked to recall their relationships with alters. As a result, obtaining ego-network data can provide a sample that can be used to observe patterns within the population. Such an approach requires that egos provide data which can be used to show their inter-dependencies and thus embeddedness within the network's structure.

Other challenges are deriving the structural and compositional features of the network, which are comprised within a dataset of ego-networks (Wasserman and Faust, 1994). The structural element is the relational ties and the compositional element the attributes of the agents, for instance the frequency of the ties. The relational tie can be directional or non-directional. This research study focused on knowledge that a respondent received (a directional relation) since the study sought to focus on the perceived usefulness and impact of that knowledge rather than on the receipt of any information regardless of its value to the recipient or upon the transmission of knowledge. Relational data can also be dichotomous or valued data. The dataset contained both dichotomous and valued data. Valued data means for instance an ego may have named the same alter from which information was received within two network types and as a result the alter has a value of 2 ties in a combined network. It was learnt that care must be taken when interpreting the results of both dichotomous and valued data since the former is a percentage and the latter an average.

Since the respondent was asked to recall their network relationships there can be issues with the accuracy of the data. Data was collected from the respondent based on the assumption that the information provided was accurate. Recall is based on memory and hence the reason the respondent was asked to recall their interaction within a 12 month period. Thus, the focus was not on particular instances but on long range patterns: regular practices conducted over a period of time, of interaction within a 12 month period. Researchers who use the long range method of recalling interactions state that their informants were the 'best' informants (Freeman, Romney and Freeman, 1987).

### **10.3 Discussion of Inter-organisational Knowledge Sharing**

After the evaluation of the conceptual and methodological aspects of this research study, a discussion of the findings are presented which includes an evaluation of how the findings compare with explanations found in the literature. There is support within the findings of this research study that inter-organisational knowledge sharing is a mutual ongoing activity supported through social interaction. In contrast to what Pena (2002) believed, business people shared their competitive tacit knowledge with other business people working in different tourism businesses. Inter-organisational relationships can be either business or personal in nature but what is common is that through both types of relationship, ideas and experiences which can be used for business operation are shared. This section evaluates the findings of this research study in regard to inter-organisational knowledge sharing to add and expand knowledge and by so doing advance knowledge regarding inter-organisational knowledge sharing. Based on the revised conceptual framework (Figure 10-5), there are four sub-sections: (1) motives, characteristics and social identity of business people in the tourism sector; (2) enablers of social networking and knowledge sharing; (3) network structures and knowledge sharing activities; and (4) creation of tacit and explicit knowledge.

### **10.3.1 Motives, Characteristics and Social Identity of Business People in the Tourism Sector**

There is limited research surrounding the motives, characteristics and social identity of business people in the tourism sector since research concerning these traits generally relate to the visitors within a tourism destination rather than the people operating businesses within the sector as evidenced by main tourism journals (see *Annals of Tourism and Tourism Management*). There is also limited empirical research regarding individual characteristics and knowledge sharing (Wang and Noe, 2010) and therefore this research study makes a contribution towards these subject areas. The relationship between social networking and knowledge sharing is not due to chance and, as posited, certain traits of business people contribute to practices of inter-organisational knowledge sharing between business people. In particular, personality and identity traits go hand in hand with the motives to network and the sharing of knowledge and therefore the motives, characteristics and social identity of business people are discussed within this subsection.

#### **10.3.1.1 Motives of Inter-organisational Knowledge Sharing**

A motive is a reason for doing something and the results of this research study lend weight to the argument that there are certain motives which influence the sharing of certain types of information and thus inter-organisational knowledge sharing. Given that knowledge crosses organisational boundaries there are particular constructs which influence the decision to share knowledge in an inter-organisational context. A construct is formed through variable relationships. Motives relate to the instrumental reasons for sharing knowledge through social networking (Section 8.2). The evidence suggests that knowledge is shared through social networks as a result of particular information needs (Table 8-1). The greatest information need of respondents was that of business development and some business development items included activities to increase revenue, new business opportunities, staff training and development and regulation (Appendix V). In addition, owners were more likely to seek information regarding marketing and managers seek information regarding business development.



### 10.3.1.2 Characteristics of Owners and Managers

After considering the motives to share information through social networks, the characteristics of the business people is discussed within this part. Characteristics of owners and managers are important since business people may potentially not share knowledge because of their character. Firstly, some business people in the tourism sector agreed that they were extraverted and related to other people well and quickly (Sub-section 7.2.1). This finding contributes to our understanding of the nature of network agents who share knowledge, in that extraversion and good relationships were important considerations.

Secondly, some respondents agreed that their personality independent from others was important and that they often do their own thing (Table 7-2). These findings relate to individualism and individualism is important since according to Kalish and Robins (2006) this characteristic suggests that respondents viewed group membership as less important. Thirdly, there was overall disagreement that membership in social groups was central to how they feel about self and therefore some respondents were generally not group focused. Owners were more likely to be self-reliant and self-dependent and therefore had less strong relationships. This evidence also suggests that within the owners' network, since 'owner agents' were statistically significantly different in regard to their independence, their network pattern would have had more structural holes than the managers' network and this was found to have been so (Figure 9-15).

### 10.3.1.3 Social Identity

Social identity is important to explain who business people social network with and through social networking may share knowledge. Social identity is viewed as the result of self-identification and self-categorisation processes. The findings of this research study suggest that respondents engaged with self-identification processes, which relates to homophily and these processes influenced the formation of network ties. As a result, the majority of respondents agreed that they networked with people who were reputable (the in-group) (Table 7-7). In addition, respondents engaged in a self-categorisation process in which they networked with businesses similar to their business (Table 7-7).

These examples highlight that the processes of self-identification and self-categorisation are important for understanding the homophily characteristics of social networking practices in that these processes influence the formation of group and sub-group structures within the network. Such a result is consistent with Hogg and Terry (2000) who observed the effects of self-identification on the formation of sub-groups within an organisation based on socio-demographic characteristics. The formation of cohesive sub-groups may act as a barrier for the sharing of knowledge between sub-groups and therefore in theory self-identification and self-categorisation processes can reduce the capability to influence an action and therefore the capability of knowledge sharing within the social network.

Social identification is one influence on the formation and composition of network ties but if social identification acts as a barrier for the sharing of knowledge then the performance of the social network is hampered. However, evidence from the findings of this research study supports the view that through social identification, the performance of the social network within the sub-group can improve. The formation of network ties based on self-identification and self-categorisation processes means that certain sub-groups within the network may control access to particular resources.

Network resource ‘controllers’ may therefore have a form of power over other sub-group agents and therefore self-categorised agents (agents within the sub-group) become dependent on ‘controllers’ for network resources. This group power-dependency was observed by Hogg and Terry (2000) and the power-dependent construct was theorised by Emerson (1962). Accordingly, social identification which results in power-dependent relationships improves the capability of the social network since ‘controllers’ can influence the adoption of knowledge sharing practices. Thus, the managers’ network with a greater number of clique formations performed better in terms of decision making (Figure 9-13).

### **10.3.2 Enablers of Social Networking and Knowledge Sharing**

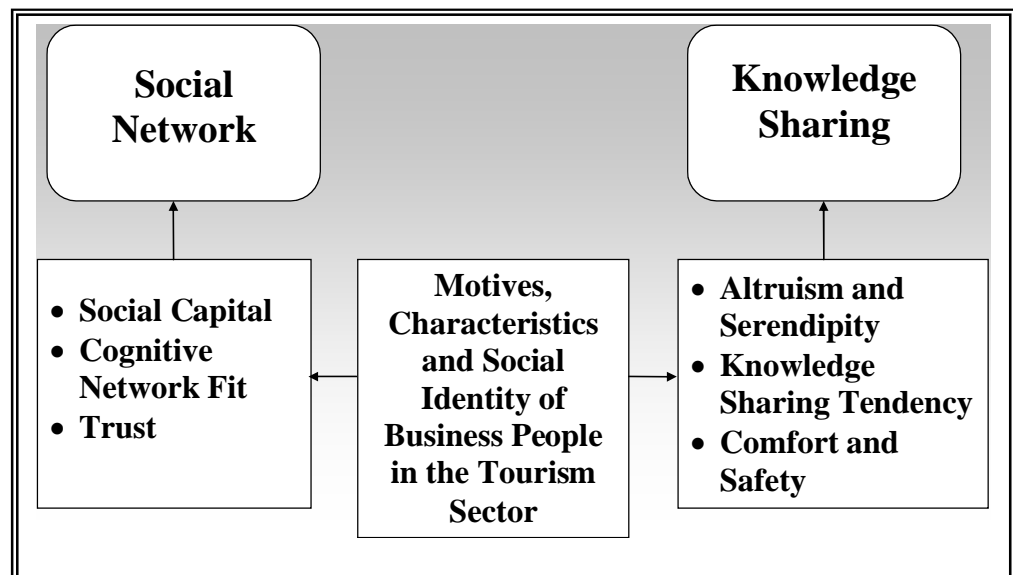
After identifying the motives, characteristics and social identity of business people in the tourism sector, this sub-section discusses the social networking and knowledge sharing enablers specifically. An enabler in this context facilitates the action and this action is to share knowledge through social networking. The social networking and knowledge sharing constructs are enablers (Figure 10-6). Enablers within the social network pre-determine the capability to share knowledge. Nonetheless, the debate continues as to whether it is the network’s structure or the agents themselves which influence network outcomes, a debate known as the Nadel’s paradox (1957). This research study argues that both the structural dynamics and the strategies of agents (also called agency), work together to explain what goes on in terms of social networking. This means that each enabler has to be closely examined to understand their contribution to structure and agency. This sub-section is divided into three parts: enablers of inter-organisational knowledge sharing; social networking enablers and facilitating conditions; and knowledge sharing enablers and facilitating conditions.

### 10.3.2.1 Enablers of Inter-organisational Knowledge Sharing

After conducting data reduction, the social networking construct was: social capital, cognitive network fit, trust and social identity (Table 7-34). Social identity was delinked from the social networking construct since social identity is a characteristic of the business person. These concepts of social networking are consistent with those of several authors (Powell et al., 1996; Monge and Contractor, 2003; Liebowitz, 2007). However, this research study sheds new light on Nonaka's (1998) early claim that knowledge is difficult to diffuse since the evidence suggests to the contrary: that given certain facilitating conditions a social network forms and this network may have knowledge sharing capability. Knowledge sharing was enabled by: altruism and serendipity, knowledge sharing tendency, and comfort and safety (Table 7-38). Altruism enables the sharing of knowledge when there is an opportunity (serendipity) and knowledge sharing tendency, comfort and safety are facilitating conditions.

**Figure 10-6 Enablers of Inter-organisational Knowledge Sharing**

Source: Author



### 10.3.2.2 Social Networking Enablers and Facilitating Conditions

The findings suggest that social networking allows the provision of social capital, that are knowledge resources, through network agents becoming aware of their fit within the network and the fit of others, and the type of trust between network agents. This part discusses three aspects of social networking: provision of social capital; cognitive network fit and trust.

#### ***10.3.2.2.1 Provision of Social Capital***

It is a widely held view that social capital is the resource within the network and this resource is made available to network agents based on the nature of their network ties (Burt, 1992a; Lin, 2001). One network resource is knowledge and therefore knowledge is a form of social capital. This finding is important since in theory, the outcomes of the social network improve if more social capital is received for each unit of social capital invested in network relationships. It was discovered that social capital was obtained through the brokerage opportunities within particular networks (Figure 9-19) and that networking activities in which brokerage opportunities were limited reduced the potential level of social capital received and therefore network outcomes. This is because agents who hold social capital may not be moving this social capital around through brokerage of those network resources.

The inter-dependence of network agents pre-determines the provision of social capital. Resource dependency theory suggests that business relationships are based on power and dependency (Ulrich and Barney, 1984) and dependency creates a motive to form a relationship (Emerson, 1962). Dependency is an attribute which determines the level of social capital in the network. A situation of dependency arises when agents rely on each other for information resources and this fact is supported by this research study since 52.4% of respondents agreed and strongly agreed with the dependency statement: 'I rely on my social network for general information on the 'goings on' to assist me in operating my business (Table 7-14).

### **10.3.2.2.2 Cognitive Network Fit**

Resource dependency enables the provision of social capital and cognition allows social capital to flow within the network. The cognitive views of network agents inform their social networking practices. Cognition is viewed as who knows what and who knows who knows what (Borgatti and Foster, 2003). The cognitive network fit finding (Table 7-34) confirms that networks are cognitive social structures as suggested by Wasserman and Galaskiewicz (1994) and these structures are formed through the cognitive view-points of business people involved in the network. Cognitive network fit is associated with: cognition and self-interest. This research study indicates that respondents overall neither agreed nor disagreed that they usually know who networks with whom. However, there was a statistically significant difference between owners' and managers' on this subject. 'Manager agents' were more likely to know who networks with whom and therefore their cognitive viewpoint influenced their social network relationships.

This research study confirms that self interest (Table 7-5) influenced the decision to network as suggested by Monge and Contractor (2003). As a result of the perceived benefit, 'manager agents' acted by forming network ties and these ties potentially influence information flow. This may in part explain the reason for a greater clustering co-efficient in the managers' network since the clustering co-efficient for the owners' and managers' networks were 4.3% and 7% respectively (9.2.2.3). Clustering means that the same 'manager agents' obtained resources from similar alters and therefore self-interest resulted in a cognitive network fit since agents associated with certain network ties that they were aware other agents were associating with.

### **10.3.2.2.3 Trust**

It is generally agreed that trust develops a sense of security to share knowledge and this security influences the establishment of bonds (Liebowitz, 2007). In an inter-organisational context, trust is particularly important since business people are operating in a competitive arena (Novelli, et al., 2006) and thus an explanation is required as to how trust influences the formation of the social network's structure. Although the level of trust between the group of owners and managers was the same, there were different network patterns in terms of the level of transitivity and clique formations and therefore the level of agents' trust may not explain the formation of ties. Thus, trust is seemingly a facilitating condition which does not necessarily initiate a tie but an agent's level of trust influences the resource flows between a tie.

Specific trust variables were analysed within this research study. Overall, respondents agreed about reliance on their social network to keep promises (keeping promises) and never having a feeling of being misled (not being misleading). On the other hand, respondents neither agreed nor disagreed that their social network knows their weaknesses and do not take advantage (not taking advantage) and that they can rely on persons' verbal statements (truth telling) (Table 7-9). Thus, the findings of this research study are consistent with trust being related to the competence of the social network (keeping a promise and not being misleading) rather than the benevolence of the social network (not taking advantage and truth telling) and therefore respondents were more likely to share tacit knowledge. Thus, these findings are consistent with those of other authors since trust is important for networking and is particularly important for the transfer of tacit knowledge (Dhanaraj et al., 2004) and competency-based trust is important for the receipt of tacit knowledge (Levin and Cross, 2004).

### 10.3.2.3 Knowledge Sharing Enablers and Facilitating Conditions

The previous part regarding social networking enablers and facilitating conditions discussed the influences on the formation and operation of social networks. This part moves the discussion forward by discussing whether the knowledge was shared through the social networking practices. Knowledge sharing enablers and facilitating conditions contribute to the network's dynamic capability to move knowledge around without any controlling hand. As knowledge moves around it is converted through different tacit and explicit forms and this conversion is a knowledge creation process and the knowledge creation process performs inter-organisational knowledge sharing.

#### *10.3.2.3.1 Altruism and Serendipity*

This thesis provides evidence which supports the claim that levels of altruism and serendipity are important for knowledge sharing (Table 7-38). Altruism can be a reason for knowledge sharing (Davenport and Prusak, 1998; Seufert et al., 1999; Bock and Kim, 2002; Choi and Hilton, 2005). Respondents overall agreed that they liked to share information (reversed) and that they have a positive feeling about sharing information (Table 7-17). Such a positive feeling is posited to bring about altruistic behaviour and these findings are consistent with that of Bock and Kim's (2002) who noted that a positive attitude toward knowledge sharing influences knowledge sharing.

It was previously believed that business people would not want to share their tacit knowledge, a form of competitive advantage (Pena, 2002). To the contrary business people in this study shared their tacit knowledge. Technical and strategic tacit knowledge were shared (Tables 8-6 and 8-10). The mean value for one serendipity variable was high and respondents also agreed that they shared information when there was an opportunity (Table 7-25).



Serendipity is also linked to gift giving and therefore the item of information is only received based on a no-obligation basis and the giving is therefore altruistic. Managers were statistically significantly different about making opportunities to share information. As a result of making opportunities to share information the managers' network had higher values of mean betweenness and mean 'incloseness' (Table 9-5). Accordingly managers made an effort to share their information more with other agents as compared with the knowledge sharing practices of owners and therefore the serendipitous behaviour (increasing the chance of serendipity) of managers improved disseminative capacity.

#### ***10.3.2.3.2 Knowledge Sharing Tendency***

A knowledge sharing tendency was suggested by Chua (2003) and this research study confirms its existence and this tendency has elements of direct contact, reciprocity, knowledgeability, similar interests and verbal sharing of information (Table 7-38). As a result of these elements, tacit knowledge (verbal sharing) in particular will be shared and therefore knowledge sharing tendency can potentially improve knowledge sharing performance. Take for example 'owner agents', they exhibited homophily in their knowledge sharing behaviour since 'owner agents' preferred to share information with people who have similar interests (Table 7-22). This finding confirms that of Chua (2003) who argued that knowledge sharing is governed by a perceived payoff and in the instance of 'owner agents' the payoff can potentially be information that will meet their concerns. Accordingly, knowledge sharing was supported through a tendency to share information with business people who have similar interests to 'owner agents' and having similar interest improved knowledge sharing performance since 'owner agents' were more central in their network position and as a result were in a position to potentially acquire information.

Knowledge sharing tendency is associated with absorptive capacity. Absorptive capacity means that a business person's ability to innovate is based on the level of prior related knowledge of that context (Cohen and Levinthal, 1990) which is built through repetitive practices of mutual knowledge sharing and thereby mutual benefits are obtained (Chua, 2003). Respondents' agreed with both prior experience statements (share information with previously known persons and on a reciprocal basis) and repetitive practices of knowledge sharing are shown by cliques (Figures 9-12 and 9-13). Some 'owner agents' were in two established cliques whereas some 'manager agents' were in three cliques and therefore managers had potentially greater reciprocal practices and potentially greater absorptive capability. The outcome of this was that 'manager agents' perceived that they made better decisions. Thus, the network's structure facilitated the potential to share knowledge and the knowledge sharing tendency, based on direct contact between 'network agents' resulted in knowledge being shared.

#### ***10.3.2.3.3 Comfort and Safety***

Experts suggest that knowledge is shared with persons whom the knowledge sharer feels a sense of engagement with and when there is safety (Cross et al., 2001). This research study adds to the work of Cross et al. (2001) by positing the concept of comfort which relates to access and engagement ideas. Another difference is that although their sense of safety related to trust, within this research study safety related to time and cost. This is because a lack of safety is interpreted as a barrier to knowledge sharing. Comfort and safety are particularly important for sharing of complex tacit forms of knowledge since the knowledge sharer may feel vulnerable and therefore become reluctant to share information.

This research study confirms Chua's (2003) work regarding knowledge sharing as a game people play, in that, time and cost are relevant determinants, which can influence whether a person shares their knowledge. Wang and Neo (2010) suggest that perceived benefit and cost have been broadly studied in relation to knowledge sharing using social exchange theory (Homans, 1958; Emerson, 1962; Blau, 1964). Since knowledge is an exchange it reasons that cost can influence the exchange. In addition, the findings from this research study suggest that comfort relates to sharing information in groups, sharing information with competitors and persons of a higher social/economic status and safety relates to cost and time (Table 7-38). Based on these observations, it is clear that a feeling of being uncomfortable will potentially result in knowledge not being disseminated and a feeling of safety will potentially result in knowledge being disseminated.

### **10.3.3 Network Structures and Knowledge Sharing Activities**

Network structures and knowledge sharing activities are highlighted in the revised conceptual framework (Figure 10-5). The previous sub-sections regarding the motives and enablers discussed the conditions which assist with the formation and working of social networks and knowledge sharing. This sub-section moves the discussion forward by discussing how knowledge can be potentially shared through social networking practices. There are two parts: network structures and knowledge sharing activities.

### 10.3.3.1 Network Structures

The facilitating conditions within a social network can influence the formation of network structures and network structures determine network content (Figure 10-5 the revised conceptual framework). Within this part the likely influence of network structures on the opportunity for knowledge sharing is discussed. The network content was examined in terms of the network patterns, of respondents, owners and managers and individuals and groups. This research study examined three classifications of respondent: (1) all respondents; (2) owners; and (3) managers, and four network types: (1) individual business network; (2) individual personal network; (3) group formal network; and (4) group informal network. Based on their networking practices the respondents indicated the perceived outcomes (Table 7-11; Sub-section 8.3.6). These findings are important to advance our knowledge regarding knowledge sharing since several authors suggest that structural characteristics result in knowledge sharing capability (Powell et al., 1996; Gulati, 1998; Kogut, 2000; Bell, 2005). This part explains how network structures are formed and discusses network characteristics in terms of embeddedness, structural influence and innovation.

#### *10.3.3.1.1 Embeddedness*

Embeddedness means that ongoing practices of social networking fix agents within a network structure. Embeddedness is viewed as potential ongoing practices of social networking which perpetuate network structures: an idea which is the basis of structuration theory (Giddens, 1984). There are three measures of embeddedness: density, transitivity and clustering. Embeddedness is important to understand how the overall network structure contributes to the actions taken by agents within that structure.

Density is based on the actual number of information ties as compared to potential number of information ties. Denser networks will therefore have a greater number of ties and as suggested by Rowley (1997), such networks facilitate the diffusion of knowledge. Transitivity means that there are more reciprocal ties (A shares with B and B also shared with A). Clusters emerge when agents within the network have a similar pattern of ties. Dense networks with more transitive ties and clusters have greater embeddedness. For example, respondents had 536 information ties (Table 9-1) and contained in these ties were 65 triads (Table 9-2) with a clustering co-efficient of 8.7% (9.2.1.3). The results (Table 7-11) showed that business people who are placed in more transitive and more clustered networks (generally the managers) benefit.

Embeddedness influences the network's overall capability to facilitate the sharing of knowledge. This research study showed that the group formal network had the highest percentage of ties (Table 9-8) whereas individual networks are more transitive, that is a greater number of triads (Table 9-9). Consequently, this research study makes a contribution towards understanding that group networks create opportunities for provision of more information whereas individual networks provide opportunities for reciprocated information. Network embeddedness was analysed using the results from the calculated clustering co-efficient and results showed that the individual networks had a higher clustering coefficient as compared with group networks and the individual personal network had the highest clustering coefficient of 2.3% (9.3.1.3). Accordingly, personal networking with individuals facilitates inter-organisational knowledge sharing more than other types of networking, an idea posited by Reagans and Mc Evily (2003).

### ***10.3.3.1.2 Structural Influence on Potential Knowledge Sharing Opportunities***

The motives and enabling conditions of network agents creates a network structure and this structure places agents in advantageous or disadvantageous positions. Within this study the sample of the networking practices of business people was used to determine network patterns and that sample was based on the knowledge being shared. Structural influence depends on the strength of ties, centrality and cliques measurements. The network's size indicates the number of strong and weak ties. The largest networks were individual business network (1 to 36 actors) and group formal network (1 to 23 actors) and these networks also had highest network centralisation of 8.99% and 21.30% respectively (Table 9-12). Thus, formal networking practices resulted in more weak ties and therefore in theory, more non-redundant information and the high centralisation values mean that network resources were available through some key main alters.

This research study contributes to knowledge about how network structure influence knowledge acquisition and dissemination. There were higher 'two-step reach' (Table 9-4) and network centralisation (Table 9-5) values recorded for the owners' network and therefore 'owner agents' can potentially acquire information readily whereas the managers' network had a greater number of cliques (Figure 9-13) and therefore 'manager agents' can potentially disseminate information more readily. These aspects are explained in greater detail below (10.3.3.2). Thus, while the strength of ties and centrality facilitate knowledge acquisition, the formation of cliques facilitates knowledge dissemination. Inter-organisational knowledge sharing also needs disseminative capacity (Parent et al., 2007) and such capacity is supported through cliques. These characteristics determine the capability of network agents to obtain and move knowledge around. Based on the network's structure agents can more readily acquire or disseminate information.

### **10.3.3.1.3 Innovation**

Innovative capability is determined by the characteristics of network structures. Innovation involves implementation of knowledge. Innovative capability can be potentially increased through the influences of structural holes and brokerage roles and these characteristics can be used to explain absorptive capacity (Cohen and Levinthal, 1990; Parent et al., 2007). Absorptive capacity is the capability of an agent to make sense of that knowledge and the nature of structural holes and brokerage roles influences absorptive capacity and sense making is an important characteristic of innovation (Choo, 1998) and for small businesses in particular (Sparrow, 2001). The importance of these findings relates to the need to understand the link between innovation, knowledge transfer, performance and competitiveness (Hjalager, 2002; Cooper, 2006; Shaw and Williams, 2009).

The empirical findings of this research study show that there were more structural holes in the owners' network as compared with the managers' network (Figures 9-15 and 9-16). Based on applying Burt's (1992) 'structural hole' theory (Sub-section 3.4.3) then the 'owner agents' had a greater potential capability to innovate and earn higher profits. A structural hole is a buffer which allows an agent to potentially obtain different views and potentially new information to inform their business practices and these characteristics of the structural hole aids absorptive capacity. The presence of structural holes, in theory according to Burt (1997a) suggests that agents are capable of obtaining proprietary social capital and this proprietary social capital assists with sense making of the dynamic business environment.

The type of business is important if we are to understand the link between innovation, knowledge transfer, business performance and tourism destination competitiveness. The structural hole results show the potential innovative capability of smaller hospitality establishments, bed and breakfast properties and small hotels within the tourism destination. Small hotels and guesthouses in the owners' network and small hotels and attractions in the managers' network recorded the largest structural holes. Similarly, the largest structural holes in the individual business network were small hotels, bed and breakfast and self catering properties and small hotels in the individual personal network. An attraction recorded the largest structural hole in the group informal network and a self-catering establishment in the group formal network. These findings are important since greater potential innovative capability enhances business competitiveness.

The nature of the brokerage role aids innovative capability. The respondents', owners' and managers' networks were different in terms of brokerage roles. The respondents' network comprised brokerage roles of representative, co-ordinator, gatekeeper and consultant. The owners' network comprised only consultants (8). A consultant is also called by Gould and Fernandez (1989) a cosmopolitan or itinerant broker, which means that the broker belongs to a different group and shares information between two agents in the same group. By consulting with someone outside their immediate network, 'owner agents' were potentially capable of obtaining new knowledge and therefore more likely to obtain innovative practices. Nonetheless, 'owner agents' were not likely to improve their business performance and therefore contribute to tourism destination competitiveness (Table 7-11). Based on these findings, it is argued that the nature of the structural hole and brokerage role influenced the absorptive capability of 'owner agents.'



Unlike the owners' network, the managers' network comprised fifteen consultants, seven gatekeepers, five representatives, and one co-ordinator (Figure 6-9 for an explanation of brokerage roles). Gatekeepers were pre-dominantly large hotels and attractions were co-ordinators (Figure 9-19). A gatekeeper role is particularly important since this ego obtains information from an agent (ego or alter) in another group and is therefore in a position to share this information within their own group. This research study therefore shows that as a result of the potential brokerage opportunities in the managers' network, the capabilities to disseminate and potentially absorb information were greater. Based on the gatekeeper brokerage role, other agents within the gatekeeper's sub-group will be able to make sense of the new knowledge since the gatekeeper belongs to their group. These observations suggest that absorptive capability is facilitated by the presence of gatekeepers and co-ordinators within the network's structure since these brokers are members of the same group into which the knowledge is being shared. As a result, the gatekeeper and co-ordinator are in a position to help their sub-group understand new information.

### 10.3.3.2 Knowledge Sharing Activities

While the previous part discussed the potential knowledge sharing capability of network structures, this part discusses the activities of knowledge sharing. There is a lack of understanding as to how knowledge sharing activities occur (Hansen, 2002) and it is proposed that knowledge sharing be examined from interactional and process perspectives (Wang and Noe, 2010). This research study makes a contribution towards these goals through use of social network analysis. Thus the network becomes an instrument of knowledge capture (Santoro et al., 2006) and the network characteristics determine knowledge sharing activities. Knowledge sharing activities were examined using several knowledge management concepts: knowledge scanning, knowledge acquisition and knowledge dissemination. These concepts are used to explain the movement of knowledge around the network. In a sense, knowledge must be captured before it can be shared (Awad and Ghaziri, 2004) and improving knowledge sharing activities will lead to more knowledge creation which can contribute to business performance improvement.

### **10.3.3.2.1 Knowledge Scanning**

Knowledge scanning involves awareness of the flow of information and respondents created their own mental maps of where information can be found. Within this thesis networks of knowledge were mapped for respondents, owners and managers (Figures 9-1, 9-2 and 9-3). Such mapping was possible since network agents were themselves aware of where information can be sourced. Each flow of information is viewed as a tie in the network. After the networks were constructed and the main components derived, there was evidence of information flows linking agents across the entire conurbation of Bournemouth, Poole and Christchurch. The tourism sector is therefore less fragmented in terms of knowledge sharing possibilities and business people were engaged in processes to source information.

### **10.3.3.2.2 Knowledge Acquisition**

Knowledge acquisition is the knowledge sharing activity of obtaining knowledge. The more centralised agents are in the social network, the more likely useful information can be acquired. This is so since centrality means that each ego is in the middle of an information flow and as a result there is potential capability of acquiring that information flow. Overall, knowledge network centralisation values were calculated for respondents (5.04%), owners (5.74%) and managers (4.01%) and therefore an 'owner agent' was potentially more capable of acquiring information as compared with a manager as an owner could potentially obtain resources from 5.74% of ties within the network. This research study therefore demonstrates evidence of structural influence within networking practices and structural influence contributes to network outcomes. In addition, based on the analysis of weak ties and key main alters, this research study shows that certain network types have greater generative capacity. Generative capacity means that more intellectual capital is potentially available within the network (Parent et al., 2007) and also that the network's structure enables the acquisition of new knowledge since weak ties improve transmission of non-redundant (new) information (Granovetter 1973).

Closeness and betweenness are also measures of centrality. Within, the managers' network egos were closer together and were readily in between positions (Table 9-5). Closeness means that more power can be exerted on an ego and influence their behaviour (to share knowledge). Betweenness means that an ego is in a position to broker (share) information. While owners were more central to obtain resources, managers were in closer positions to broker information and hence structural positions enhanced their acquisition capability. This research study therefore confirms that centrality of an agent influences capability to benefit from knowledge transfer as suggested by several authors (Kogut, 2000; Bell, 2005). In addition, informal networking practices reduce overall network centralisation (Table 9-12) and therefore an agent's ability to acquire knowledge resources can be potentially reduced.

#### ***10.3.3.2.3 Knowledge Dissemination***

Knowledge dissemination is the process of moving information from one entity, for instance a business person, to another entity. Cliques influence knowledge dissemination. Cliques are dense connections and therefore the potential for disseminating information is greater. Cliques develop from reciprocal exchanges which are a pre-condition of having a relationship (Davenport and Prusak, 1998). There were 63 cliques in the respondents' network, 16 cliques in the owners' network and 29 cliques in the managers' network. As a result, the respondents' and managers' networks as compared with the owners' network had greater disseminative capability. In addition, individual business networking practices increase the disseminative capability of knowledge resources (Table 9-30) since this network had the most cliques.

In terms of the tourism sector the groupings within owners' and managers' networks meant that different resources were being disseminated within these networks. Cliques were different in the owners' and managers' networks (Figure 9-13). In the owners' network there were two main cliques and these cliques comprised mainly smaller establishments: bed and breakfast properties and small hotels formed around a main private sector organisation. In the managers' network there were three cliques, comprised mainly of large hotels, attractions and caravan parks formed around public sector organisations. This research study therefore demonstrates that respondents and owners' obtained information from both public and private sectors, while managers' inter-organisational knowledge sharing practices were located in the public sector (Figures 9-4, 9-5, and 9-6). In addition, the group informal network was a public and private sector partnership and therefore these network agents were able to know exactly what was happening in the tourism destination (Table 8-24). This research study therefore contributes to our understanding of the key players within the tourism sector and the knowledge dissemination practices of these key players.

#### **10.3.4 Creation of Tacit and Explicit Knowledge**

This sub-section considers the outputs of inter-organisational knowledge sharing. It is argued that the sharing of tacit and explicit knowledge through use of certain communication methods to share certain types of information, improves knowledge stocks within the tourism destination and these knowledge stocks improve business performance. Consequently, there is an association of social networking with knowledge sharing, which can be referred to as knowledge networking. This research study makes a contribution towards understanding the form of information that is diffused through inter-organisational knowledge sharing. Information content is obtained through the type of information and the communication methods. The level of tacit and explicit knowledge, information content, available to business people in the tourism sector relate to three knowledge management concepts: knowledge domain, knowledge diffusion and knowledge specialists.

#### 10.3.4.1 Knowledge Domain

A knowledge domain can be viewed as a space in which knowledge is held. Simply speaking a domain may be a physical space such as a repository or a social space such as a group of people (Jackson, 2005). The domain therefore comprises the specific type of knowledge held within a repository or group of people. This research study makes a contribution by defining knowledge domains based on the instrumental reasons for receiving information and also the size of the domain (Section 8.2). The contribution this research study has made is to define the largest knowledge domain in the tourism sector as business development with 144 responses which accounted for 27.3% of instrumental reason responses (Table 8-1). This research study also showed no statistically significant difference between the number information relationships held by owners as compared to managers (Table 8-1). However, owners were likely to source more information regarding marketing and managers, more information regarding business development (Section 8.2).

The results in this thesis showed that strategic information was obtained through face to face conversation and technical information was obtained through written documents and electronic mail and therefore the type of information in the domain (Sub-section 8.3.4). Strategic information improves business performance and it is particularly important that this type of information is obtained through face to face conversation. Face to face conversation is a socialisation knowledge creation process and involves engagement with the business environment (Nonaka and Toyama, 2003). Thus, socialisation can be viewed as an environmental scanning process which allows the business person to obtain strategic information. Such strategic information enters the knowledge domain, is stored and may be used later on in business practices. On the other hand, technical information is a combination knowledge creation process which applies explicit knowledge and information (Nonaka and Toyama, 2003). Combination ensures that documented procedures moves from one group to another in an inter-organisational context and therefore the correct procedures can be followed. Local and managerial information were externalised (a knowledge creation process) through use of electronic mail.

#### 10.3.4.2 Knowledge Specialists

People can be developed as knowledge specialists (Drucker, 1998; Nonaka, 1998). A knowledge specialist should make their knowledge available to others (Nonaka, 1998) and developing people as knowledge specialists helps businesses to remain competitive (Drucker, 1998). Managers received statistically significantly more strategic information as compared with owners and therefore managers were knowledge specialists in strategic information. Strategic knowledge specialists will help the tourism destination remain competitive and hence the inter-organisational knowledge sharing practices of managers are important. This finding provides another reason for managers' improved decision making and contribution to beliefs and attitudes of business operation (Table 7-11) and receipt of strategic information contributed to a perceived business performance improvement.

This research study suggests that networking with individuals is an important mechanism of developing as a knowledge specialist. Knowledge specialists develop an information advantage. There were relationships between the type of networking, type of communication method and obtaining an information advantage. Individual business and personal networkers obtained an information advantage in relation to strategic information through use of the face to face conversation communication method (Table 8-14). These findings suggest that networking with individuals is rather important in developing specific knowledge and therefore a contribution is made to understanding how information content and network type are associated with knowledge sharing activities.

### 10.3.4.3 Knowledge Diffusion

Knowledge is diffused within the knowledge domain through knowledge specialists and the communication method aids the fluidity, tangibility and therefore diffusibility of shared knowledge. There were no statistically significant differences between owners and managers based on the tacit-based and explicit-based methods of communication and therefore differences in outcomes of these networks cannot be explained in terms of communication methods (Sub-section 8.3.3). However, in terms of inter-organisational knowledge sharing the communication method was the facilitating tool for the sharing of certain kinds of information since technical and local based information were shared using explicit-based methods and strategic information shared using tacit-based methods. Thus, technical and local information were more fluid (easy movement).

Knowledge diffusion is facilitated based on the communication method (Chua, 2001). Boisot's (1998) I-Space concept is relevant to this research study in that it explains why particular types of information are more readily diffused than others. In addition, tangibility is facilitated by the communication method. Technical and local information were also made more tangible since these information types were statistically significantly shared using electronic mail. Processes of codification and abstraction (Boisot, 1998) make information tangible and aids diffusion of information. Therefore, through use of electronic mail technical and local information were readily diffused (Tables 8-7 and 8-13). This research study therefore confirms that explicit-based knowledge is more readily available and therefore is important to the diffusion process.

## **10.4 Conclusion**

There is a commonly held claim that knowledge is a factor of competitiveness (Porter, 1980; Ritchie and Crouch, 2003) and based on this claim this research study attempts to show how, why and what knowledge is shared and what are the likely outcomes of this knowledge sharing. A method to deal with these questions and the measurement issues involved with inter-organisational knowledge sharing, particularly those issues relating to network structure was developed. Sophistication was added to the work by examining differences between owners and managers, and the different network types. Based on these findings knowledge regarding inter-organisational knowledge sharing was advanced. Thus, this research study has revealed knowledge in regard to why, how and what knowledge flows between people in different businesses including small and medium sized businesses.

This research study therefore makes an original contribution to understanding the functioning of inter-organisational networks of knowledge sharing in the tourism sector. Thus, the gap in understanding of the extent, nature and perceived implications of knowledge management in tourism is closing. The motives relate to the instrumental reasons for social networking, information content is formed through the workings of the form of knowledge and the dissemination methods, and networking involve the social network structures. The results in this thesis suggest that inter-organisational networks have knowledge sharing capability distributed across respondents, owners and managers and such capability was influenced by certain enablers, facilitating conditions, structural processes and information content.



The workings of network structures, which are embeddedness, structural influence and innovation, the knowledge sharing activities and tacit and explicit knowledge, operate based on certain enablers and facilitating conditions regarding the social network and knowledge sharing. Tourism and hospitality businesses require knowledge and tacit knowledge in particular, for innovation and knowledge sharing was clearly identified since the network relations were mapped and network characteristics determined. Structural processes are established through ongoing practices of information sharing and these ongoing practices form a structure (Parsons, 1951; Nadel & Fortes, 1957; Giddens, 1984). Ongoing practices result in a knowledge creation process which produces tacit and explicit knowledge outputs which are the information content. Given the identification of structural processes within the research findings, the research study made a contribution to our understanding of the workings of inter-organisational knowledge sharing practices and therefore can be used to explain how agents of the system benefit, adjust and adapt to external stimuli (information flows).

Conclusions drawn within the research study were based only on literature review and the research findings. Accordingly, the research study was a scientific examination of inter-organisational knowledge sharing in the tourism sector. This research study expands and provides an explanation in regard to the types of network structures and their relationship with inter-organisational knowledge sharing. In addition, within this study the nature of knowledge is both tacit and explicit and therefore this research study adds to knowledge regarding the dissemination practices of different types of knowledge. A revised conceptual framework which can be used to explain the complicated processes involved with inter-organisational knowledge sharing between businesses has emerged from this research study.

Finally, the studied subject area has contributed to new knowledge of inter-organisational knowledge sharing through social networks. Constructs of social networking and knowledge sharing were proposed as the enablers of knowledge creation. By creating knowledge, businesses within the tourism sector will become more adaptable to the dynamic environment within which these businesses operate. An understanding of inter-organisational knowledge sharing between people in tourism and hospitality businesses enables tourism and hospitality professionals to re-consider their network positions and structures carefully. As a result of the people, type of information shared, communication method and network structure there are certain outcomes. A conclusion to this doctoral thesis follows this chapter. The conclusion reviews the thesis's objectives, discusses management implications and suggests further research.

## **CHAPTER 11 CONCLUSIONS AND IMPLICATIONS**

### **11.1 Introduction**

In general, research and discussion on knowledge management has focused on sharing knowledge within businesses (Demarest, 1997; Tsai, 2001; Alavi & Tiwana, 2003; Yeung, 2003; Foss, Husted and Michailova, 2010). This thesis changes the focus to that of sharing knowledge within an inter-organisational context and explains and maps how knowledge was shared, why this knowledge was shared, what knowledge was shared and what were the likely outcomes. Thus this work sheds new light by combining attribute and relational data, which are the characteristics of respondents and the information sharing inter-relationships, in the same study in order to understand inter-organisational knowledge sharing and therefore makes an original contribution to understanding inter-organisational knowledge sharing between people in tourism sector businesses. This concluding chapter sets out and reviews the achievement of the research study's aim and objectives, the management implications and suggests further research.

### **11.2 Achievement of Research Aim and Objectives**

This section discusses the achievement of the research aim and objectives and is divided into five sub-sections: (1) aim and objectives; (2) research identification; (3) the conceptual framework; (4) attributes and relational data; and (5) contribution.

### 11.2.1 Aim and Objectives

The research study's aim was: *to examine inter-organisational knowledge sharing, by considering the individual and group relationships of business people in different tourism and hospitality businesses and focusing on the contribution of social networks to this knowledge sharing*. There were four key objectives:

(1) to identify gaps in the literature by a selective review and systematic synthesis of the literature concerning knowledge management, knowledge sharing and social networks, and the relationship of these theories and concepts to the tourism sector;

(2) to examine concepts and their relationships in regard to why, why not, how and what inter-organisational knowledge sharing practices take place within the tourism sector;

(3) a critical examination of inter-organisational knowledge sharing within a tourist destination using both attribute and relational data; and

(4) to make a contribution towards building an awareness and understanding of the mechanisms of inter-organisational knowledge sharing within the tourism sector.

The following sub-sections set out the achievement of these objectives within this research study.

### **11.2.2 Research Identification – the Gaps in the Literature**

The research study identified gaps in the literature in regard to inter-organisational knowledge sharing in the tourism sector. An extensive review of the main bodies of literature relating to knowledge, social networks and tourism was conducted. Journalised literature was categorised based on questions and concerns, material evidence, arguments, concepts and theories and main citations (Hart, 1998). There were several identified gaps. The first gap related to the need to establish a clear picture of how and what knowledge is diffused within an inter-organisational context. The second gap was identified in terms of how influencing factors in the tourism sector affected outcomes. The perceived fragmentation of the tourism sector also meant that there was a third gap in terms of appropriate methodology to be used to map network patterns of inter-organisational knowledge sharing.

### **11.2.3 The Conceptual Framework**

At the outset of this research study it was identified that to understand inter-organisational knowledge sharing it was necessary to focus on the dispositions and attitudes of business people, network structures and knowledge sharing and within these there would need to be a focus on motives, information content and networking concepts. The initial version of the conceptual framework setting out these foci of the study and their inter-relationship were presented at the PhD Consortium of the United Kingdom Academy of Information Systems annual conference held at Bournemouth University in April, 2008 and was broadly accepted during discussion (and the prize for best presentation being awarded). However, that initial version has now been modified to incorporate what was learnt as a result of the primary research.

In the initial conceptual framework the motivational inputs were based on theories and concepts in regard to networking ( that is the multi-theoretical framework of Monge and Contractor (2003)), and in regard to knowledge sharing ( the feelings, preferences, status of knower, prior experience, serendipity, cost and time (Argote & Ingram, 2000; von Krogh et al., 2001; Swan et al., 2000; Hansen, 2002; Pena, 2002; Awad & Ghaziri, 2004; Choi & Hilton, 2005)). Instrumental reasons for social networking, which are the motives for social networking, were identified based on the information needs of respondents. However, the theories included within Monge and Contractor's (2003) multi-theoretical, multi-level framework (Section 7.3) were re-grouped. For instance, social support and dependency theories were combined into the same group and therefore social support was de-linked from homophily. Social support was de-linked since homophily relates to social comparison and social identity theories, whereas, social support is a form of social exchange (Sub-section 3.3.4). Finally, and in addition, the conceptual approach was modified and included trust and time variables.

Following the primary research, and its analysis and interpretation, the conceptual framework has been revised and now includes improved constructs of: social network and knowledge sharing in that the factors associated with these constructs have been clarified. As a result, information sharing processes are explained within this work based not only on the standard explanations such as those by Porter and Millar (1985), Poon (1993) and Nonaka et al. (1996) but also from a social practice perspective whereby social networks become a mechanism for the sharing of knowledge (Monge and Contractor, 2003; Marouf, 2004; Liebowitz, 2007). From this perspective inter-organisational knowledge sharing is viewed as being built up through business peoples' social networking practices.

As a result of the initial and revised conceptual frameworks, this research study makes a contribution to our understanding of how tourism and hospitality businesses inter-relate based on the motives to share knowledge in an inter-organisational context. In turn, knowledge resources build knowledge stocks which are used to develop competitive tourism destinations.

### **11.2.4 Attribute and Relational Data Integration**

Within this research study examination of inter-organisational knowledge sharing processes by use of attribute data and use of social network analysis to network map relational data was developed. The fundamental idea that informational value depends on network structure and networking practices was examined. The evidence resulting from this examination suggests that respondents benefited differently dependant on the structures and practices of networks, to which they belonged (Sub-sections 7.3.4 and 8.3.4). For instance, 'manager agents' benefited from improved decisions (Table 7-11) and respondents in the informal networks benefited from their social relations contributing to their beliefs and attitudes about business operation and social support (Tables 8-23 and 8-24). As a result, different network types resulted in positional (owner or manager) and structural (networking practices) advantages in regard to the knowledge sharing capabilities of these agents.

### **11.2.5 Contribution**

Whilst this study was being conducted many authors have highlighted the need to examine issues relating to knowledge management and SMEs in an inter-organisational context (Chen et al., 2006; Shaw and Williams, 2009). Thus Chen et al. (2006) have suggested that the nature of the processes involved in inter-organisational knowledge management were complicated and that studies were needed to develop our understanding. Easterby-Smith and Lyles (2008) have recognised the importance of businesses learning from the experience of other businesses through a process of inter-organisational knowledge transfer and accordingly published a 2008 Special Issue on Inter-Organisational Knowledge Transfer within the *Journal of Management Studies*, 45 (4). Wang and Noe (2010) have noted that knowledge sharing is essential to the success of knowledge management activities. Thus during the period that this research study has been conducted, its relevance and importance have been highlighted within academic literature. With this as the context, the final objective of this study, of providing a contribution towards awareness and understanding of inter-organisational knowledge sharing mechanisms, was also achieved.

Knowledge regarding inter-organisational knowledge sharing was advanced and therefore theoretical contributions were made. Knowledge was advanced in four main areas: (1) a revised conceptual framework to define elements of inter-organisational knowledge sharing; (2) the motives and enablers of inter-organisational knowledge sharing; (3) the structural processes involved in the workings of inter-organisational knowledge sharing; and (4) the information content. The knowledge sharing elements of inter-organisational knowledge sharing include: (1) the knowledge sharing activities of scanning, acquisition and dissemination; and (2) knowledge creation occurring within domains by diffusion through specialists.

Enablers of inter-organisational knowledge sharing include the social networking and knowledge sharing components. Structural processes are network structures of embeddedness, structural influence and innovation. Information content relates to the information type and dissemination methods. Inter-organisational knowledge sharing theory is built through the examination of information sharing between tourism and hospitality business people. This research study therefore provides a contribution to our understanding of why and how information circulates and what knowledge is built within the tourism sector of the Bournemouth, Poole and Christchurch conurbation.

Shaw and Williams (2009) highlighted that very little is known of how knowledge is transferred between tourism SMEs, although there is an indication that informal networks are part of the process. This research study makes a contribution and provides knowledge regarding both formal and informal social networking processes in the tourism sector. Take for example the finding that only informal networking processes provided social support and application of best practices (Tables 8-25 and 8-26). Additionally, informal group networking practices improved an agent's ability to obtain 'knowledge of happenings' (Table 8-24).



Generally, a contribution has been made through the highlighting within the academic community, of the role and structures of knowledge networks through the publishing of a paper, based on the primary data from one part of this research study, in the *Service Industries Journal* (McLeod, Vaughan and Edwards, 2010). In the past, much emphasis has been placed on the role of technology to improve information sharing processes (Ritchie and Ritchie, 2002). This research in contrast, has contributed to the advancement of knowledge regarding knowledge sharing processes based on the daily activities of social networking, a social interaction perspective.

Finally, this research study makes a contribution to the role and function of emergent network practices. The contribution is one of being able to understand why structures influence outcomes and that the attributes of an agent only provide one part of the picture. Specialised knowledge was provided as to the patterns of knowledge sharing and the outcomes of these patterns (Sub-section 8.4.6). Social networking practices form a network structure, as explained through structuration theory (Giddens, 1984), and this structure affects network outcomes. Applying social network analysis methodology to determine the knowledge sharing mechanisms within the tourism sector in this study therefore has advanced knowledge regarding knowledge sharing in general and also inter-organisational knowledge sharing. Wang and Neo (2010) suggested that social network theory has been underutilised as a tool, particularly the identification of structural holes and closeness, in developing understanding of knowledge sharing in any context and they advocated for future research regarding the investigation of the mechanisms through which social network characteristics relate to knowledge sharing.

### **11.3 Management Implications for Businesses and Tourism Destination Management Organisations**

Inter-organisational knowledge sharing is a mechanism by which businesses develop sustainable competitive advantage (Prusak, 1996). Inter-organisational (external) knowledge sharing activities are particularly important for industries with dominant small and medium sized businesses since the size of many tourism sector businesses means the resources to capture and exploit knowledge may not be available and if available there is a cost (Cooper, 2006). With this as the context, this section regarding management implications is divided into three parts: the implications for businesses, in terms of improving the competitive position of the business; the implications for tourism destination management organisations (TDMOs), in terms of increasing the competitive position of the tourism destination; and the implications for both the businesses and the TDMO.

As such, inter-organisational knowledge sharing activities are associated with social networking and knowledge sharing enablers and the outcomes are dependent on the network pattern and information contents. The implications discussed in this section are associated with the enablers, process and content of inter-organisational knowledge sharing (Table 11-1). The implications of cognitive network fit, altruism and serendipity, patterns of structural influences, knowledge acquisition and knowledge specialists relate to improving profitability and quality of businesses through obtaining timely new information. The implications for the TDMO relate to social identity, patterns of embeddedness, knowledge dissemination and diffusion and these elements relate to improving the overall tourism product offer through helping businesses obtain relevant and timely information. Finally, there are implications for both businesses and TDMOs and these are social networks and their enablement of social capital, trust, knowledge sharing tendency, patterns of innovation, knowledge scanning and knowledge domain.

**Table 11-1 Implications of Research Study Findings**

Source: Author

FINDINGS	IMPLICATIONS		
	Businesses	TDMO	Businesses and TDMO
<b><i>ENABLERS</i></b>			
Social networking enables the provision of social capital			✓
Cognitive network fit	✓		
Trust			✓
Social identity		✓	
Altruism and Serendipity	✓		
Knowledge sharing tendency			✓
Comfort and safety			✓
<b><i>PROCESS</i></b>			
Patterns of embeddedness		✓	
Patterns of structural influence	✓		
Patterns of innovation			✓
Knowledge scanning			✓
Knowledge acquisition	✓		
Knowledge dissemination		✓	
<b><i>CONTENT</i></b>			
Knowledge domain			✓
Knowledge specialists	✓		
Knowledge diffusion		✓	

### **11.3.1 Management Implications for Businesses**

Cooper and Sheldon (2010) suggest that businesses within the tourism destination need to leverage strategic advantage from their networks. Knowledge is shared between businesses, between networks and between tourism destinations and as suggested by Cooper (2006) these layers form a multi-level or network organisation. This layering effect places businesses within a broader competitive environment and the implication here is that the action of an individual business has a cascading effect based on network connectivity and this cascading effect influences business performance. In view of this, business people need to engage with knowledge sharing activities, as suggested by Cooper and Sheldon (2010), within and between networks. While the business person may not be aware of how such activities are enabled, it is important that business people be made aware since enablers of cognitive network fit, and altruism and serendipity are initiated by business people. Hence, this sub-section discusses the implications of cognitive network fit, altruism and serendipity, patterns of structural influence, knowledge acquisition and knowledge specialists.

#### **11.3.1.1 Cognitive Network Fit**

Cognitive network fit means that business people are aware of the social networking activities of other business people. This awareness influences their own social networking practices, in that, the business person may potentially social network with perceived key players. A key player is another agent or source (alter) who can provide the information resource that the business person needs. Thus, social networks in which there is an improved cognitive network fit ('manager agents' network) will have a greater clustering co-efficient as resources are sought by several business persons from the same source and limitations such as time will not prevent the business person from social networking activities (Table 7-34). Thus, business people should seek to increase their cognitive network fit because this will potentially result in greater social networking activities which can potentially influence knowledge sharing and receipt of information. Business people, owners in particular, need to recognise the important role business contacts play as potential sources of information.

### 11.3.1.2 Altruism and Serendipity

Altruism and serendipity enables the diffusion of knowledge since business people share their knowledge with a sense of no obligation when there is an opportunity. Opportunities for knowledge sharing are created based on the density of the network and therefore group networking structures (Table 9-8) create more opportunities for the effects of altruism and serendipity. There are several implications: (1) business people in group networks have a greater opportunity to share information; and (2) altruistic motives can potentially increase the level of knowledge stocks considerably. In addition, there is an indication that 'manager agents' made opportunities to share information (Table 7-25), even though this was the case, evidence suggests that 'manager agents' had less average ties (Table 9-1). The implication here is that altruism is affected by an opportunity to share information and when there are less ties information can potentially not be shared. Business people need to be aware of this and to act accordingly.

### 11.3.1.3 Knowledge Acquisition

Businesses are placed within a dynamic external environment and business practices require adjustment to maintain and sustain business success. The results suggest that, 'manager agents' obtained social capital based on their brokerage roles, 'incloseness' and betweenness centralities (9.2.2.2 and 9.2.3.2). The generation and sharing of knowledge are precursors to innovation (Cooper and Sheldon, 2010) and therefore the real challenges with knowledge management are: as suggested by Prusak (1996) - knowing information fast, and as suggested by Burt (1992) - obtaining new information. A better understanding of the generative capacity of shared knowledge was obtained from the findings of this research study since based on the structure of the 'manager agents' network, evidence was provided of the potential influence of network structure on resource outcomes (Table 7-11 shows the outcomes of 'manager agents').

#### 11.3.1.4 Patterns of Structural Influence

Centrality of an agent improved the potential capability to acquire a knowledge flow and that brokerage facilitates the acquisition of new information (10.3.3.2.2 and 10.3.3.1.3). Acquisition of new information is facilitated by contact with individuals with whom the agent did not have a prior relationship. As a result, homophily practices, such as those of 'owner agents' were unlikely to be beneficial in obtaining new information while brokerage practices of 'manager agents' facilitated the dissemination of social capital within the network (Figure 9-19). The implications of these findings are that business people in the tourism sector can seek central positions through direct contact with the main knowledge sources (alters) and therefore through direct contact obtain new information faster.

#### 11.3.1.5 Knowledge Specialists

Knowledge specialists develop their competency in specific types of information. The research findings suggest that 'manager agents' were specialists in strategic information (Table 8-3). In turn, strategic information was obtained through face to face conversation (Table 8-10). There are several implications of managers being strategic knowledge specialists in different tourism and hospitality businesses. First, if strategic information is obtained through face to face conversation then strategic information is associated with a socialisation process. As noted by Nonaka (1998) socialisation is a mentoring process and therefore a socialisation process means that there is need for ongoing direct contact with the knowledge specialist. Second, there are information advantages being obtained by a specific group of persons within the business, the 'manager agents' and therefore other groups such as 'owner agents' are not benefiting. Thus, the managerial role within the business, as compared with the ownership role, can potentially lead the business into a particular strategic direction. Third, since 'manager agents' were more likely to be knowledge specialists in strategic information, other forms of information, technical, managerial and local were not being significantly developed. As a result, while the business can transform in a particular strategic direction, there can be challenges maintaining business success since other types of information are underdeveloped.

### **11.3.2 Implications for Tourism Destination Management Organisations**

The Tourism Destination Management Organisation (TDMO) is often operated by a public sector organisation and such organisations need to understand the mechanisms of inter-organisational knowledge sharing in order to develop policies and plans that can contribute to tourism destination competitiveness. In the same vein as suggested by Cooper and Sheldon (2010), the TDMO needs to understand the characteristics of shared knowledge, the enablers of knowledge sharing and why they need to encourage inter-organisational knowledge sharing processes within the private sector (both from their own point of view and the view of the businesses). This sub-section discusses: social identity, patterns of embeddedness, knowledge dissemination and diffusion.

#### **11.3.2.1 Social Identity**

Owners and managers are two independent groups and the TDMO can use the findings from this research study to improve the knowledge sharing activities between these two groups. One result from this study suggests that ‘owner agents’ were more likely to share information with other business people who have similar interests (Table 7-21). This therefore means that there can potentially be a barrier between ‘owner agents’ and ‘manager agents’ sharing information with each other since their information needs are different (Section 8.2). This form of information sharing is however important for destination growth and therefore the TDMO can play a mediating role and forge interaction between groups of owners and managers within the destination. A mediating role is important since, based on the finding that ‘manager agents’ were more likely to social network, as a result of their self interest (Table 7-5) and that ‘owner agents’ were more likely to be independent as compared with ‘manager agents’ and therefore a process of self-driven interaction, between owners and managers would be challenging.

### 11.3.2.2 Patterns of Embeddedness

Another important implication which improves inter-organisational knowledge sharing activities is the frequency of interaction and this frequency depends on the embeddedness of agents within the network and this embeddedness influences their knowledge sharing practices. Evidence was provided that more transitive networks with clusters ('manager agents') improved information transmission (Table 9-2 and Figure 9-6). As a result, if business people are to benefit from the diffusion of information their social networking activities should adopt practices similar to that of 'manager agents'. Therefore it is recommended that the TDMO make 'owner agents' aware of the knowledge sharing benefits: (1) derived from engaging in social networking activities; and (2) of improved decision making which contributes to business success.

### 11.3.2.3 Knowledge Dissemination

This research study provided evidence that certain types of knowledge are shared through certain communication methods. The implication here is that, as suggested by Haas and Hansen (2007), different knowledge brings different benefits or resource savings, in that while explicit knowledge saves time, tacit knowledge improves work quality. As a result, the communication method influences the outcome of shared knowledge and therefore strategic tacit information (Table 8-10) and local explicit information (Table 8-13) resulted in different benefits. Bearing this in mind, the TDMO may allocate resources towards facilitating more tacit types of dissemination methods, face to face conversations, that can result in a competitive advantage (strategic tacit information) for the business people and the tourism destination overall.



#### 11.3.2.4 Knowledge Diffusion

As suggested by Boisot (1998) the diffusion of knowledge is facilitated by means of communication and frequency of interaction. In addition, knowledge diffusion and cost increase as information becomes more explicit (Boisot, 1998) and the method of communication determines the richness of information (information carrying capacity). Evidence was provided that explicit-based communication methods of electronic mail and written documents (Table 8-5) increased the diffusion of information and therefore these types of communication methods are recommended within business practices. The implication here is that although creating explicit information comes at a higher cost and reduces information richness, diffusion of information increases, and this diffusion improves the operational information requirements (technical and managerial) of business people (Tables 8-7 and 8-9). As a result, business operation can improve when the business creates explicit information types, written documents and electronic mail.

#### **11.3.3 *Implications for Businesses and Tourism Destination Management Organisations***

The TDMO should become a driving force, organising activities to support inter-organisational knowledge sharing processes and it is recommended that they consider the type of available social capital, the cognitive network fit of agents and the type of trust. Based on these considerations a group of business people can be encouraged to come together and work in collaboration with the TDMO and can be made aware of the benefits of inter-organisational knowledge sharing even those benefits obtained from sharing information with their competitors. The implications are that knowledge sharing would not be left to chance and that social networking activities would support inter-organisational knowledge sharing. This sub-section discusses: social networking enablement of the provision of social capital; trust, knowledge sharing tendency and comfort and safety; patterns of innovation; knowledge scanning; and knowledge domain.

### 11.3.3.1 Social networking enable the provision of Social Capital

The social network becomes an important mechanism through which knowledge is shared in various tacit and explicit forms and the shared knowledge is transformed based on knowledge creation theory (Nonaka and Toyama, 2003). This research study has shown that knowledge is shared between people in different businesses and through practices of knowledge sharing, knowledge stocks are developed. These knowledge stocks are stored by business people for later use and help them manage and develop their businesses to improve cost efficiency and effectiveness in the delivery of their tourism product. The implication here is that an understanding of the inter-organisational knowledge sharing activities will guide knowledge management within the tourism sector. Therefore it is recommended that every effort be taken by business people and the TDMO to encourage and support social networking practices, as main network organisers (9.2.1.3), since these practices support the building of knowledge stocks within the tourism destination.

### 11.3.3.2 Trust, Knowledge Sharing Tendency, Comfort and Safety

Competency based trust is important to the receipt of tacit knowledge (Levin and Cross, 2004). This therefore means that the competency of the knowledge sharer is an evaluating tool in relation to whether knowledge sharing would be initiated. A knowledge sharing enabler termed 'knowledge sharing tendency' improves with direct contact and is linked with reciprocity, knowledgeable ability, similar interests and verbal information sharing (Table 7-38). The implication here is that face to face interaction (informal practices) initiates a tendency to share information and improves diffusion of information. As a result, informal interaction activities which engage direct contact between business people and the TDMO should be preferred since this improves the possibility of knowledge sharing within an inter-organisational context.

Comfort and safety are vital enablers of inter-organisational knowledge sharing (10.3.2.2.3) and therefore these factors should be considered when creating an environment for inter-organisational knowledge sharing activities. For instance to create a sense of comfort, the selected knowledge sharer should be within the social status and not deemed a competitor and to provide a level of safety, there should be adequate time and reasonable cost.

### 11.3.3.3 Patterns of Innovation

Observations were made that only informal networking practices facilitated the application of best practices (Table 8-25) and agents who were engaged in informal networking practices were more likely to receive a great deal of social support (Table 8-26). Therefore, it is recommended that the TDMO seeks to improve the informal social networking activities within the tourism destination. The implication is that the TDMO can understand how knowledge spreads and therefore encourage the adoption of these knowledge sharing activities. In addition, as suggested by Rogers (2003) social learning is a form of observational modelling and patterns of behaviour are learnt through verbal and non-verbal clues. The TDMO should therefore encourage processes of social learning through social networking activities.

The social networking practices of owners resulted in larger structural holes for small hotels, guesthouses and bed and breakfast properties and these structural holes can be used to explain the social capital benefit owners received (Table 9-6). On the other hand, managers' social networking practices resulted in larger structural holes for small hotels and attractions and therefore these establishments benefited from the social capital resources of the network. Evidently, the network and information contents contributed to business performance improvement (Table 7-11; Table 8-3; Table 9-2), since managers perceived that they made better decisions.

Businesses can be made aware of how brokerage opportunities within their social networks facilitate innovation. As a result, the business person can be encouraged to engage with social interaction processes which can provide an opportunity to obtain brokered information resources, for example, individual business networking (Figure 9-39). In addition, although an individual business may not be aware of whether their knowledge sharing activities has created a structural hole, the findings regarding structural holes can be used by the TDMO to encourage certain business types, large hotels, campsites and self catering establishments (Table 9-6), with smaller structural holes, to establish ties with other business people. Thereby, the tourism destination overall will benefit from increased inter-organisational knowledge sharing activity.

#### 11.3.3.4 Knowledge Scanning

Knowledge scanning is an awareness of where knowledge can be found. Social network mechanisms can be used for scanning the business environment and such scanning processes improve the capability of an agent to absorb a potential information flow. Cooper (2006), a tourism-focused author, argued for networks of organisations to increase knowledge stocks through knowledge articulation and that the greater the knowledge stocks the more effective will be the assimilation of new knowledge. Improvements to knowledge scanning processes influence an agent's absorptive capacity since the agent would have obtained a prior experience of the context through scanning the business environment. While emergent networks facilitate processes of knowledge scanning since these networks emerge based on the information needs of agents, the TDMO also has a role to ensure that agents become aware of important information which can affect business success. The implication here is as suggested by Seufert et al. (1999) emergent networks are to be cultivated to become high-performing. Such cultivation can involve the TDMO engaging its own environmental scanning process and providing businesses with this information.

### 11.3.3.5 Knowledge Domain

The motives for social networking are different between owners and managers (Table 8-1); owners were likely to need marketing information and managers to source business development information. In addition, within this research study it was revealed that particular knowledge contents are shared within certain networks. For instance, although there were structural holes in the owners' network and these structural holes in theory mean that 'owner agents' would have benefited from proprietary social capital, the network pattern of the 'owner agents' network did not result in an information advantage. This was likely the case since proprietary social capital, such as strategic information, was proportionally less in the owners' knowledge domain (Table 8-3). As a result, it is recommended that owners be made more aware of the benefit of strategic information and that managers be made more aware of the benefit of marketing information.

## 11.4 Further Research

This research study was based on understanding how, why and what knowledge flows through social networks in the tourism sector. Nonetheless, there are other areas in which our knowledge regarding inter-organisational knowledge sharing can be advanced and therefore add to the body of knowledge regarding the subject matter. This section discusses further research and is divided into four parts: (1) network mapping and analysis; (2) knowledge sharing relationships not covered in this study; and (3) typology of knowledge sharers and changing attitudes, and (4) replication and destination specificity.

### **11.4.1 Network mapping and analysis**

Further research can be conducted regarding social networks in the tourism sector in relation to the type of data collected and statistical analysis. The social networks were mapped based on respondents receiving information from other business people. This was done in order to examine the perceived impact of this information. Social networks may also be mapped in terms of business people sending information.

In addition, advanced statistical analysis of network data can be conducted to determine the influences of the agents and the influences of the network on behaviours. Such measures can be performed using longitudinal social network data in which changes in network behaviour can be established. Thereby, the co-evolution characteristics of the social network can be determined and recommendations made as to improving the generation and disseminative capabilities of an inter-organisational knowledge sharing network. This type of work is currently being conducted by Snijders, van de Bunt and Steglich (2010) using a software known as SIENA (Simulation Investigation for Empirical Network Analysis).

### **11.4.2 Knowledge sharing relationships not covered in this study**

Inter-organisational knowledge sharing theory could be further developed by conducting additional studies. Future research directions need to address issues regarding the connection of inter-organisational and intra-organisational knowledge sharing. The population can be selected based on the different intra-organisational levels within the business and the different inter-organisational links the business is engaged with. The data collected could also include information relating to the 'important' information the respondent shares with other business people. Thus the knowledge external flows from within the business can be determined. This information will give yet another view of inter-organisational knowledge sharing practices including the level of reciprocity, mutual information sharing, between and within businesses.

In addition, knowledge sharing can be studied in relation to other potential, or actual, relationships. These could include academic and government organisations and their knowledge sharing practices in respect of businesses. Of interest would be the role of the public sector as disseminators of knowledge and the best ways for such dissemination to be implemented. Thereby, barriers to knowledge sharing can be discovered and recommendations made to improve knowledge sharing practices.

### **11.4.3 Typology of knowledge sharers and changing attitudes**

Further research can be conducted to identify the typologies of business people and their related knowledge sharing behaviours. The benefits are advancing knowledge regarding inter-organisational knowledge sharing and improving the inter-organisational knowledge sharing practices of different types of business knowledge sharers. Thereby, businesses and the TDMO can devise tactics to improve the inter-organisational knowledge sharing practices of the different types of knowledge sharers.

Additionally, longitudinal studies can be conducted to investigate changes in knowledge sharing relationships over an extended time period. Such research will contribute to the understanding of how changes in dispositions and attitudes towards inter-organisational knowledge sharing influence changes in network structures. As such it would complement the longitudinal research highlighted in 11.4.1

#### **11.4.4 Replication and destination specificity of results**

Quantitative research can be conducted in other areas. By conducting studies in other destinations any destination specificity within the findings of this thesis, in particular their generalisability, will be identified. Replication of this research study is facilitated by the explicit methods and analytical procedures adopted to examine inter-organisational knowledge sharing.

### **11.5 Conclusion**

The results set out in this thesis were built on established theoretical explanations and a positivist methodological approach. The theoretical contribution that this study has made is the development of a conceptual framework that can be used to help explain inter-organisational knowledge: both the mechanisms and the influences on the people involved. Within the conceptual framework three constructs were highlighted: motives, characteristics and social identity of business people; social networking; and knowledge sharing enablers. Based on understanding the influences on the businesses in relation to inter-organisational knowledge sharing, the TDMOs can become pro-active in relation to the dynamic environment within which they operate and in particular their actions in respect to developing and facilitating the disseminating of knowledge between tourism sector businesses.

The methodological approach, in the sense of what was done in research terms, employed both social network data collection and analysis and behavioural and motivational data and analysis. Thus the approach focused on both mapping and explaining the mechanism of knowledge sharing, the social network, and on the influences on the use of those networks, the factors relating to the attitudes and dispositions of individual business people, in the one study. As far as it is known, this has not been done before.



Finally, this research study has provided evidence that social interaction processes facilitated the sharing of knowledge and this knowledge sharing contributes to the building up of knowledge stocks. This thesis has made an original contribution to understanding network structures of inter-organisational knowledge sharing in terms of why, how and what knowledge is shared in an inter-organisational context. As such, this research study's originality related to an examination of information flows (a dynamic element) within a tourism destination and how these contribute to performance (a stable element) and how performance can be improved through the application of constructs of social networking and knowledge sharing enablers (a holistic system).

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## GLOSSARY OF SELECTED NETWORK ANALYSIS TERMS

Sources: Borgatti, Everett & Freeman (2002) - UCINET 6 Overview of Help; Burt (1982); Hanneman & Riddle (2005).

<b>TERMS</b>	<b>EXPLANATIONS</b>
Betweenness Centrality	Measures information control and therefore betweenness is a measure of the number of times the focal agent links two other agents. A focal agent is between two other agents who wish to contact each other.
Brokerage	Calculates the number of times an agent is in a position to share resources and there are five brokerage roles: co-ordinator, consultant, gatekeeper, representative and liaison.
Cliques	Describes a maximally complete sub-graph and analyses the number of times each pair of agents are in the same clique. A clique is formed when agents have strong relations, which are all possible ties.
Closeness Centrality	Calculates the sum of the reciprocated distances so that infinite distances contribute a value of zero and is thought to be an index of the expected time-until-arrival for items flowing through the network via optimal paths.
Cluster	Partitions agents based on their similarities or dissimilarities and a series of nested partitions emerge.
Components	Identifies in an undirected graph the path connecting agents. In a directed graph two agents are in the same weak component if there is a semi-path connecting them while two agents are in a strong component if there is a mutual-path connecting them.

<b>TERMS</b>	<b>EXPLANATIONS</b>
Constraint	Measures the extent to which an agent invests in other agents who have also invested in other agents.
Consultant	Counts the number of times an agent brokers between other agents who belong to a different group.
Co-ordinator	Counts the number of times an agent brokers when all three agents belong to the same group.
Degree Centrality	Calculates the number of agents adjacent to the focal agent and therefore measures network activity.
Density	Calculates the total number of ties divided by the total number of possible ties.
Distance	Calculates the length of a path as the number of edges it contains and therefore the distance between two nodes is the length of the shortest path.
Ego networks	Measures the cohesiveness of the agents the focal agent is connected to.
Gatekeeper	Counts the number of times a broker is the source to a different group.
Multi-dimensional scaling	Finds a set of points in k-dimensional space to correspond as closely as possible to their proximities.
Reachability	Calculates the length of the shortest path.
Representative	Counts the number of times the destination node belongs to a different group.

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<b>TERMS</b>	<b>EXPLANATIONS</b>
Structural Holes	Measures the number of agents connected to the focal agent and the focal agent's positional advantage or disadvantage. Measures are effective size, efficiency and constraint.
Transitivity	Calculates the density of transitive triads in a network.



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## APPENDIX I: CONCEPTUAL FRAMEWORK LINK TO FINAL MAIN SURVEY QUESTIONNAIRE

Question Number	Objectives: To examine ....	Literature Reviewed	Theories and Concepts
1	Formal business networking activity	Parsons, 1952; Nadel, 1957; Axelsson & Easton, 1992; Baker, 1992; Curan et al, 1993; Grabher, 1993; Mizruchi, 1994; Backhaus & Buschken, 1997; Gemunden et al, 1997; Gulati & Gargiulo, 1999; Lin, 2001; Tyler and Dinan, 2001; Belin, 2002; Hawkins, 2004; Morrison, Lynch & Johns, 2004; Saxena, 2005; Dredge, 2006; Novelli, 2006; Pforr, 2006; Marouf, 2007	Types of Networks/ <b>Theory of Social Structure</b> (Nadel, 1957); <b>Social Capital</b> (Lin, 2001); <b>The Social System</b> Parsons, 1952)
2	Business reasons for working with other tourism businesses	Buttery and BATTERY, 1994; Monge and Contractor, 2003	<b>Theory of Communication Networks</b> (Monge & Contractor, 2003)
3	Useful information obtained from business relationships	Anderson, Hakansson et al, 1994; Holmlund & Tomroos, 1997; Lane et al, 1998; Bengtsson & Kock, 1999; Hjalager, 2002; Bell, 2005; Bou-Llusar et al, 2006; Cooper, 2006	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990)
4	Methods of communication for formal business networks	Cohen & Levinthal, 1990; Badaracco, 1991; Bennett, 1998; Boisot, 1998; Chua et al., 2000;	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990); <b>I-Space</b> (Boisot, 1998); <b>Knowledge Creation</b> (Nonaka & Takeuchi, 1995)
5	Types of information obtained from formal business networks	Cohen & Levinthal, 1990; Choo, 1998; Argote and Ingram, 2000; Boland et al, 2001; Hansen, 2002; Haas & Hansen, 2007	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990); <b>Search-Transfer Problem</b> (Hansen, 2002)
6	Dyadic ties of formal networks and important information flows	Boje & Whetten, 1981; Burt, 1992; Easton & Lundgren, 1992; Krackhardt, 1992; Nohria & Eccles, 1992; Rowley, 1997; Gulati & Gargiulo, 1999; Hansen, 1999; Ahuja, 2000; Contractor & Monge, 2002; Carlsson, 2003; Inkpen & Tsang, 2005; Pyo, 2005; Doreian, 2006;	Social Network Theory - <b>Weak ties</b> (Granovetter, 1973, 1983); <b>Strong ties</b> (Friedkin, 1982); <b>Structural holes</b> (Burt, 1992)
7	Dyadic ties of formal networks and general information flows	Boje & Whetten, 1981; Burt, 1992; Easton & Lundgren, 1992; Krackhardt, 1992; Nohria & Eccles, 1992; Rowley, 1997; Gulati & Gargiulo, 1999; Hansen, 1999; Ahuja, 2000; Contractor & Monge, 2002; Carlsson, 2003; Inkpen & Tsang, 2005; Pyo, 2005; Doreian, 2006;	Social Network Theory - <b>Weak ties</b> (Granovetter, 1973, 1983); <b>Strong ties</b> (Friedkin, 1982); <b>Structural holes</b> (Burt, 1992)
8	Informal social networking activity	Parsons, 1952; Nadel, 1957; Axelsson & Easton, 1992; Baker, 1992; Curan et al, 1993; Grabher, 1993; Mizruchi, 1994; Backhaus & Buschken, 1997; Gemunden et al, 1997; Gulati & Gargiulo, 1999; Lin, 2001; Tyler and Dinan, 2001; Belin, 2002; Hawkins, 2004; Morrison, Lynch & Johns, 2004; Saxena, 2005; Dredge, 2006; Novelli, 2006; Pforr, 2006; Marouf, 2007	Types of Networks/ <b>Theory of Social Structure</b> (Nadel, 1957); <b>Social Capital</b> (Lin, 2001); <b>The Social System</b> Parsons, 1952)
9	General reasons for social relationships with other tourism businesses	Buttery and BATTERY, 1994;	<b>Theory of Communication Networks</b> (Monge & Contractor, 2003)

Question Number	Objectives: To examine ....	Literature Reviewed	Theories and Concepts
10	Useful information obtained from friendship relationships	Anderson, Hakansson et al, 1994; Holmlund & Tomroos, 1997; Lane et al, 1998; Bengtsson & Kock, 1999; Hjalager, 2002; Bell, 2005; Bou-Llusar et al, 2006; Cooper, 2006	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990)
11	Methods of communication for informal friendship networks	Cohen & Levinthal, 1990; Badaracco, 1991; Bennett, 1998; Boisot, 1998; Chua et al., 2000	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990); <b>I-Space</b> (Boisot, 1998); <b>Knowledge Creation</b> (Nonaka & Takeuchi, 1995)
12	Types of information obtained from informal friendship networks	Cohen & Levinthal, 1990; Choo, 1998; Argote and Ingram, 2000; Boland et al, 2001; Hansen, 2002; Haas & Hansen, 2007	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990); <b>Search-Transfer Problem</b> (Hansen, 2002)
13	Dyadic ties of informal networks and important information flows	Boje & Whetten, 1981; Burt, 1992; Easton & Lundgren, 1992; Krackhardt, 1992; Nohria & Eccles, 1992; Rowley, 1997; Gulati & Gargiulo, 1999; Hansen, 1999; Ahuja, 2000; Contractor & Monge, 2002; Carlsson, 2003; Inkpen & Tsang, 2005; Pyo, 2005; Doreian, 2006;	Social Network Theory - <b>Weak ties</b> (Granovetter, 1973, 1983); <b>Strong ties</b> (Friedkin, 1982); <b>Structural holes</b> (Burt, 1992)
14	Dyadic ties of informal networks and general information flows	Boje & Whetten, 1981; Burt, 1992; Easton & Lundgren, 1992; Krackhardt, 1992; Nohria & Eccles, 1992; Rowley, 1997; Gulati & Gargiulo, 1999; Hansen, 1999; Ahuja, 2000; Contractor & Monge, 2002; Carlsson, 2003; Inkpen & Tsang, 2005; Pyo, 2005; Doreian, 2006;	Social Network Theory - <b>Weak ties</b> (Granovetter, 1973, 1983); <b>Strong ties</b> (Friedkin, 1982); <b>Structural holes</b> (Burt, 1992)
15	Formal group business networking activity	Parsons, 1952; Nadel, 1957; Axelsson & Easton, 1992; Baker, 1992; Curan et al, 1993; Grabher, 1993; Mizruchi, 1994; Backhaus & Buschken, 1997; Gemunden et al, 1997; Gulati & Gargiulo, 1999; Lin, 2001; Tyler and Dinan, 2001; Belin, 2002; Hawkins, 2004; Morrison, Lynch & Johns, 2004; Saxena, 2005; Dredge, 2006; Novelli, 2006; Pforr, 2006; Marouf, 2007	Types of Networks/ <b>Theory of Social Structure</b> (Nadel, 1957); <b>Social Capital</b> (Lin, 2001); <b>The Social System</b> Parsons, 1952)
16	Business reasons for working with trade association	Buttery and BATTERY, 1994;	<b>Theory of Communication Networks</b> (Monge & Contractor, 2003)
17	Useful information obtained from business relationships with association members	Anderson, Hakansson et al, 1994; Holmlund & Tomroos, 1997; Lane et al, 1998; Bengtsson & Kock, 1999; Hjalager, 2002; Bell, 2005; Bou-Llusar et al, 2006; Cooper, 2006	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990)
18	Methods of communication for formal group business networks	Cohen & Levinthal, 1990; Badaracco, 1991; Bennett, 1998; Boisot, 1998; Chua et al., 2000	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990); <b>I-Space</b> (Boisot, 1998); <b>Knowledge Creation</b> (Nonaka & Takeuchi, 1995)

Question Number	Objectives: To examine ....	Literature Reviewed	Theories and Concepts
19	Types of information obtained from formal group business networks	Cohen & Levinthal, 1990; Choo, 1998; Argote and Ingram, 2000; Boland et al, 2001; Hansen, 2002; Haas & Hansen, 2007	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990); <b>Search-Transfer Problem</b> (Hansen, 2002)
20	Dyadic ties of formal group networks and important information flows	Boje & Whetten, 1981; Burt, 1992; Easton & Lundgren, 1992; Krackhardt, 1992; Nohria & Eccles, 1992; Rowley, 1997; Gulati & Gargiulo, 1999; Hansen, 1999; Ahuja, 2000; Contractor & Monge, 2002; Carlsson, 2003; Inkpen & Tsang, 2005; Pyo, 2005; Doreian, 2006;	Social Network Theory - <b>Weak ties</b> (Granovetter, 1973, 1983); <b>Strong ties</b> (Friedkin, 1982); <b>Structural holes</b> (Burt, 1992)
21	Dyadic ties of formal group networks and general information flows	Boje & Whetten, 1981; Burt, 1992; Easton & Lundgren, 1992; Krackhardt, 1992; Nohria & Eccles, 1992; Rowley, 1997; Gulati & Gargiulo, 1999; Hansen, 1999; Ahuja, 2000; Contractor & Monge, 2002; Carlsson, 2003; Inkpen & Tsang, 2005; Pyo, 2005; Doreian, 2006;	Social Network Theory - <b>Weak ties</b> (Granovetter, 1973, 1983); <b>Strong ties</b> (Friedkin, 1982); <b>Structural holes</b> (Burt, 1992)
22	Useful information obtained from informal group relationships	Anderson, Hakansson et al, 1994; Holmlund & Tomroos, 1997; Lane et al, 1998; Bengtsson & Kock, 1999; Hjalager, 2002; Bell, 2005; Bou-Llusar et al, 2006; Cooper, 2006	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990)
23	Methods of communication for informal group friendship networks	Cohen & Levinthal, 1990; Badaracco, 1991; Bennett, 1998; Boisot, 1998; Chua et al., 2000;	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990); <b>I-Space</b> (Boisot, 1998); <b>Knowledge Creation</b> (Nonaka & Takeuchi, 1995)
24	Types of information obtained from informal group friendship networks	Cohen & Levinthal, 1990; Choo, 1998; Argote and Ingram, 2000; Boland et al, 2001; Hansen, 2002; Haas & Hansen, 2007	Structural processes - <b>Structuration theory</b> (Giddens, 1984); <b>Absorptive capacity</b> (Cohen & Levinthal, 1990); <b>Search-Transfer Problem</b> (Hansen, 2002)
25	Dyadic ties of informal group networks and important information flows	Boje & Whetten, 1981; Burt, 1992; Easton & Lundgren, 1992; Krackhardt, 1992; Nohria & Eccles, 1992; Rowley, 1997; Gulati & Gargiulo, 1999; Hansen, 1999; Ahuja, 2000; Contractor & Monge, 2002; Carlsson, 2003; Inkpen & Tsang, 2005; Pyo, 2005; Doreian, 2006;	Social Network Theory - <b>Weak ties</b> (Granovetter, 1973, 1983); <b>Strong ties</b> (Friedkin, 1982); <b>Structural holes</b> (Burt, 1992)
26	Dyadic ties of informal group networks and general information flows	Boje & Whetten, 1981; Burt, 1992; Easton & Lundgren, 1992; Krackhardt, 1992; Nohria & Eccles, 1992; Rowley, 1997; Gulati & Gargiulo, 1999; Hansen, 1999; Ahuja, 2000; Contractor & Monge, 2002; Carlsson, 2003; Inkpen & Tsang, 2005; Pyo, 2005; Doreian, 2006;	Social Network Theory - <b>Weak ties</b> (Granovetter, 1973, 1983); <b>Strong ties</b> (Friedkin, 1982); <b>Structural holes</b> (Burt, 1992)
27a	Importance of social networking	Gulati, 1998; Kogut, 2000; Monge & Contractor, 2003	Network structure motivational input – <b>Self Interest</b>
27b	Knowledge of who networks with who	Krackhardt, 1990	Network structure motivational input - <b>Cognitive social structures</b>
27c	Importance of relationship with business contacts	Argote & Ingram, 2000; Monge & Contractor, 2003	Network structure motivational input - <b>Self interest: structural holes</b>

<b>Question Number</b>	<b>Objectives: To examine ....</b>	<b>Literature Reviewed</b>	<b>Theories and Concepts</b>
27d	Time constraint impact on social networking	Monge & Contractor, 2003; Awad et al, 2004	Network structure motivational input - <b>Transaction cost economic theory</b>
27e	Social networking only with industry	Monge & Contractor, 2003	Network structure motivational input - <b>Semantic</b>
27f	Social network with reputable persons	Law, 1986; Monge & Contractor, 2003; Awad et al, 2004	Network structure motivational input - <b>Homophily</b>
27g	Social network nearest location	Akooie, 2000; Monge & Contractor, 2003; Hawkins, 2004; Inkpen & Tsang, 2005; Hall & Michael, 2007	Network structure motivational input - <b>Proximity</b>
27h	Social network with similar organisations	Monge & Contractor, 2003;	Network structure motivational input - <b>Homophily</b>
27i	Discussion of important matters with friends	Monge & Contractor, 2003;	Network structure motivational input - <b>Homophily</b>
27j	Personal business contacts knowledge of my weaknesses	Rotter, 1967; Kalafatis et al, 1997; Tyler & Dinan, 2001; Dhanaraj et al, 2004; Saxena, 2005; Swan et al, 2005	Network structure motivational input: <b>Trust</b>
27k	Reliance on personal business contacts to keep promises	Rotter, 1967; Kalafatis et al, 1997; Tyler & Dinan, 2001; Dhanaraj et al, 2004; Saxena, 2005; Swan et al, 2005	Network structure motivational input: <b>Trust</b>
27l	Feeling of being misled	Rotter, 1967; Kalafatis et al, 1997; Tyler & Dinan, 2001; Dhanaraj et al, 2004; Saxena, 2005; Swan et al, 2005	Network structure motivational input: <b>Trust</b>
27m	Reliance on verbal statements	Rotter, 1967; Kalafatis et al, 1997; Tyler & Dinan, 2001; Dhanaraj et al, 2004; Saxena, 2005; Swan et al, 2005	Network structure motivational input: <b>Trust</b>
28a	Social networking and decision-making	Knoke, 1993; Monge & Contractor, 2003	Network structure motivational input - <b>Social capital; Dependency</b>
28b	Social networking contribution to attitudes and beliefs	Monge & Contractor, 2003	Network structure motivational input - <b>Contagion</b>
28c	Social networking as a source of knowledge	Seufert et al, 1999; Kogut, 2000; Monge & Contractor, 2003	Network structure motivational input - <b>Exchange and Dependency</b>
28d	Benefit of social networking is knowledge	Latour, 1986; Monge & Contractor, 2003	Network structure motivational input - <b>Social capital</b>

Question Number	Objectives: To examine ....	Literature Reviewed	Theories and Concepts
28e	Social networking and social support	Monge & Contractor, 2003;	Network structure motivational input – <b>Social Support</b>
28f	Reliance on social network for 'goings on' in my industry	Lawson et al, 1999Monge & Contractor, 2003;	Network structure motivational input - <b>Exchange and Dependency</b>
28g	Action things learnt from social network	Nonaka, Umenoto & Senoo, 1996; Monge & Contractor, 2003; Rogers, 2003; Liebowitz, 2007	Network structure motivational input <b>Self interest: social capital</b>
29a	Readily share business information with competitors	Argote & Ingram, 2000; von Krogh, Nonaka & Aben, 2001	Knowledge sharing motivational input – <b>Information Need</b>
29b	Many opportunities to receive important business information	Carlsson, 2003	Knowledge sharing motivational input - <b>Mutual interest</b>
29c	Fear to share knowledge with my competitors	Pena, 2002	Knowledge sharing motivational input - <b>Relationship quality</b>
29d	Prior experience with person and knowledge sharing	Gulati, 1998	Knowledge sharing motivational input - <b>Prior Experience</b>
29e	Socio-economic status and knowledge sharing	Knoke, 1983, 1993, 1994; Awad et al, 2004	Knowledge sharing motivational input - <b>Status of the knower</b>
29f	Knowledgeable people and knowledge sharing	Powell et al, 1996	Knowledge sharing motivational input - <b>Status of the knower</b>
29g	Similar interests and knowledge sharing	Spender & Grant, 1996; Argote & Ingram, 2000	Knowledge sharing motivational input – <b>Status of the knower</b>
29h	Time constraint and knowledge sharing	Zander & Kogut, 1995; Bennett, 1998; Argote & Ingram, 2000; von Krogh, Nonaka & Aben, 2001; Hansen, 2002	Knowledge sharing motivational input - <b>Transaction cost</b>
29i	Prefer sharing in groups	Bennett, 1998; Carlsson, 2003; Jackson, 2005	Knowledge sharing motivational input - <b>Social interaction</b>
29j	Usually share on a one to one basis	Bennett, 1998; Argote & Ingram, 2000; Sherif & Xing, 2006	Knowledge sharing motivational input - <b>Social interaction</b>
29k	Improvement of relationship and knowledge sharing	Carlsson, 2003	Knowledge sharing motivational input – <b>Status of the knower</b>
29l	Share knowledge when there is an opportunity	Lundvall, 1993; Argote & Ingram, 2000	Knowledge sharing motivational input - <b>Transaction cost</b>

<b>Question Number</b>	<b>Objectives: To examine ....</b>	<b>Literature Reviewed</b>	<b>Theories and Concepts</b>
29m	Makes opportunity to share knowledge	Madhavan et al, 1998	Knowledge sharing motivational input - <b>Social interaction</b>
29n	Frequently use computer to send e-mails and share knowledge	Sherif & Xing, 2006	Knowledge sharing motivational input - <b>Information needs</b>
29o	Preference of sharing knowledge verbally	Argote & Ingram, 2000	Knowledge sharing motivational input - <b>Preference</b>
30a	Strong belief of improving industry performance on knowledge sharing	Perrow, 1992; Pena, 2002	Knowledge sharing motivational input - <b>Altruism</b>
30b	Receive important business information by chance	Davenport and Prusak, 1998	Serendipity basis for knowledge sharing - <b>Serendipity</b>
30c	Social interaction and knowledge sharing	Kogut et al, 1993; Kogut, 2000;	Knowledge sharing motivational input - <b>Social interaction</b>
30d	Reciprocity and knowledge sharing	Bengtsson & Kock, 1999; Skvortez et al, 2004; Choi & Hilton, 2005	Knowledge sharing motivational input - <b>Prior Experience</b>
30e	Cost constraint and knowledge sharing	Zander & Kogut, 1995; Grant, 1996; Hansen, 2002; Diakoulakis et al, 2004; Sherif & Xing, 2006	Knowledge sharing motivational input - <b>Transaction cost</b>
30f	Value from knowledge sharing	Porter & Millar, 1985	Knowledge sharing motivational input - <b>Transaction cost</b>
30g	Gift giving and knowledge sharing	Choi & Hilton, 2005	Knowledge sharing motivational input - <b>Gift giving</b>
30h	Preference not to share knowledge	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Preference</b>
30i	Personal benefit from knowledge sharing	Hansen, 2002; Pena, 2002	Knowledge sharing motivational input - <b>Social capital; Information need</b>
30j	Positive feeling about sharing knowledge	Swan et al, 2000; Hansen, 2002	Knowledge sharing motivational input - <b>Prior Experience</b>
31a	Relate with people well and quickly	Monge & Contractor, 2003; Kalish & Robins, 2006	Network structure motivational input - <b>Personality</b>

<b>Question Number</b>	<b>Objectives: To examine ....</b>	<b>Literature Reviewed</b>	<b>Theories and Concepts</b>
31b	Reserved, quiet person and knowledge sharing	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Personality</b>
31c	Outgoing person and knowledge sharing	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Extraversion</b>
31d	Being different to other people	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Psychological predispositions and network structure</b>
31e	Distinguish self from others	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Psychological predispositions and network structure</b>
31f	Personal identity independent from others	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Psychological predispositions and network structure</b>
31g	Do "own thing"	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Psychological predispositions and network structure</b>
31h	Importance of belonging to social groups	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Psychological predispositions and network structure</b>
31i	Identify strongly with people in one or more of my social groups	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Psychological predispositions and network structure</b>
31j	Membership in social groups is not central to how I feel about myself	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Psychological predispositions and network structure</b>
31k	Rely on myself most of the time	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Psychological predispositions and network structure</b>
31l	Depend on myself than others	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Psychological predispositions and network structure</b>
31m	If groups are slowing me down, it is better to work alone	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Psychological predispositions and network structure</b>
31n	Social groups I belong to are unimportant to my sense of what kind of a person I am.	Kalish & Robins, 2006; Yang, 2008	Knowledge sharing motivational input - <b>Psychological predispositions and network structure</b>
32	Type of tourism/hospitality organisation	Szarka, 1990; Sparrow, 2001; Tinsley & Lynch, 2001	



<b>Question Number</b>	<b>Objectives: To examine ....</b>	<b>Literature Reviewed</b>	<b>Theories and Concepts</b>
33	Membership in tourism/hospitality organisations	Borgatti & Foster, 2003	
34	Post code	Porter, 1998; Bell, 2005; Inkpen & Tsang, 2005; Gimenez-Garcia, 2007 Hall & Michael, 2007	
35	Number of years worked in Dorset		
36	Number of years worked in tourism/hospitality		
37	Gender	Kalish & Robins, 2006	
38	Position in the organisation	Kalish & Robins, 2006	
39	Highest level of education	Kalish & Robins, 2006	
40	Comments on social networking and knowledge sharing	Oppenheim (1992:112)	

## APPENDIX II: PILOTED FACE TO FACE INTERVIEW QUESTIONNAIRE



AN INVESTIGATION OF  
 NETWORKS OF KNOWLEDGE SHARING IN THE  
 TOURISM AND HOSPITALITY INDUSTRY OF  
 CHRISTCHURCH, UNITED KINGDOM

*This questionnaire seeks to obtain an understanding of how and why knowledge flows through networks in the tourism and hospitality industries, and how the performance of knowledge flows can be improved.*

## QUESTIONNAIRE

ALL RESPONSES WILL BE TREATED IN THE STRICTEST CONFIDENCE

QUESTIONNAIRE NO. \_\_\_\_\_

Guidelines

1. Please could a member of the management team complete the questionnaire?  
Thank you.
2. For the purpose of this enquiry information is defined as: data that makes decision making easier and knowledge is defined as: an understanding of information based on its perceived importance or relevance.
3. **PLEASE READ ALL QUESTIONS CAREFULLY** before you answer.

## SECTION 1 - FORMAL AND INFORMAL SOCIAL NETWORKS

1. a. In the past six (6) months, have you been a member of a tourism/hospitality association in Christchurch?

Yes

No  **If NO, go to question 2**

- b. During the past six (6) months, and as a result of your membership of the association, did you receive **important information** from your tourism/ hospitality association that was/will be useful to your organisation?

Yes – was useful

Yes – will be useful

No  **If NO, go to question 1d**

- c. When you attended your association's events in the past six (6) months, what type of **important information** did you receive? (**tick all that apply**)

Nature of Information	Information Received
Technical (information about performing specific tasks such as housekeeping or advertising)	<input type="checkbox"/>
Managerial (information about managing an organisation such as co-ordinating or budgeting)	<input type="checkbox"/>
Strategic (information about changing the direction of the organisation such as market research or visioning)	<input type="checkbox"/>
Local (information about people and businesses)	<input type="checkbox"/>

**d.** What, in general terms, was that **important information** you received about and why was the important information you obtained not useful to your organisation?

**Nature of Information**

**Explanation**

**e.** Did the **important information** come as a result of 'formal' agenda items of the meetings/events or simply as a result of meeting and talking to people there in a less formal context?

Formal

Less formal

**f.** How many meetings/events has your association held in the past six (6) months which you could have attended?

Number of events \_\_\_\_\_

**g.** How many of the tourism/hospitality association's meetings/events in the past six (6) months have you attended?

Number of events \_\_\_\_\_

**h.** Are the meetings/events held by your tourism/hospitality association in any six (6) month period ...?

Weekly

Monthly

Bi-Monthly

Quarterly

Once in six months

**i.** In the past six (6) months, which were the organisations, where members work that you received **important information** from? (**please list these organisations**)

**Nature of Information**

**Name of Members' Organisations**

**2. a.** In the past six (6) months, have you been a member of a tourism/hospitality board or public management body in Christchurch?

Yes

No  **If NO, go to question 2**

**b.** During the past six (6) months, and as a result of your membership of the association, did you receive **important information** from your tourism/ hospitality board or public management body that was/will be useful to your organisation?

Yes – was useful

Yes – will be useful

No  **If NO, go to question 2d**

**c.** When you attended your board or public management body's events in the past six (6) months, what type of **important information** did you receive? (**tick all that apply**)

<b>Nature of Information</b>	<b>Information Received</b>
Technical (information about performing specific tasks such as housekeeping or advertising)	<input type="checkbox"/>
Managerial (information about managing an organisation such as co-ordinating or budgeting)	<input type="checkbox"/>
Strategic (information about changing the direction of the organisation such as market research or visioning)	<input type="checkbox"/>
Local (information about people and businesses)	<input type="checkbox"/>

**d.** What, in general terms, was that **important information** you received about and why was the important information you obtained not useful to your organisation?

**Nature of Information**

**Explanation**

**e.** Did the **important information** come as a result of 'formal' agenda items of the meetings/events or simply as a result of meeting and talking to people there in a less formal context?

Formal

Less formal

**f.** How many meetings/events has your board or public management body held in the past six (6) months which you could have attended?

Number of events \_\_\_\_\_

**g.** How many of the tourism/hospitality board or public management body's meetings/events in the past six (6) months have you attended?

Number of events \_\_\_\_\_

**h.** Are the meetings/events held by your tourism/hospitality board or public management body in any six (6) month period ...?

Weekly

Monthly

Bi-Monthly

Quarterly

Once in six months

**i.** In the past six (6) months, which were the organisations, where members work that you received **important information** from? (**please list these organisations**)

**Nature of Information**

**Name of Members' Organisations**

**3. a.** In the past six (6) months, did you meet **formally** (other than tourism/ hospitality association or board/public management body meetings) with persons working in other tourism/hospitality organisations in Christchurch?

Yes

No  **If NO, go to question 2**

**b.** Did you receive **important information** from your **business relations** with persons working in other tourism/hospitality organisations in Christchurch that was/will be useful to your organisation?

Yes – was useful

Yes – will be useful

No  **If NO, go to question 3d**

**c.** When you met **formally** with persons working in other tourism/hospitality organisations in Christchurch, what type of **important information** did you receive? (**tick all that apply**)

<b>Nature of Information</b>	<b>Information Received</b>
Technical (information about performing specific tasks such as housekeeping or advertising)	<input type="checkbox"/>
Managerial (information about managing an organisation such as co-ordinating or budgeting)	<input type="checkbox"/>
Strategic (information about changing the direction of the organisation such as market research or visioning)	<input type="checkbox"/>
Local (information about people and businesses)	<input type="checkbox"/>

**d.** What, in general terms, was that **important information** you received about and why was the important information you obtained not useful to your organisation?

**Nature of Information**

**Explanation**

**e.** Did the **important information** come as a result of 'formal' agenda items of the meetings/events or simply as a result of meeting and talking to people there in a less formal context?

Formal

Less formal

**f.** How many **formal** meetings/events in your tourism/hospitality industry, which you are aware of were held in the past six (6) months which you could have attended?

Number of events \_\_\_\_\_

**g.** How many **formal** meetings/events in your tourism/hospitality industry, in the past six (6) months have you attended?

Number of events \_\_\_\_\_

**h.** Are the **formal** meetings/events held by your tourism/hospitality industry in any six (6) month period ...?

Weekly

Monthly

Bi-Monthly

Quarterly

Once in six months

**i.** In the past six (6) months, which were the organisations, in which persons work, that you met with **formally** and received **important information** from in Christchurch? (**please list these organisations**)

**Nature of Information**

**Name of Persons' Organisations**

**4. a.** In the past six (6) months, did you meet **informally** (meet with business colleagues, breakfast clubs etc.) with persons working in other tourism/hospitality organisations in Christchurch?

Yes

No  **If NO, go to question 5**

**b.** Did you receive **important information** from your **social relations** with persons working in other tourism/hospitality organisations in Christchurch that was/will be useful to your organisation?

Yes – was useful

Yes – will be useful

No  **If NO, go to question 4d**

**c.** When you met **informally** with persons working in other tourism/hospitality organisations in Christchurch, what type of **important information** did you receive? (**tick all that apply**)

<b>Nature of Information</b>	<b>Information Received</b>
Technical (information about performing specific tasks such as housekeeping or advertising)	<input type="checkbox"/>
Managerial (information about managing an organisation such as co-ordinating or budgeting)	<input type="checkbox"/>
Strategic (information about changing the direction of the organisation such as market research or visioning)	<input type="checkbox"/>
Local (information about people and businesses)	<input type="checkbox"/>



**d.** What, in general terms, was that **important information** you received about and why was the important information you obtained not useful to your organisation?

**Nature of Information**

**Explanation**

**e.** How many **informal** meetings/events in your tourism/hospitality industry, which you are aware of were held in the past six (6) months which you could have attended?

Number of events \_\_\_\_\_

**f.** How many **informal** meetings/events in your tourism/hospitality industry, in the past six (6) months have you attended?

Number of events \_\_\_\_\_

**g.** Are the **informal** meetings/events held by your tourism/hospitality industry in any six (6) month period ...?

- Weekly
- Monthly
- Bi-Monthly
- Quarterly
- Once in six months

**h.** In the past six (6) months, which were the organisations, in which persons work, that you met with **formally** and received **important information** from in Christchurch? (**please list these organisations**)

**Nature of Information**

**Name of Persons' Organisations**

5. a. Which of the following method(s) did you most often use when exchanging your **important information informally** with persons from other tourism/hospitality organisations in Christchurch? (**tick only one**)

Face to face   
 Documents   
 Both face to face and documents   
 None of the above

- b. Which of the following method(s) did you most often use when exchanging your **important information formally** with persons from other tourism/hospitality organisations in Christchurch? (**tick only one**)

Face to face   
 Documents   
 Both face to face and documents   
 None of the above

## SECTION 2 - INFORMATION/KNOWLEDGE SHARING NETWORKS

6. a. From time to time you may discuss **matters of crucial importance** to your organisation. How often did you discuss these matters with persons in **any organisation, other than your own**, in the past six (6) months?

Number of discussions in past six (6) months \_\_\_\_\_

- b. How often did you discuss **matters of crucial importance** to your organisation with persons working in **other tourism organisations** in Christchurch in the past six (6) months?

Number of discussions in past six (6) months \_\_\_\_\_

- c. How often did you discuss **matters of crucial importance** to your organisation with persons working in **other hospitality organisations** in Christchurch in the past six (6) months?

Number of discussions in past six (6) months \_\_\_\_\_

7. a. In the past six (6) months, did you discuss your **experiences** with persons in other tourism/hospitality organisations in Christchurch?

Yes   
 No

**If NO, go to question 8**

**b.** How often did you discuss your **experiences** with persons working in other tourism/hospitality organisations in Christchurch in the past six (6) months?

- Weekly   
 Monthly   
 Bi-Monthly   
 Quarterly   
 Once in six months

**c.** In the past six (6) months, when you discussed your **experiences** with persons in other tourism/hospitality organisations in Christchurch, what type of information was discussed? (**tick all that apply**)

<b>Nature of Information</b>	<b>Experiences Discussed</b>
Technical (information about performing specific tasks such as housekeeping or advertising)	<input type="checkbox"/>
Managerial (information about managing an organisation such as co-ordinating or budgeting)	<input type="checkbox"/>
Strategic (information about changing the direction of the organisation such as market research or visioning)	<input type="checkbox"/>
Local (information about people and businesses)	<input type="checkbox"/>

**d.** In the past six (6) months, which were the other tourism/hospitality organisations in Christchurch, where persons work that you discussed your **experiences** with? (**please list these organisations**)

**Nature of Experiences**

**Name of Persons' Organisations**

e. In the past six (6) months, please state some reasons as to why you discussed your experiences with those persons and not with other persons working in other tourism/hospitality organisations in Christchurch.

### Nature of Experiences

### Explanations

8. a. In the past six (6) months, did you send **important information** through **documents** including letters, e-mails, newsletters etc. to persons in other tourism/hospitality organisations in Christchurch?

Yes

No  **If NO, go to question 9**

- b. How often did you send **documents** to persons working in other tourism/hospitality organisations in Christchurch in the past six (6) months?

Weekly

Monthly

Bi-Monthly

Quarterly

Once in six months

- c. In the past six (6) months, when you sent **documents** to persons in other tourism/hospitality organisations in Christchurch, what type of information was sent? (**tick all that apply**)

Nature of Information	Documents Sent
Technical (information about performing specific tasks such as housekeeping or advertising)	<input type="checkbox"/>
Managerial (information about managing an organisation such as co-ordinating or budgeting)	<input type="checkbox"/>
Strategic (information about changing the direction of the organisation such as market research or visioning)	<input type="checkbox"/>
Local (information about people and businesses)	<input type="checkbox"/>

**d.** In the past six (6) months, which were the other tourism/hospitality organisations in Christchurch, where persons work that you sent **documents** to? (**please list these organisations**)

**Nature of Documents Sent**

**Name of Persons' Organisations**

**e.** In the past six (6) months, please state some reasons as to why you sent documents to those persons and not to other persons working in other tourism/hospitality organisations in Christchurch.

**Nature of Documents Sent**

**Explanations**

**9. a.** In the past six (6) months, did you receive any **important new ideas or new ways of doing things** from persons working in other tourism/hospitality organisations in Christchurch?

Yes

No

**If NO, go to question 10**

**b.** How often did you receive **important new ideas or new ways of doing things** from persons working in other tourism/hospitality organisations in Christchurch in the past six (6) months?

Weekly

Monthly

Bi-Monthly

Quarterly

Once in six months

c. In the past six (6) months, when you received **important new ideas or new ways of doing things** from persons in other tourism/hospitality organisations in Christchurch, what type of information was received? (**tick all that apply**)

<b>Nature of Information</b>	<b>New Ideas Received</b>
Technical (information about performing specific tasks such as housekeeping or advertising)	<input type="checkbox"/>
Managerial (information about managing an organisation such as co-ordinating or budgeting)	<input type="checkbox"/>
Strategic (information about changing the direction of the organisation such as market research or visioning)	<input type="checkbox"/>
Local (information about people and businesses)	<input type="checkbox"/>

d. In the past six (6) months, which were the other tourism/hospitality organisations in Christchurch, where persons work that you received **important new ideas or new ways of doing things** from? (**please list these organisations**)

**Nature of New Ideas Received**

**Name of Persons' Organisations**

e. In the past six (6) months, please state some reasons as to why you received important new ideas or new ways of doing things from those persons and not from other persons working in other tourism/hospitality organisations in Christchurch.

**Nature of New Ideas Received**

**Explanations**

- 10. a.** In the past six (6) months, did you receive **advice (know-how)** from persons working in other tourism/hospitality organisations in Christchurch?

Yes

No  **If NO, go to question 11**

- b.** How often did you receive **advice (know-how)** from persons working in other tourism/hospitality organisations in your Christchurch in the past six (6) months?

Weekly

Monthly

Bi-Monthly

Quarterly

Once in six months

- c.** In the past six (6) months, when you received **advice (know-how)** from persons in other tourism/hospitality organisations in Christchurch, what type of information was received? (**tick all that apply**)

<b>Nature of Information</b>	<b>Advice Received</b>
Technical (information about performing specific tasks such as housekeeping or advertising)	<input type="checkbox"/>
Managerial (information about managing an organisation such as co-ordinating or budgeting)	<input type="checkbox"/>
Strategic (information about changing the direction of the organisation such as market research or visioning)	<input type="checkbox"/>
Local (information about people and businesses)	<input type="checkbox"/>

- d.** In the past six (6) months, which were the other tourism/hospitality organisations in Christchurch, where persons work that you received **advice (know-how)** from? (**please list these organisations**)

**Nature of Advice Received**

**Name of Persons' Organisations**

e. In the past six (6) months, please state some reasons as to why you received advice (know-how) from those persons and not from other persons working in other tourism/hospitality organisations in Christchurch.

**Nature of Advice Received**

**Explanations**

**SECTION 3 - REASONS FOR SOCIAL NETWORKING AND KNOWLEDGE SHARING**

11. If you are to consider the past six (6) months, why, why not and how you networked with your business colleagues in other tourism/hospitality organisations in Christchurch, how strongly do you agree with the following statements?

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neither Agree or Disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
Social networking is an important activity for me and so I network regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social networking has improved the decisions I make to a great extent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I view my network of personal business contacts as important relationships	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My network of social relations has contributed to my beliefs and attitudes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer an informal network for discussion of important business information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually know who networks with who in my industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Time constraint is the main reason I do not network with business colleagues in other organisations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social networking is the best means for me to know exactly what is happening in my industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The main benefit of my social networking is knowledge exchange	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I network with persons only in my industry since they best know the business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer to social network with known, reputable persons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neither Agree or Disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
I prefer to social network with persons in organisations nearest to my location	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer to social network with people in organisations similar to mine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social networking provides a great deal of social support for my organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer to discuss matters of importance to my organisation with my friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I relate to persons well and quickly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have never had a feeling of being misled by my personal business contacts in my industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
From my personal business contacts, I can rely on persons' verbal statements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My personal business contacts know my weaknesses and do not take advantage of me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can usually rely on my personal business contacts to keep their promises	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 12.** If you are to generally consider the past six (6) months, why, why not and how you shared your knowledge with persons in Christchurch, how strongly do you agree with the following statements?

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neither Agree or Disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
I believe I may improve the performance of my industry by sharing my knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am generally a quiet, reserved person, so I sometimes don't share my knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am more of an outgoing person and so there are many opportunities to share my knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I generally share knowledge with persons who share knowledge with me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is very costly, when I consider meeting and documentation costs, to share my knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I generally share my knowledge with people I know previously	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Social interaction is the usual way I share my knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am fearful to share my knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer to share my knowledge with persons of a higher social/economic status than myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually share knowledge with persons who I perceive to also be knowledgeable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neither Agree or Disagree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
I prefer sharing my knowledge in groups rather than one on one	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I share my knowledge with people who have similar interests to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get a good feeling inside, like giving a gift, when I share my knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel like I do not have the time to share my knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I rely on my personal business contacts for general information on the 'goings on' in my industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I share my knowledge with people who I want to improve my relationship with	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I generally have a positive feeling about sharing my knowledge with persons in my industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I generally share my knowledge once the opportunity presents itself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past six (6) months, I have shared my knowledge countless times	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I frequently use a computer to send e-mails and share my knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SECTION 4 - NETWORK MAPPING & CLASSIFICATION CATEGORIES**

13. Which of the following best describes your type of tourism/hospitality organisation?

- |                 |                          |                                   |                          |
|-----------------|--------------------------|-----------------------------------|--------------------------|
| Hotel           | <input type="checkbox"/> | Campsite                          | <input type="checkbox"/> |
| Guesthouse      | <input type="checkbox"/> | Tourist Attraction                | <input type="checkbox"/> |
| Bed & Breakfast | <input type="checkbox"/> | Government/tourism administration | <input type="checkbox"/> |
| Self-catering   | <input type="checkbox"/> | Other                             | <input type="checkbox"/> |
|                 |                          | (please specify) _____            |                          |

14. What is the first part of your post code? \_\_\_\_\_

15. Please state the total number of years you have worked in Christchurch:

\_\_\_\_\_

16. Please state the total number of years you have worked in the tourism/hospitality industry:

\_\_\_\_\_

17. Please indicate your gender: Male   
 Female

**18.** Please state your position in this organisation: \_\_\_\_\_

**19.** Please state your highest level of education: \_\_\_\_\_

**20.** Is there any other comment you will like make on your social networking and knowledge sharing activities in the tourism and hospitality industries in Christchurch?

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**THANK YOU FOR YOUR HELP**

## APPENDIX III: PRE-TEST ADMINISTERED QUESTIONNAIRE

QUESTIONNAIRE NO. \_\_\_\_\_



School of Services Management

This PhD research study seeks to establish whether information is shared between business people who work in different tourism businesses in Christchurch. In addition, if information is shared, the study seeks to establish why, how and what information is shared. The reason for conducting this research is to analyse and evaluate the processes, content and perceived outcomes associated with the sharing of knowledge between members of the tourism industry so as to make recommendations on how to enhance tourism business performance.

In the study the tourism industry is defined as consisting of the accommodation and attraction sectors of Christchurch and the relevant public sector bodies such as Christchurch Tourism Association. Information is defined as both facts and 'know how' relevant to the effective and efficient development and management of your business.

I would be grateful if you could take the time to complete this questionnaire. All responses and comments will be treated in the **strictest confidence**.

Thank you.

Michelle McLeod  
Postgraduate Research Student

### SECTION 1 – BUSINESS RELATIONSHIPS WITH INDIVIDUALS

*In this section the focus is on formal business relationships with individuals working in other tourism businesses within Christchurch. A formal business relationship is one where you are working together for a business reason such as promotion, purchasing of supplies etc.*

1. In the past 12 months, have you worked with people from other tourism businesses in Christchurch for business reasons?

1 Yes   
2 No

**If NO, go to Section 2**

2. What were the business reasons for working with these other tourism businesses? (*Please give details of up to 3 main reasons*)

Reason 1 \_\_\_\_\_  
Reason 2 \_\_\_\_\_  
Reason 3 \_\_\_\_\_

3. While working with these businesses, did you receive information from any of them that you consider was, or will be, important to the effective and efficient operation of your business?  
*(The information may or may not be specifically related to why you were working with them. Please tick one option)*

- 1. Yes, was/will be important
- 2. No  **If NO, go to Question 8**

4. When you received that important information, how was it provided to you? *(Please tick all that apply)*

- 1 Face to face conversation
- 2 Written-documents
- 3 Telephone
- 4 Electronic mail
- 5 Electronic discussion
- 6 Video conferencing

5. What types of important information did you receive from the other tourism businesses?

(a) Did you receive technical information (eg. housekeeping, advertising etc.)-

- 1 Yes
- 2 No

If YES, state the nature of the technical information received:

\_\_\_\_\_  
 \_\_\_\_\_

(b) Did you receive managerial information (eg. budgeting, co-ordinating etc.)-

- 1 Yes
- 2 No

If YES, state the nature of the managerial information received:

\_\_\_\_\_  
 \_\_\_\_\_

(c) Did you receive strategic information (eg. market research, visioning etc.)-

- 1 Yes
- 2 No

If YES, state the nature of the strategic information received:

\_\_\_\_\_  
 \_\_\_\_\_

(d) Did you receive local information (information about people and businesses)-

- 1 Yes
- 2 No

If YES, state the nature of the local information received:

\_\_\_\_\_  
 \_\_\_\_\_

6. What are the names of the other tourism businesses that were the basis of the answers you have just given?  
*(This question is being asked to allow the construction of network diagrams showing how businesses inter-relate when sharing information. No business will be identified in the final analysis.)*

Names of businesses:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**SECTION 2 – ONE TO ONE PERSONAL RELATIONSHIPS WITH INDIVIDUALS**

*In this section the focus is on your 'social' relationships with individuals working in other tourism businesses within Christchurch. Such relationships are informal and are not dependant on there being a business tie. These informal relationships can be close relationships, such as friendship, or be less close relationship, such as being a general acquaintance. Please do not include any relationship that specifically arises from being a member of a trade or professional association. However if the relationship arises from being a member of a charitable organisation, such as the Rotary Club, that can be included in your answers.*

7. In the past 12 months, have you talked about your business, or about the local tourism industry, with people who work in other businesses in the local tourism industry but with whom you were not in a business relationship?

1 Yes   
2 No

**If NO, go to Section 3**

8. What were the general reasons for talking with these other tourism businesses? (Please give details of up to 3 main reasons)

Reason 1 \_\_\_\_\_  
Reason 2 \_\_\_\_\_  
Reason 3 \_\_\_\_\_

9. When meeting with, or communicating with, these people, did you receive information from any of them that you consider was, or will be, important to the effective and efficient operation of your business? (The information may or may not be specifically related to why you were working with them. Please tick one option)

1. Yes, was/will be important   
2. No

**If NO, go to Question 13**

10. When you received that important information, how was it provided to you? (Please tick all that apply)

1 Face to face conversation   
2 Written-documents   
3 Telephone   
4 Electronic mail   
5 Electronic discussion   
6 Video conferencing

11. What types of important information did you receive from these friends/business acquaintances?

- (a) Did you receive technical information (eg. housekeeping, advertising etc.)-

1 Yes   
2 No

If YES, state the nature of the technical information received:

\_\_\_\_\_  
\_\_\_\_\_

- (b) Did you receive managerial information (eg. budgeting, co-ordinating etc.)-

1 Yes   
2 No

If YES, state the nature of the managerial information received:

\_\_\_\_\_  
\_\_\_\_\_

- (c) Did you receive strategic information (eg. market research, visioning etc.)-

1 Yes   
2 No

If YES, state the nature of the strategic information received:

\_\_\_\_\_  
\_\_\_\_\_

- (d) Did you receive local information (information about people and businesses)-
- 1 Yes
- 2 No
- If YES, state the nature of the local information received:

\_\_\_\_\_

\_\_\_\_\_

12. What are the names of the tourism businesses that the people, about whom you have just given answers, worked in or owned?  
(This question is being asked to allow the construction of network diagrams showing how businesses inter-relate when sharing information. No business will be identified in the final analysis.)

Names of businesses:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### SECTION 3 – MEMBERSHIP OF A TRADE GROUP/ASSOCIATION

*In this section the focus is on the information you might have received as a result of being a member of a trade association within Christchurch such as, for example, an hoteliers association. This information could have arisen directly from the formal communication processes of the association or informal conversations during association meetings.*

13. In the past 12 months, have you been a member of, and did you attend meetings of, a trade association relevant to your business?

- 1 Yes – member but not attended
- 2 Yes – member and attended
- 3 No  **If NO, go to Section 4**

14. What were the business reasons for attending, or what were the reasons for you not attending, association meetings? (Please give details of up to 3 main reasons)

Reason 1 \_\_\_\_\_

Reason 2 \_\_\_\_\_

Reason 3 \_\_\_\_\_

15. Have the associations, of which you are a member, provided you with any information over the past 12 months that you consider was, or will be, important to the effective and efficient operation of your business?  
(Please tick one option)

1. Yes, was/will be important
2. No  **If NO, go to Question 8**

16. When the association provided that important information how was it provided to you?  
(Please tick all that apply)

- 1 Face to face
- 2 Written-documents
- 3 Telephone
- 4 Electronic mail
- 5 Electronic discussion
- 6 Video conferencing

17. What types of important information did you receive from the associations?
- (a) Did you receive technical information (eg. housekeeping, advertising etc.)-
- 1 Yes
- 2 No
- If YES, state the nature of the technical information received:
- \_\_\_\_\_
- \_\_\_\_\_
- (b) Did you receive managerial information (eg. budgeting, co-ordinating etc.)-
- 1 Yes
- 2 No
- If YES, state the nature of the managerial information received:
- \_\_\_\_\_
- \_\_\_\_\_
- (c) Did you receive strategic information (eg. market research, visioning etc.)-
- 1 Yes
- 2 No
- If YES, state the nature of the strategic information received:
- \_\_\_\_\_
- \_\_\_\_\_
- (d) Did you receive local information (information about people and businesses)-
- 1 Yes
- 2 No
- If YES, state the nature of the local information received:
- \_\_\_\_\_
- \_\_\_\_\_

18. What are the names of the associations about which you have just given answers?  
*(This question is being asked to allow the construction of network diagrams showing how businesses inter-relate when sharing information. No business will be identified in the final analysis.)*

Names of Associations:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**If you have not attended any meetings of the associations of which you are a member please go to Section 4**

19. Excluding the formal component of the association meetings you attended in the last 12 months, did you receive any other information from any person there that you consider was, or will be, important to the effective and efficient operation of your business?  
*(Please exclude any information that was given during the 'formal' component of the meetings. Please tick one option)*

1. Yes, was/will be important
2. No  **If NO, go to Section 4**

20. When you received that important information, how was it provided to you? *(Please tick all that apply)*

- 1 Face to face conversation
- 2 Written-documents
- 3 Telephone
- 4 Electronic mail
- 5 Electronic discussion
- 6 Video conferencing



21. What types of important information did you receive as a result of informal conversations during the meetings (either at the meeting or as a result of the conversation)?

(a) Did you receive technical information (eg. housekeeping, advertising etc.)-

- 1 Yes
- 2 No

If YES, state the nature of the technical information received:

\_\_\_\_\_

\_\_\_\_\_

(b) Did you receive managerial information (eg. budgeting, co-ordinating etc.)-

- 1 Yes
- 2 No

If YES, state the nature of the managerial information received:

\_\_\_\_\_

\_\_\_\_\_

(c) Did you receive strategic information (eg. market research, visioning etc.)-

- 1 Yes
- 2 No

If YES, state the nature of the strategic information received:

\_\_\_\_\_

\_\_\_\_\_

(d) Did you receive local information (information about people and businesses)-

- 1 Yes
- 2 No

If YES, state the nature of the local information received:

\_\_\_\_\_

\_\_\_\_\_

22. What are the names of the tourism businesses that the people you received information from either worked in or owned and were the basis of the answers you have just given?

*(This question is being asked to allow the construction of network diagrams showing how businesses inter-relate when sharing information. No business will be identified in the final analysis.)*

Names of businesses:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**SECTION 4 – ATTITUDES TOWARDS BUSINESS AND PERSONAL NETWORKS**

*This section focuses on your attitudes towards, and expectations of, business and personal networks, as covered in the previous sections. In particular the focus is on the relationship between these networks and the effectiveness and efficiency of your business.*

23. Considering your business and personal networks, either with individuals or as part of an association, in the hospitality and tourism industries, how strongly do you agree with each of the following statements? *(For each statement, please circle your answer)*

As a business person social networking is an important activity for me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
Social networking has improved the decisions I have made in the past to a great extent.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I usually know who networks with whom.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I view my network of business contacts as important relationships for the success of my business.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I do have a time constraint, but this does not stop me from social networking.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

My network of social relations has contributed to my beliefs and attitudes about how to operate my business.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
Social networking is the best means for me to know exactly what is happening to assist me in operating my business.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
The main benefit of my social networking is information receiving.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I network with persons only in my industry since they best know the business.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer to social network with reputable persons.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer to social network with persons working in businesses nearest to my location.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer to social network with persons in businesses similar to mine.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
Social networking provides a great deal of social support for me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer to discuss matters of importance to my business with my friends rather than my competitors.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I rely on my social network for general information on the 'goings on' to assist me in operating my business.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I sometimes apply best practices that I learn from my social network.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
My social network of persons in other businesses knows my weaknesses and do not take advantage of me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I can usually rely on my social network of persons in other businesses to keep their promises.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I have never had a feeling of being misled by my social network of persons in other businesses in my industry.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
From my social network of persons in other businesses, I can rely on persons' verbal statements.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

### SECTION 5 – ATTITUDES TOWARDS SHARING INFORMATION

*This section focuses on your attitudes towards, and expectations of, sharing information with other people in the tourism industry of Christchurch, as covered in the previous sections. In particular the focus is on the relationship between information sharing and the effectiveness and efficiency of your business.*

24. Considering the idea of sharing information with individuals in the tourism industry of Christchurch, how strongly do you agree with each of the following statements? (For each statement, please circle your answer)

I firmly believe I may improve the performance of my business by sharing my information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I readily share my business information with my competitors.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
There are many opportunities for me to receive important business information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
Social interaction is the usual way I share my business information with persons in other hospitality and tourism businesses.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I generally share information with persons who share information with me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
It is very costly, when I consider meeting costs, to share information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
The value obtained from sharing information far outweighs any cost.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I am fearful to share information with my competitors.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I generally share information with people I know previously.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer to share information with persons of a higher social/economic status than myself.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I usually share information with persons who I perceive to also be knowledgeable.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I share information with people who have similar interests to me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I get a good feeling inside, like giving a gift, when I share information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I feel like I do not have the time to share information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I generally do not like sharing information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
Sharing information has not benefited me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer sharing information in groups.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I usually share information on a one to one basis.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I share information with people with whom I want to improve my relationship.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I generally have a positive feeling about sharing information with persons in other businesses.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I generally share information once the opportunity presents itself.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

I sometimes make opportunities to share information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I frequently use a computer to send e-mails and share information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer sharing information verbally.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

## SECTION 6 – MY PERSONALITY AND IDENTITY

*This section focuses on how you see yourself. Your personality and identity may affect your attitudes toward and extent to which, you both network with other business people and share information with them.*

25. How strongly do you agree with each of the following statements about yourself?  
(Please circle your answer)

I relate to other people well and quickly.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I am generally a quiet, reserved person.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I am more of an outgoing person.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
Being different to other people in my groups is important to me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I like to distinguish myself from other people in my social groups.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
My personal identity independent from others is important to me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I often do "my own thing".	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
In general, belonging to social groups is an important part of my self-image.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I identify strongly with people because they are in one or more of my social groups.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
My membership in social groups is not central to how I feel about myself.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I rely on myself most of the time.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I'd rather depend on myself than others.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
If the groups I belong to are slowing me down, it is better to work alone.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
The social groups I belong to are unimportant to my sense of what kind of a person I am.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

**SECTION 7 - CLASSIFICATION CATEGORIES**

*This section asks you for a few details by which we can classify and analyse the results.*

*None of this information will be used in such a way that you can be identified.*

26. Which of the following best describes your type of tourism/hospitality business?  
(Please tick only one)

- |   |                                   |                          |
|---|-----------------------------------|--------------------------|
| 1 | Hotel                             | <input type="checkbox"/> |
| 2 | Campsite                          | <input type="checkbox"/> |
| 3 | Guesthouse                        | <input type="checkbox"/> |
| 4 | Bed & Breakfast                   | <input type="checkbox"/> |
| 5 | Self-catering                     | <input type="checkbox"/> |
| 6 | Tourist Attraction                | <input type="checkbox"/> |
| 7 | Government/tourism administration | <input type="checkbox"/> |
| 8 | Other (please specify) _____      | <input type="checkbox"/> |

27. In the past year have you been a member of any of the following organisations/businesses?  
(Please tick all that apply)

- |   |  |                          |
|---|--|--------------------------|
| 1 | Private sector tourism/hospitality association | <input type="checkbox"/> |
| 2 | Public sector tourism/hospitality board        | <input type="checkbox"/> |
| 3 | Public/private sector partnership              | <input type="checkbox"/> |
| 4 | Tourism/hospitality voluntary business         | <input type="checkbox"/> |

28. What is the first part of your post code?  
Post Code \_\_\_\_\_

29. Please state the total number of years you have worked in Christchurch:  
Number of years \_\_\_\_\_

30. Please state the total number of years you have worked in the tourism/hospitality industry:  
Number of years \_\_\_\_\_

31. Please indicate your gender:

- |   |        |                          |
|---|--------|--------------------------|
| 1 | Male   | <input type="checkbox"/> |
| 2 | Female | <input type="checkbox"/> |

32. Please state your position in this business:  
Position in business \_\_\_\_\_

33. Please state your highest level of education:  
Highest level of education \_\_\_\_\_

**SECTION 8 – ANY ADDITIONAL COMMENTS**

34. Is there any other comment you would like make on your social networking and information sharing activities in the tourism and hospitality industries in Christchurch?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**THANK YOU FOR YOUR HELP**

**APPENDIX IV: FINAL MAIN SURVEY QUESTIONNAIRE AND LETTER SAMPLES**  
 QUESTIONNAIRE IDENTIFICATION NO. \_\_\_\_\_



School of Services Management

This PhD research study seeks to establish whether information is shared between business people who work in different tourism businesses in the Bournemouth, Poole and Christchurch conurbation. In addition, if information is shared, the study seeks to establish why, how and what information is shared. The reason for conducting this research is to analyse and evaluate the processes, content and perceived outcomes associated with the sharing of information between members of the tourism industry so as to make recommendations on how to enhance tourism business performance.

In the study the tourism industry is defined as consisting of the accommodation and attraction sectors of the Bournemouth, Poole and Christchurch conurbation and the relevant public sector bodies such as the Bournemouth Tourism Department and the Poole and Christchurch equivalent.

Information is defined as both facts and 'know how' relevant to the effective and efficient development and management of your business.

I would be grateful if you could take the time to complete this questionnaire. All responses and comments will be treated in the **strictest confidence**.

Thank you.

Michelle McLeod  
 Postgraduate Research Student

**SECTION 1 – BUSINESS RELATIONSHIPS WITH INDIVIDUALS**

*In this section the focus is on formal business relationships with individuals working in other tourism businesses within the Bournemouth, Poole and Christchurch conurbation. A formal business relationship is one where you are working together for a business reason such as promotion, purchasing of supplies etc.*

1. In the past 12 months, have you worked with people from other tourism businesses in the Bournemouth, Poole and Christchurch conurbation for business reasons?

1 Yes   
 2 No

**If NO, go to Section 2**

2. What were the business reasons for working with these other tourism businesses? *(Please give details of up to 3 main reasons in order of importance)*

Reason 1 \_\_\_\_\_  
Reason 2 \_\_\_\_\_  
Reason 3 \_\_\_\_\_

3. While working with these businesses, did you receive information from any of them that you consider was, or will be, important to the effective and efficient operation of your business?  
*(The information may or may not be specifically related to why you were working with them. Please tick one option)*

1. Yes, was/will be important   
2. No  **If NO, go to Question 6**

4. When you received that important information, how was it provided to you? *(Please tick all that apply)*

1 Face to face conversation   
2 Written-documents   
3 Telephone   
4 Electronic mail   
5 Electronic discussion   
6 Video conferencing

5. What types of important information did you receive from the other tourism businesses?

(a) Did you receive technical information (eg. housekeeping, advertising etc.)-

1 Yes   
2 No

If YES, please state nature of the technical information received:

\_\_\_\_\_  
\_\_\_\_\_

(b) Did you receive managerial information (eg. budgeting, co-ordinating etc.)-

1 Yes   
2 No

If YES, please state nature of the managerial information received:

\_\_\_\_\_  
\_\_\_\_\_

(c) Did you receive strategic information (eg. market research, visioning etc.)-

1 Yes   
2 No

If YES, please state nature of the strategic information received:

\_\_\_\_\_  
\_\_\_\_\_

(d) Did you receive local information (information about people and businesses)-

1 Yes   
2 No

If YES, please state nature of the local information received:

\_\_\_\_\_  
\_\_\_\_\_

6. What are the names of the other tourism businesses that were the basis of the answers you have just given?  
*(This question is being asked to allow the construction of network diagrams showing how businesses inter-relate when sharing information. No business will be identified in the final analysis.)*

Names of businesses:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. What are the names of any other tourism businesses you received information from over the past 12 months, and with which you have worked, that were not named in question 6 above?  
(This question is being asked to allow the construction of network diagrams showing how businesses inter-relate when sharing information. No business will be identified in the final analysis.)

Names of businesses:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## SECTION 2 – ONE TO ONE PERSONAL RELATIONSHIPS WITH INDIVIDUALS

*In this section the focus is on your 'social' relationships with individuals working in other tourism businesses within the Bournemouth, Poole and Christchurch conurbation. Such relationships are informal and are not dependant on there being a business tie. These informal relationships can be close relationships, such as friendship, or be less close relationship, such as being a general acquaintance. Please do not include any relationship that specifically arises from being a member of a trade or professional association. However if the relationship arises from being a member of a charitable organisation, such as the Rotary Club, that can be included in your answers.*

8. In the past 12 months, have you talked about your business, or about the local tourism industry, with people who work in other businesses in the local tourism industry but with whom you were not in a business relationship?

1 Yes

2 No

**If NO, go to Section 3**

9. What were the general reasons for your social relationships with persons in these other tourism businesses?  
(Please give details of up to 3 main reasons in order of importance)

Reason 1 \_\_\_\_\_

Reason 2 \_\_\_\_\_

Reason 3 \_\_\_\_\_

10. When meeting with, or communicating with, these people, did you receive information from any of them that you consider was, or will be, important to the effective and efficient operation of your business?  
(The information may or may not be specifically related to why you were working with them. Please tick one option)

1. Yes, was/will be important

2. No

**If NO, go to Question 13**

11. When you received that important information, how was it provided to you? (Please tick all that apply)

1 Face to face conversation

2 Written-documents

3 Telephone

4 Electronic mail

5 Electronic discussion

6 Video conferencing

12. What types of important information did you receive from these friends/business acquaintances?  
(a) Did you receive technical information (eg. housekeeping, advertising etc.)-

1 Yes

2 No

If YES, please state nature of the technical information received:

\_\_\_\_\_

\_\_\_\_\_



- (b) Did you receive managerial information (eg. budgeting, co-ordinating etc.)-
- 1 Yes
- 2 No
- If YES, please state nature of the managerial information received:

\_\_\_\_\_

\_\_\_\_\_

- (c) Did you receive strategic information (eg. market research, visioning etc.)-
- 1 Yes
- 2 No
- If YES, please state nature of the strategic information received:

\_\_\_\_\_

\_\_\_\_\_

- (d) Did you receive local information (information about people and businesses)-
- 1 Yes
- 2 No
- If YES, please state nature of the local information received:

\_\_\_\_\_

\_\_\_\_\_

13. What are the names of the tourism businesses that the people, about whom you have just given answers, worked in or owned?  
*(This question is being asked to allow the construction of network diagrams showing how businesses inter-relate when sharing information. No business will be identified in the final analysis.)*

Names of businesses:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

14. What are the names of any other tourism businesses you received information from persons on a one on one basis over the past 12 months that were not named in question 13?  
*(This question is being asked to allow the construction of network diagrams showing how businesses inter-relate when sharing information. No business will be identified in the final analysis.)*

Names of businesses:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**SECTION 3 – MEMBERSHIP OF A TRADE GROUP/ASSOCIATION**

*In this section the focus is on the information you might have received as a result of being a member of a trade association within the Bournemouth, Poole and Christchurch conurbation such as, for example, an hoteliers association. This information could have arisen directly from the formal communication processes of the association or informal conversations during association meetings.*

15. In the past 12 months, have you been a member of, and did you attend meetings of, a trade association relevant to your business? *(Please tick one option)*
- 1 Yes – member but not attended
- 2 Yes – member and attended
- 3 No  **If NO, go to Section 4**

16. What were the business reasons for attending, or what were the reasons for you not attending, association meetings? *(Please give details of up to 3 main reasons in order of importance)*

Reason 1 \_\_\_\_\_

Reason 2 \_\_\_\_\_

Reason 3 \_\_\_\_\_

17. Have the associations, of which you are a member, provided you with any information over the past 12 months that you consider was, or will be, important to the effective and efficient operation of your business?  
(Please tick one option)

- 1. Yes, was/will be important
- 2. No  **If NO, go to Question 20**

18. When the association provided that important information how was it provided to you?  
(Please tick all that apply)

- 1 Face to face conversation
- 2 Written-documents
- 3 Telephone
- 4 Electronic mail
- 5 Electronic discussion
- 6 Video conferencing

19. What types of important information did you receive from the associations?

(a) Did you receive technical information (eg. housekeeping, advertising etc.)-

- 1 Yes
- 2 No

If YES, please state nature of the technical information received:

\_\_\_\_\_  
\_\_\_\_\_

(b) Did you receive managerial information (eg. budgeting, co-ordinating etc.)-

- 1 Yes
- 2 No

If YES, please state nature of the managerial information received:

\_\_\_\_\_  
\_\_\_\_\_

(c) Did you receive strategic information (eg. market research, visioning etc.)-

- 1 Yes
- 2 No

If YES, please state nature of the strategic information received:

\_\_\_\_\_  
\_\_\_\_\_

(d) Did you receive local information (information about people and businesses)-

- 1 Yes
- 2 No

If YES, please state nature of the local information received:

\_\_\_\_\_  
\_\_\_\_\_

20. What are the names of the associations about which you have just given answers?

(This question is being asked to allow the construction of network diagrams showing how businesses and associations inter-relate when sharing information. No business will be identified in the final analysis.)

Names of Associations:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

21. If, in the past 12 months, you received information during the formal content of your association meetings from other tourism businesses, what are the names of those businesses? These persons providing the information must also be members of your association.  
(This question is being asked to allow the construction of network diagrams showing how businesses and associations inter-relate when sharing information. No business will be identified in the final analysis.)

Names of businesses:

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**If you have not attended any meetings of the associations of which  
you are a member please go to Section 4**

22. Excluding the formal component of the association meetings you attended in the past 12 months, did you receive any other information from any person there that you consider was, or will be, important to the effective and efficient operation of your business?  
(Please exclude any information that was given during the 'formal' component of the meetings. Please tick one option)

1. Yes, was/will be important   
 2. No  **If NO, go to Section 4**

23. When you received that important information, how was it provided to you? (Please tick all that apply)

- 1 Face to face conversation   
 2 Written-documents   
 3 Telephone   
 4 Electronic mail   
 5 Electronic discussion   
 6 Video conferencing

24. What types of important information did you receive as a result of informal conversations during the meetings (either at the meeting or as a result of the conversation)?

- (a) Did you receive technical information (eg. housekeeping, advertising etc.)-  
 1 Yes   
 2 No   
 If YES, please state nature of the technical information received:

\_\_\_\_\_  
 \_\_\_\_\_

- (b) Did you receive managerial information (eg. budgeting, co-ordinating etc.)-  
 1 Yes   
 2 No   
 If YES, please state nature of the managerial information received:

\_\_\_\_\_  
 \_\_\_\_\_

- (c) Did you receive strategic information (eg. market research, visioning etc.)-  
 1 Yes   
 2 No   
 If YES, please state nature of the strategic information received:

\_\_\_\_\_  
 \_\_\_\_\_

- (d) Did you receive local information (information about people and businesses)-  
 1 Yes   
 2 No   
 If YES, please state nature of the local information received:

\_\_\_\_\_

\_\_\_\_\_

25. What are the names of the tourism businesses that the people you received information from either worked in or owned and were the basis of the answers you have just given?  
*(This question is being asked to allow the construction of network diagrams showing how businesses inter-relate when sharing information. No business will be identified in the final analysis.)*

Names of businesses:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

26. If, in the past 12 months, you talked to other people informally at the meetings of associations to which you belong, in addition to those you have detailed in question 25, what are the names of the businesses which they either owned or worked in? These persons must also be members of your association.  
*(This question is being asked to allow the construction of network diagrams showing how businesses inter-relate when sharing information. No business will be identified in the final analysis.)*

Names of businesses:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**SECTION 4 – ATTITUDES TOWARDS BUSINESS AND PERSONAL NETWORKS**

*This section focuses on your attitudes towards, and expectations of, business and personal networks, as covered in the previous sections. In particular the focus is on the relationship between these networks and the effectiveness and efficiency of your business.*

27. Considering your business and personal networks, either with individuals or as part of an association, in the hospitality and tourism industries, how strongly do you agree with each of the following statements? *(For each statement, please circle your answer)*

As a business person social networking is an important activity for me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I usually know who networks with whom.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I view my network of business contacts as important relationships for the success of my business.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I do have a time constraint, but this does not stop me from social networking.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I network with persons only in my industry since they best know the business.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer to social network with reputable persons.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer to social network with persons working in businesses nearest to my location.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer to social network with persons in businesses similar to mine.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer to discuss matters of importance to my business with my friends rather than my competitors.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
My social network of persons in other businesses knows my weaknesses and do not take advantage of me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I can usually rely on my social network of persons in other businesses to keep their promises.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

I have never had a feeling of being misled by my social network of persons in other businesses in my industry.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
From my social network of persons in other businesses, I can rely on persons' verbal statements.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

28. Considering the outcomes of your business and personal networks, either with individuals or as part of an association, in the hospitality and tourism industries, how strongly do you agree with each of the following statements? (For each statement, please circle your answer)

Social networking has improved the decisions I have made in the past to a great extent.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
My network of social relations has contributed to my beliefs and attitudes about how to operate my business.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
Social networking is the best means for me to know exactly what is happening to assist me in operating my business.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
The main benefit of my social networking is information receiving.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
Social networking provides a great deal of social support for me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I rely on my social network for general information on the 'goings on' to assist me in operating my business	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I sometimes apply best practices that I learn from my social network.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

**SECTION 5 – ATTITUDES TOWARDS SHARING INFORMATION**

*This section focuses on your attitudes towards, and expectations of, sharing information with other people in the tourism industry of the Bournemouth, Poole and Christchurch conurbation, as covered in the previous sections. In particular the focus is on the relationship between information sharing and the effectiveness and efficiency of your business.*

29. Considering the idea of sharing information with individuals in the tourism industry of the Bournemouth, Poole and Christchurch conurbation, how strongly do you agree with each of the following statements? (For each statement, please circle your answer)

I readily share my business information with my competitors.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
There are many opportunities for me to receive important business information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I am fearful to share information with my competitors.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I generally share information with people I know previously.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer to share information with persons of a higher social/economic status than myself.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I usually share information with persons who I perceive to also be knowledgeable.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I share information with people who have similar interests to me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I feel like I do not have the time to share information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer sharing information in groups.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

I usually share information on a one to one basis.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I share information with people with whom I want to improve my relationship.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I generally share information once the opportunity presents itself.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I sometimes make opportunities to share information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I frequently use a computer to send e-mails and share information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I prefer sharing information verbally.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

30. Considering how and why you shared information with individuals in the tourism industry of the Bournemouth, Poole and Christchurch conurbation, how strongly do you agree with each of the following statements? (For each statement, please circle your answer)

I firmly believe I may improve the performance of my business by sharing my information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I sometimes receive important business information by chance.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
Social interaction is the usual way I share my business information with persons in other hospitality and tourism businesses.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I generally share information with persons who share information with me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
It is very costly, when I consider meeting costs, to share information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
The value obtained from sharing information far outweighs any cost.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I get a good feeling inside, like giving a gift, when I share information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I generally do not like sharing information.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
Sharing information has not benefited me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I generally have a positive feeling about sharing information with persons in other businesses.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

**SECTION 6 – MY PERSONALITY AND IDENTITY**

*This section focuses on how you see yourself. Your personality and identity may affect your attitudes toward, and the extent to which, you both network with other business people and share information with them.*

**31.** How strongly do you agree with each of the following statements about yourself?  
(Please circle your answer)

I relate to other people well and quickly.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I am generally a quiet, reserved person.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I am more of an outgoing person.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
Being different to other people in my groups is important to me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I like to distinguish myself from other people in my social groups.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
My personal identity independent from others is important to me.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I often do “my own thing”.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
In general, belonging to social groups is an important part of my self-image.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I identify strongly with people because they are in one or more of my social groups.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
My membership in social groups is not central to how I feel about myself.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I rely on myself most of the time.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
I’d rather depend on myself than others.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
If the groups I belong to are slowing me down, it is better to work alone.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE
The social groups I belong to are unimportant to my sense of what kind of a person I am.	STRONGLY AGREE	AGREE	NEITHER AGREE OR DISAGREE	DISAGREE	STRONGLY DISAGREE

**SECTION 7 - CLASSIFICATION CATEGORIES**

*This section asks you for a few details by which we can classify and analyse the results. None of this information will be used in such a way that you can be identified.*

**32.** Which of the following best describes your type of tourism/hospitality business?  
(Please tick only one)

- 1 Hotel
- 2 Campsite
- 3 Guesthouse
- 4 Bed & Breakfast
- 5 Self-catering
- 6 Tourist Attraction
- 7 Government/tourism administration
- 8 Other (please specify) \_\_\_\_\_

**33.** In the past 12 months have you been a member of any of the following organisations/businesses?  
(Please tick all that apply)

- 1 Private sector tourism/hospitality association
- 2 Public sector tourism/hospitality board
- 3 Public/private sector partnership
- 4 Tourism/hospitality voluntary business

**34.** What is the first part of your post code?  
Post Code \_\_\_\_\_

35. Please state the total number of years you have worked in the Bournemouth, Poole and Christchurch conurbation:

Number of years \_\_\_\_\_

36. Please state the total number of years you have worked in the tourism/hospitality industry:

Number of years \_\_\_\_\_

37. Please indicate your gender:

- 1 Male
- 2 Female

38. Please state your position in this business:

Position in business \_\_\_\_\_

39. Please state your highest level of education:

Highest level of education \_\_\_\_\_

**SECTION 8 – ANY ADDITIONAL COMMENTS**

40. Is there any other comment you would like make about your social networking and information sharing activities in the tourism and hospitality industries of the Bournemouth, Poole and Christchurch conurbation?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**THANK YOU FOR YOUR HELP**



**Drop and Collect Pre-notification Letter (sample)**

13<sup>th</sup> June 2008

«Contact\_Person»  
«Name»  
«Address\_Line\_1»  
«Address\_Line\_2»  
«Post\_Town»  
«Post\_Code»

Dear «Contact\_Person»

I am writing to ask you if you would be prepared to spend a short time answering a questionnaire which forms part of my PhD research being undertaken at Bournemouth University under the supervision of Professor Roger Vaughan and Dr. Jonathan Edwards.

The research concerns social networks and information sharing in the tourism and hospitality industries. This study will examine the existence of social networks and the extent to which, participants exchange information and knowledge.

I hope to visit your establishment in the near future to hand deliver the questionnaire personally.

Thank you for your consideration.

Yours sincerely

---

Michelle McLeod  
Postgraduate Research Student  
mmcleod@bournemouth.ac.uk

**Cover Letter (sample)**

16<sup>th</sup> June 2008

«Contact\_Person»  
«Name»  
«Address\_Line\_1»  
«Address\_Line\_2»  
«Post\_Code»

Dear «Contact\_Person»

***Re: Bournemouth University questionnaire on social networks and knowledge sharing in the tourism and hospitality industries***

I am writing to ask you if you would spend a short time answering a questionnaire which I am using as an integral part of my research being undertaken at Bournemouth University under the supervision of Professor Roger Vaughan and Dr. Jonathan Edwards. The research concerns social networks and information sharing in the tourism and hospitality industries. This PhD study will examine the existence of social networks and the extent to which participants share information. The study's focus includes: If information is shared, what information is shared and whether the shared information is useful to the success of your business.

Your organisation is one located in the tourism and hospitality industries of the Bournemouth, Poole and Christchurch conurbation. In order that all likely social networks of tourism/hospitality businesses are covered, it is important and desirable that each questionnaire be completed and returned. It is also appropriate that we obtain the views of the owner or senior manager.

Please be assured of complete confidentiality. The questionnaire has an identification number for mailing and network mapping purposes only. This is so that I may check your business name off of the mailing list when your questionnaire is returned. Please do not write your name or your business's name on the questionnaire.

The results of this study will be made available. You may receive a summary of results by writing your name and address on the back of the return envelope. If you have any questions, please feel free to call 01(202)965387 or write to [mmcleod@bournemouth.ac.uk](mailto:mmcleod@bournemouth.ac.uk).

Thank you for your help.

Yours sincerely,

Michelle McLeod  
Postgraduate Research Student

**Follow-up Letter (sample)**

3<sup>rd</sup> July 2008

«Contact\_Person»  
«Name»  
«Address\_Line\_1»  
«Address\_Line\_2»  
«Post\_Code»

Dear «Contact\_Person»

***Re: Bournemouth University questionnaire on social networks and  
information sharing in the tourism and hospitality industries***

Recently a questionnaire was sent seeking your views concerning social networks and information sharing in the tourism and hospitality industries. As of today I have not yet received your completed questionnaire.

The number of questionnaires returned is very encouraging. But whether we will be able to describe accurately how information is shared between business people who work in different tourism businesses and what information is shared ultimately depends upon the level of response received from the industry not least because those persons who may not have responded may hold different views and the study will only be accurate and representative if everyone's views are included.

Please be assured that while your reply would be very helpful in enabling me to gain an understanding of social networking the confidentiality of all responses will be fully respected.

I enclose a second copy of the questionnaire and a self-addressed stamped envelope should you have misplaced the original.

If you have any questions you may contact me by sending an e-mail to [mmcleod@bournemouth.ac.uk](mailto:mmcleod@bournemouth.ac.uk).

Your contribution to the success of this study will be appreciated greatly.

Yours sincerely,

Michelle McLeod  
Postgraduate Research Student

**APPENDIX V: REASONS FOR SOCIAL NETWORKING (DETAILS)****KEY: O – Owner; M - Manager**

<b>Individual Business Network</b>								
REASON 1			REASON 2			REASON 3		
	O	M		O	M		O	M
<b>Marketing</b>								
Advertising	6	2	Market reach of agent	1	0	Promoting our services	0	1
Advertising - star rating	1	0	Promoting Bournemouth	1	0	Shared advertising	1	0
Increase in bookings	1	0	Press trip	0	1	Public awareness	0	1
Generating sales and hotel business	1	1	To increase awareness of guesthouse	1	0	Sales	0	1
Promotion	0	4	Advertising	1	0	Advertising	0	1
Poole Tourism - for attracting people to the area	1	0	Promotion of special event	1	0	Wedding promotion	0	1
Increasing guest levels and business	1	0	Mutual promotion	1	0			
To increase visitor numbers	2	1	Promotion	0	1			
Marketing conurbation area	1	2	Increase donations	0	1			
Promote Museum - No. visitors	0	1	Local Awareness	0	1			
For customer satisfaction	0	1	Gaining business	0	1			
Marketing	1	4	Increase brand awareness	0	1			
Driving more demand	0	1	To keep good relations with other attractions	0	1			
Boscombe Marketing	1	0	Package deals	0	1			
Joint promotion to increase flow to the Quay	0	1	Website with tourist board	0	1			
Gain awareness for our hotel	0	1	Mutually beneficial advertising	0	1			
Advertising with boat cruise	0	1						
Advertising and marketing at head office	0	1						
Promote Bournemouth	0	1						
Increased profile	0	1						
<b>Business Development</b>								
Absentee landlord living elsewhere in the UK	1	0	Staff issues	0	1	Security	0	2
Hotel tours	1	0	Theatres	1	0	Training	0	1
Part of the National campaigns working group and BAHA	0	1	To enlist more venues and widen our membership offering	0	1	Best practice within own company	0	1
Forward planning to 2026 (Local Development Framework)	0	1	Different hotel guests	0	1	Maintenance	1	0
Maintain/develop business relationship	0	2	Shared assistance in stock	0	1	Statistics and Security	0	1
To increase visitor numbers	0	1	Downfall of Southbourne	1	0	Meet friend/relationships in community	0	1
Event organisation	0	1	Purchasing	0	1	Training	0	1
Planning Application	1	0	Improving services and facilities for guests	1	0	Increase our potential business	0	1
Sharing of costs	0	1	Bringing together of tourism	1	0			

<b>Individual Business Network</b>								
REASON 1			REASON 2			REASON 3		
	O	M		O	M		O	M
<b>Business Development</b>								
Agents for our letting business	1	0	Type of visitors - schools	0	1			
Purchasing	1	0	Sharing of skills	0	1			
Training	1	1	Increase business	1	0			
Business development	0	1	Security	1	0			
Increase football	0	1	Relationship building	0	1			
The flat got let	1	0	Agency Costs	0	1			
Increase revenue	0	1	Festival	0	1			
Build relationships	0	1	Audience development	0	1			
Tourism purposes	1	1	Offering other services	0	1			
			Gaining business	0	1			
			To make more money	1	1			
			Increase business	0	2			
			Business needs	0	1			
			Part closure of other hotel	1	0			
			Enhance quality of visitor holiday with other attractions	0	1			
			Supplies	0	1			
			Opening new brassiere	0	1			
<b>Information Gathering and Sharing</b>								
Tourist information - to promote business	1	0	Help guidance	1	0	Discussion-business suppliers	1	0
Discuss lack of business	1	0	Advice	2	0	Information	0	5
Sharing information at "Tourism Management Board" meetings	0	1	Sharing of visitor information to avoid bad debt	0	1	General conversation	1	0
Information sharing	1	1	Other tourism businesses for web links	1	0	Share knowledge and experiences	1	0
Gathering information	0	1	Business comparisons	0	1	Intelligence	1	0
To help other hotels	1	0	Networking	1	0	Networking	0	1
Knowledge	0	1	To keep up with local activities	0	1	Lobbying	0	1
			Trends	0	1	To assist visitors with their holidays	0	1
			Passing on tips & information	1	0			
			General feedback	1	0			
			Share Information	1	0			
			Sharing best practice	0	1			
			Keeping up to date with policies	1	0			
			To offer up to date tourist information	0	1			
			Share ideas	0	1			
			See how other places are doing	0	1			
			Poole Tourism Management Board	0	1			
			Get to know everyone	0	1			

<b>Individual Business Network</b>								
REASON 1			REASON 2			REASON 3		
	O	M		O	M		O	M
<b>Accommodation Sharing</b>								
We pass business on and business referral	6	6	Shared assistance in stock	1		Highest possible level of occupancy	1	
Tourist Board giving us business	1	0	Exchange of clients	1		Accommodation	1	
Try to place customers else where	1	0				Helping guests if we were full	1	
Overbooking	1	0				Mutual bookings	1	
Reservations	1	0						
Sharing of availability	1	0						
Tourist office bookings	0	1						
To help fill vacant accommodation	1	0						
Adjusting bookings due to volume	1	0						
<b>Socialisation</b>								
Networking	1	3	Networking	1		Previous good working relationship	0	1
Tourist Board and Church	1	0	Contact	1		Networking	0	1
To help each other	1	0				Because we like them	0	1
Other hotels	0	1				Meet friend/relationships in community	0	1
Neighbouring B&B	1	0				Can we work together	0	1
						To build network of tourism business partners	0	1
						Tour Company	1	0
<b>Pricing</b>								
			Pricing	1				

<b>Individual Personal Network</b>								
REASON 1			REASON 2			REASON 3		
	O	M		O	M		O	M
<b>Marketing</b>								
Business trends	0	1	Market Trends	1	0	Promotional Ladies/Masonic Festivals to Bournemouth		
Help people set up websites	1	0	Sales activity	0	2	Public awareness		1
Deciding how/where to advertise	1	0	Market Research	1	0			1
Promoting Bournemouth Air Show	0	1	Website for Highcliffe	1	0			
Marketing	0	1	Increase donations	0	1			
			Promotion	0	1			
			Sharing advertising	0	1			
<b>Business Development</b>								
On a course	1	0	Being on Town centre Board	1	0	How the town has changed	1	0
Poole regeneration	0	1	Coach hire	1	0	To enquire about goods and services	1	0
Talk about training	0	1	The plans for the town as a vision	0	1	What if planning stages for future expansion of business of cooperative ventures	1	0
To gain better training for all customer facing staff	0	1	Staffing levels	0	1	Customers identified	0	1
Biking problems	0	1	Business generation	0	1	Find out how we work with them	0	1
Business development	0	1	Customers	1	0			
Business research with suppliers	0	1	Lack of council support	1	0			
Traders re: the market	0	1	Financial State	0	1			
Planning issues	1	0	Audience development	0	1			
Increase football	0	1	Discussing meal prices	1	0			
Increase business	0	1	Encourage local tourism business to work together	0	1			
Business levels and profitability	0	1	Opening of brassiere	0	1			
To develop mutual business	0	1						
<b>Information Gathering and Sharing</b>								
How business is progressing	0	1	Discussion on the week events	1	0	Information getting	0	2
General chit chat	0	2	Been in the same business	0	1	Phone and/or general conversations	1	0
General	1	1	Whether Bournemouth is still aimed at families	1	0	Keeping abreast of how their businesses are doing	1	0

<b>Individual Personal Network</b>								
REASON 1			REASON 2			REASON 3		
	O	M		O	M		O	M
<b>Information Gathering and Sharing</b>								
Catch up on local competition	0	1	Attending recent potential new tourist attraction meeting & workshop	1	0	Attendance at Pub Watch	0	1
Comparison of trade in general	1	0	Getting information on suppliers	1	0	Caravan company going bust	0	1
Networking	0	3	Smoking ban	0	1	To maintain a knowledge of levels of business with local companies	0	1
Sharing ideas, information, best practice and local knowledge	1	4	Shared interests	1	0			
How was trade	2	1	Award Problems	0	1			
Places we visit	1	0	Lobbying	0	1			
Tourism information	0	1	Discussing Bournemouth 2010 - 200th Anniversary	0	1			
Hotels-opposition	0	1	Mutual problems	0	1			
General support and advice	1	0	Keeping up with trade	1	0			
Got bet in on trade's food	0	1	To keep abreast of changes to legislation	0	1			
			Networking	0	1			
			Was the credit crunch having an effect	1	0			
			To gain information re: planning	0	1			
<b>Accommodation Sharing</b>								
Provide me with business	0	1				Shares a lodger group of people	1	
To pass on booking enquiries and referral of business	4	0						
<b>Socialisation</b>								
Friendship	5	6	Social Activities	0	1	Bournemouth tourism award evening	0	1
Members of Tourism Board	2	0	Hospitality visit to AFC Bournemouth	0	1	Meeting other hoteliers	0	1
Taxi	1	0	Friendship	3	1	Attending Poole town centre management meeting and events; social networking lunch at local restaurant	1	0
Social meeting with other hoteliers	1	0	To have a friend to moan to	1	0	Social events	2	0
Attendance of local charity event (Pink Ball)	0	1	Family	1	0	Phone and/or general conversations	1	0
General chit chat	0	1	General Acquaintance	1	0	Networking	0	1
B&B Proprietor	1	0	Getting to know people more	0	1	Promoting networking and good working relationships	0	1



<b>Individual Personal Network</b>								
REASON 1			REASON 2			REASON 3		
	O	M		O	M		O	M
<b>Socialisation</b>								
Networking	1	0	To introduce myself as new business owner	1	0			
Fellow holiday home owners	1	0	Members of business association	0	1			
Interest	2	0	Happened to meet at a function	0	1			
Attending Poole tourism AGM and workshop exercises	1	0	Work together	0	1			
Delivery drivers	1	0	Networking	0	1			
Personal relationship	1	0						
Social	1	0						
Neighbour	0	1						
Social annual dinners	0	1						
Members of trade association	0	1						
Arranged luncheon	0	1						
Previous contacts/colleagues	0	1						
Build relationships	0	1						
Meet in pub with people	1	0						
Interest and leading at another workplace	0	1						
<b>Pricing</b>								
						Pricing and/or rates	3	

<b>Group Formal Network</b>								
REASON 1			REASON 2			REASON 3		
	O	M		O	M		O	M
<b>Time and Cost</b>								
Too busy, lack of time	5	4	Two young children	1	0	Too little time and/or no spare time	3	0
Family business, no staff	1	0	Not enough time and/or no time to attend and/or too busy	3	0	Cost	0	1
Busy working in the business	0	1	Dinner service	1	0			
Other work	1	0	Waste of my time (not attending)	1	0			
Wrong time and/or not suitable time	4	0	Work	0	1			
Other business priorities	1	0						
Working	1	0						
Running of hotel top priority	1	0						
Work commitments	0	1						
<b>Information Gathering and Sharing</b>								
Bournemouth planning	0	1	Kept informed by e-mail	0	1			
Keep up to date with legislation	1	0	Informal discussions	1	0			
Prefer informal relationships; find out more information	1	0						
<b>Membership</b>								
Only committee attend	1							
<b>Lack of Interest</b>								
Hotel operation family concern	1		Not interested enough and/or subject not of great interest	3		Forgot about meeting	1	
Did not gain anything from meeting	1		Agenda discussed of no relevance to us	1		Bournemouth Tourism not hugely applicable	1	
Not necessary and/or not relevant	2		Bored after 30 years in the business I have heard it all before	1				
Did not benefit me	1							
Marketing generally not relevant to my business	1							
<b>Socialisation</b>								
Networking	1	0				Friendship	1	
To interact with other hoteliers within our region	0	1						
<b>Other</b>								
No meetings held for association	1							
Decision already taken	1							
Not been invited to one yet	1							
BAHA does not operate on workshop basis	1							
No meetings held	1							

<b>Group Informal Network</b>								
REASON 1			REASON 2			REASON 3		
	O	M		O	M		O	M
<b>Time and Cost</b>								
Budget		1	Holidays	1				
<b>Information Gathering and Sharing</b>								
New website	1	0	Boscombe Spa Resort Limited - new business venture	0	1	Get updated on things	1	0
Keep up to date (information)	2	0	Networking	0	1	To give input	0	1
BAHA - hear about the area marketing planning	0	1	To get involved in promotions	0	1	To generally exchange idea	0	1
To gain an update of industry information	0	1	Discuss local events	0	1	Ideas and/or share ideas	1	1
To get update on local economy	0	1	Whether business is good	1	0	To help members	1	0
Information gathering: local, current affairs, what's going on, for coming year	5	6	Promotion of our services	0	1	Business opportunities	0	1
<b>Information Gathering and Sharing</b>								
Poole Tourism Meeting	1	0	Obtaining latest information and/or update information	0	2	Any new information	1	0
Discuss pros & cons what Council can do to create tourism	1	0	Future planning	0	1			
Exchange of information and ideas relevant to my core business	0	1	To learn business strategies	0	1			
Personal business interest to keep up to date with what is happening in both residential tourism sectors locally	1	0	Catch up with other B&B owners	1	0			
To promote Christchurch as prime location	1	0	Learning from others	0	1			
As before	0	1						
Keep up to date with competitors	0	1						
Training courses	1	0						
Finger on pulse and/or keeping in touch, catch up	2	1						
Local activities and/or issues, including tourism issues	1	2						
Keep up to date with legislation	0	1						
Sharing techniques	0	1						
To develop business	0	1						
Sharing best practice	0	1						
Attractions networking	0	1						
Discuss tourism attractions for Poole	0	1						

<b>Group Informal Network</b>								
REASON 1			REASON 2			REASON 3		
	O	M		O	M		O	M
<b>Membership</b>								
On committee for 2007/2008	3	0	To meet officers	1		Need to attend		1
Poole Tourism Meeting	1	0	AGM's Seminars	1				
AGM support and/or annual conference	3	1	Yearly meeting	1				
Invited to join - interested to see what was happening in the future	0	1						
<b>Socialisation</b>								
Networking	1	2	See other members	1	0	Social aspect	1	0
Poole Tourism Meeting			Networking	1	2	Social networking and/or with other hoteliers and/or to improve networking	1	2
To connect with business community	0	1	Meeting with colleagues	1	0	Making contacts	0	1
			Friendship	1	0	Meet new members	0	1
			Social	2	0			
			Meeting contact	0	1			
<b>Other</b>								
Ill health	1	0	To increase visitor numbers	1	0	To visit the meeting place	1	0
Progression of town	1	0	Conference re "green tourism"	1	0	Joint marketing and advertising	0	1
Promote business	0	1	Excluded People	0	1	Training	0	1
Pub watch scheme	0	1	Crime Problem	0	1	Provided Meeting Venue	0	1
To gain more business	0	1	Lobbying	0	1			
Local business	0	1	Ongoing core business	0	1			
			To make money	0	1			
			Look good	0	1			

**APPENDIX VI: TYPES OF INFORMATION (DETAILS)**

KEY: O – Owner; M - Manager

<b>Individual Business Network</b>											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
<b>Marketing</b>											
Websites	1	2	Sales, marketing, promotions, staffing	0	1	Networking		1	Advertising attractions and events	2	3
Advertising and security	0	1	E-commerce	1	0	Some of the big groups have access to very good marketing information		1	What is happening in town and in Poole	0	2
Advertising for Poole and Advertising for Bournemouth Tourism	1	0				Marketing		1	Periodical magazine	1	0
Press trip	0	1				'Focus group' - ideas for the future increasing visitor number, trends that are emerging in the market		1	Local activities program; "what's on in ..."	0	1
Event delivery for example advertising	0	1				Marketing strategy and vision from Poole Tourism		1	Local event; fund raising	1	0
Advertising (over killed)	4	1				Marketing information - that is useful for our promotions		1			
Marketing	0	2									
Tourism brochures	0	1									
Advertising and business results during 2008	0	1									
Opening times and advertising	0	1									
<b>Product</b>											
Terms of business and agreement to specific instructions	1	0	Statistics	0	1	Air festival logistics		1	Staff retention, training and development	0	1
Other trades	1	0	In general operation procedures	1	0	Local area briefing		1	Security	0	1
Housekeeping, advertising and other products	1	0	Economic and tourism	1	0				Other Managers contact details	0	1

<b>Individual Business Network</b>											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
<b>Product</b>											
Health and safety, use of food and fully heated	1	0							Directed to other sectors in the hospitality field eg. information about relevant legislation for disabled facilities	1	0
Fire regulations and access policies	1	0							Local activities and local businesses supporting tourism	1	0
Local events/attractions	0	1							Local business addresses/contacts. Local authority initiatives	0	3
Information re "Going Green"	1	0							Training programme; Accommodation ; Advertising	0	1
New front office systems	0	1							Accommodation ; disability access; what's on	0	1
Positive response re: planning application	1	0							Local information on reef	0	1
Laundry services used	1	0							Plans for Bournemouth International airport	0	1
Statutory requirements	1	0							Meetings	1	0
									Supplies	0	1
<b>H/R and Finance</b>											
Recruitment opportunities		1	Restaurant cost training	0	1	Tourist office information	1		Invited to seminars		1
Staffing information, costs and advertising		1	Invitation to training seminars	1	0						
HR, finance and health & safety		1	Budget	0	1						
Training		1	Co-ordinating	1	0						
			Finance and legal	0	1						
			Business reports	0	1						
			Bookkeeping	0	1						
<b>Competitive</b>											
Sales information and rooming lists	0	1	Monthly statements of account	1	0	National census and tours	1	0	Ad hoc reports of market movements and activity	1	0
Avoiding a specific client due to poor	0	1	Supply costs	1	0	Market research	1	3	Venue occupancy statistics/	0	2

<b>Individual Business Network</b>											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
conduct or bad debt									Statistics		
Alternative supply chain	1	0	Updates on tourism activity	1	0	Visitor figures and BIC numbers	0	1	Police reports if anyone leaves without paying	1	0
Sales, down turn, courses	0	1				Visitor numbers via Tourism Manager	1	0	Visitor numbers	1	1
<b>Competitive</b>											
Information on conferences coming to Bournemouth	0	1	Wage comparisons	0	1	Market research carried out by 'team' on behalf of Bournemouth & Poole Tourism Management Boards	0	1	General information	1	0
Pricing information	1	0				Information from other B&B, guesthouses involved already in green tourism	1	0	From Tourism Manager and/or Chamber of Trade	1	2
						Information on the competition	1	0	What type of trade, ie. couples, businessmen	1	0
						Market data, tourism update and town centre vision	0	1	Local council offices attend meeting	0	1
						Visitor statistics	0	2	School/area//population information	0	1
						Occupancy	0	1	New positions and/or businesses	0	2
						Average room occupancy of other hotels	0	1	Planning consents and new hotels opening in the area	1	0
						Potential accounts and gaps in the market	0	1	Business levels and forecasts of local competitors	0	1
						Competitor pricing	1	0	Business environment locally	0	1
						Hotel occupancy and market research	0	1	The type of businesses that were thriving or declining in the locality	0	1
						Market research and	0	1	Keeping up to date with other	1	0

Individual Business Network											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
						new initiatives			competition		
						Sales figures and number of bookings	0	2	Other hotel availability	0	1
									Pricing; facilities information	1	0
									How economic climate affects other like minded business	0	1

Individual Personal Network											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
<b>Marketing</b>											
Teletex and newspaper advertising and general advice on effective advertising	5	2	Promotion		1	How to get visitor information from website	1	0	List for mail shots	1	0
Website improvements	1	0	Marketing strategies and budgeting		1	Marketing - we were offered the opportunity to use a friend's established marketing tools to promote one off events.	1	0	Local events	1	0
Business star rating	0	1				Types of information we would like to see in Tourist Board Centres. Research from national outlets via Internet etc.	1	0	Tourist Board	1	0
Marketing & leaflet distribution contacts	0	1				Promotion, visitor statistics	0	1	New contacts for marketing	0	1
Property available for holiday let	0	1				General marketing; general information	0	1			
						Advertising, advice and general marketing	1	0			
						Where they advertise	0	1			
						Public Relations	0	1			
New products	1	0	Quote for TV leasing from ... hotel	1		Progression of Boscombe Reef. Town vision. Night-time economy.	0	1	Quality of company to do deals with etc.	0	1



<b>Individual Personal Network</b>											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
<b>Product</b>											
Housekeeping from other hotels, information on different companies	2	0	Booking and payment systems	1		Business development opportunities	0	1	Cleaning and gardening companies	0	1
Terms & conditions	1	0				Town centre Master Vision; New Government regulations	1	0	Business development opportunities and updates	0	1
Various aspect of things done in their environment	0	1				Vision, similarities in business, etc.	0	1	Sources of goods	1	0
How keys are supplied to clients	0	1				Poole tourism forum	1	0	Events; Crime	1	0
Housekeeping and/or purchasing produce	1	0				Future business plans	1	0	Attractions; restaurants	1	0
Linked to business delivery	0	1							Planning for new travel inn in Highcliffe and campaign to stop it.	1	0
From AA after inspections. Tourist Board	1	0							Name of contacts within the tourism department	0	1
									Local bars	0	1
<b>H/R and Finance</b>											
Where staff were being recruited from		2	Business structures and budgets		1						
Training; brand knowledge		1	Budgets; forecasting		1						
			Legal		1						
<b>Competitive</b>											
Pricing; level of business experienced etc; vacancies	1	0	Business forecast, trends	0	1	Business forecast, trends	0	1	Business activity, strengths, weaknesses opportunities	0	1
Recommended suppliers and staff. Statistics, results from previous advertising campaigns with certain publications.	1	0	Likely price increases per room	1	0	Regarding tourist office's work. Impact of arrival interim of budget hotel groups	1	0	General gossip	1	0

<b>Individual Personal Network</b>											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
Assist re: overbooking	0	1	Informal conversation regarding wages, budgeting etc.	0	1	From where most business come from "corporate" - local, national, interaction customers	0	1	How other businesses are progressing in difficult times	0	1
Alternative supply chain	1	0	Advice on pricing, rooms etc. (this is because I am new to the tourism business)	1	0	Details of local competition	0	1	From other people on course about their businesses	1	0
New businesses to area	0	1	Average room rates			Visitor numbers to Bournemouth	0	1	Contacts of new appointments	0	1
Business performance	0	1	Trends in business development			Information on who our competitors are	0	1	General occupancy of businesses	0	1
General information on how their business was being affected in current climate	0	1	Information on pay structure			Where new business was coming from	0	1	Information on companies; business opportunities	0	1
<b>Competitive</b>											
						Wage level; reduction-aggressive	0	1	General feedback on how businesses performing in current climate	1	0
						Tariffs and discount levels	0	1	How other business were doing - what people want	1	0
						Prices of competition/new business being created in the area	0	1	What was happening with new businesses opening	1	0
									Business development opportunities and updates	0	1
									Which businesses were in trouble	0	1
									Very helpful in directing us to people useful addresses	1	0
									How busy	1	0

<b>Individual Personal Network</b>											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
<b>Competitive</b>											
									Spending trends and footfall	1	0
									Hotels for sale or bought; People moves	1	0
									Fellow hotels	0	1
									Local tourism issues	1	0
									Information on competitors and how they were doing	1	0
									New businesses	0	1
									Prices of competition /new business being created in the area	0	1
									All club members	0	1

<b>Group Formal Network</b>											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
<b>Marketing</b>											
Advertising	4					Advertising and Marketing	1		Advertising in directory for local trades people	1	0
New hotel booking programme	1								Local shows and entertainment	0	1
									Poole Quay events	1	0
									Forthcoming events including attractions, meetings, exhibitions and their timings	2	0
									In and around Bournemouth	0	1
									Changes in CTA events	1	0
									About air show - BIC	1	0
									Events in the area and police information from walkout guests to missing persons	1	0
									Advertising company - bookings	1	0
<b>Product</b>											
Mostly topical information eg. new laws, council issues etc.	1	0	Health & safety information, courses. Fire registration information, courses	0	1	We are kept up to date in all council plans for tourism in Bournemouth area	1	0	Companies (accountants etc) that could help business re: people in Association with specific knowledge	1	0
Planning & policing	0	1	New legislation information	1	0	Guest behaviour	0	1	Unsuitable guests and/or warning of dodgy customers and/or guest behaviour	0	2
New/updated regulations and/or legislation	2	1							Crime alerts and/or security	0	1
Advice on dealing with difficult situations involving guests	1	0									

<b>Group Formal Network</b>											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
<b>Product</b>											
Planning & legislation	1	0									
Insurance information; government decisions regarding small businesses	1	0									
<b>H/R and Finance</b>											
			Budgeting	1							
			Courses to attend etc. New laws/taxes/staff information etc.	1							
<b>Competitive</b>											
			Wage		1	General trends and/or statistics, including bed counts	1	0	Number of visitors to different things	1	
						Visitor numbers, including numbers to conurbation and/or web design – e-marketing	0	1	Information on local events and feedback on these events	1	
						Statistics regarding Christchurch Tourism	1	0			
						National/local statistics	1	0			
						Only local market share results for occupancy and tariff	0	1			

<b>Group Informal Network</b>											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		M	
<b>Marketing</b>											
How to use new website and/or website improvement	2	0	General advice in email newsletter	1	0	It advertises local trades and businesses	1	0	What's on information	1	0
Advertising	4	3	Events via Council	0	1	What is happening in Boscombe	0	1	Advertising & marketing	0	1
Advertising, merger	0	1	Advertising information	1	0	Forthcoming events including attractions, meetings, exhibitions and their timings	4	0			
Marketing	0	1	Destination Management System - Tourism	0	1	Information about events - food festival	1	0			
PDQ Systems; Websites	1	0				Local area information including information from Council	0	2			
Invitation to be in Poole guide	1	0				Local planning and events	1	0			
						Newsletter including newsletter sent to members	0	2			
						Local services print and exhibition materials	0	1			
<b>Product</b>											
Housekeeping	1	0	Managing collections		1	Crime alerts and/or security	0	2	Visions for Poole and increasing tourism	1	0
New/updated regulations and/or legislation	1	0				Address, names, e-mail contacts of companies, businesses and tourism providers	0	3	Governmental role; Olympics etc.	1	0
How they were looking to make improvements in the tourism trade	1	0				BSR	0	1	Town centre vision; Business barometer	0	1
Fire precautions	1	0				What is being done in Christchurch (plans)	1	0	Boscombe reef	0	1
Details re: requirements for achieving green tourism membership	1	0							Visions for 2012 Olympics	1	0

<b>Group Informal Network</b>											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
<b>Product</b>											
Excluded people on Pub Watch. CCTV system in Poole	0	1							Strategy for museums from government	0	1
Through BAHAl-legal; Tourism development	1	0									
Health & safety	0	1									
Operation	0	1									
<b>H/R and Finance</b>											
Courses including those organised with College	1	0	Budgeting	0	1				IT training skills; E-marketing		1
Where staff were being recruited from	0	1	Budgeting and sales activities	0	1						
HR legal and technical for food & beverage	0	2	Legal documents	1	0						
<b>Competitive</b>											
Visitor numbers; courses for training	1	0	Average room rates	0	1	New developments, change of ownerships	0	1	General trends and/or statistics, including bed counts	1	1
Solutions	0	1	General industry information	1	0	Unsuitable guests and/or warning of dodgy customers and/or guest behaviour	1	0	Market research, Town Centre Vision	0	1
Business performance	0	1	Profit levels; labour % costs; food % costs	0	1	Which business has ceased trading	1	0	Visitor numbers, including numbers to conurbation and/or web design – e-marketing	1	1
Tourism trends; visitor numbers; national average	0	1	Budgets and spend on marketing in Poole area	0	1	Survey of reasons why people are visiting or not visiting	1	0	Figures; occupancy statistics	1	0
						Statistics	1	0	Where new business was coming from	0	1
						Which businesses were in trouble	0	1	Market research including strategy	2	3
						Number of visitors to different things	0	1	Affecting tourism	1	0
						Business levels and initiatives	0	1	Average room rate; room occupancy	0	1

<b>Group Informal Network</b>											
TECHNICAL			MANAGERIAL			STRATEGIC			LOCAL		
	O	M		O	M		O	M		O	M
<b>Competitive</b>											
						General updates	1	0	Statistics on local business	0	1
						New hotel development	0	1	Industry tracks and figures	0	1
						Varied discussions on ways to improve business	1	0			
						Local people who are barred from premises	0	1			



**APPENDIX VII: NETWORK ANALYSIS TABLES**

**Respondents' Ego-network Basic Measures**

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.25	1 PSC07	2.00 0.00	1.00	2.00	50.00				1.00	50.00	6.08	90.91	0.50
0.45	2 PSC10	5.00 25.00	2.00	20.00	10.00				3.00	60.00	13.98	79.31	9.00
0.50	3 NG01	17.00 0.00	2.00	272.00	0.74			15.00	88.24	20.67	70.10	135.00	
0.00	4 BSH11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	13.68	100.00	0.00	
0.50	5 BP01	45.00 0.00	13.00	1980.00	0.66			33.00	73.33	41.64	62.27	983.50	
0.50	6 BGH33	3.00 33.33	0.00	6.00	0.00			3.00	100.00	21.58	76.34	3.00	
0.50	7 BG01	45.00 0.00	15.00	1980.00	0.76			30.00	66.67	51.06	60.65	982.50	
0.00	8 CBB04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00	
0.50	9 CG01	21.00 0.00	4.00	420.00	0.95			17.00	80.95	19.15	67.02	208.00	
0.50	10 BSH26	4.00 25.00	0.00	12.00	0.00			4.00	100.00	17.63	98.31	6.00	
0.50	11 BSH53	5.00 20.00	0.00	20.00	0.00			5.00	100.00	17.63	98.31	10.00	
0.00	12 BSH54	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.42	13 BSH25	3.00 16.67	1.00	6.00	16.67			2.00	66.67	6.38	87.50	2.50	
0.42	14 BA02	3.00 0.00	1.00	6.00	16.67			2.00	66.67	5.17	89.47	2.50	
0.44	15 BSH09	10.00 18.89	10.00	90.00	11.11			2.00	20.00	35.87	63.44	40.00	
0.50	16 BLH47	4.00 0.00	0.00	12.00	0.00			4.00	100.00	14.89	96.08	6.00	
0.50	17 BA06	3.00 0.00	0.00	6.00	0.00			3.00	100.00	3.95	92.86	3.00	
0.00	18 TW01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.50	19 BE01	2.00 0.00	0.00	2.00	0.00			2.00	100.00	3.34	91.67	1.00	
0.50	20 PSC35	4.00 0.00	0.00	12.00	0.00			4.00	100.00	11.55	100.00	6.00	
0.00	21 BS04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.00	22 DBB01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.00	23 DSCC01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.50	24 PG01	35.00 0.00	11.00	1190.00	0.92			24.00	68.57	41.95	67.32	589.50	
0.00	25 BSH33	1.00	0.00	0.00		0.00	0.00	1.00	100.00	13.68	100.00	0.00	
0.33	26 BGH07	3.00 0.00	2.00	6.00	33.33			1.00	33.33	19.15	92.65	2.00	
0.48	27 BBB15	8.00 8.93	2.00	56.00	3.57			6.00	75.00	25.23	73.45	27.00	
0.49	28 RG01	15.00 0.00	4.00	210.00	1.90			12.00	80.00	19.76	69.15	103.00	
0.00	29 BBB29	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.04	100.00	0.00	
0.50	30 NP02	10.00 0.00	0.00	90.00	0.00			10.00	100.00	11.55	79.17	45.00	
0.50	31 BLH41	4.00 0.00	0.00	12.00	0.00			4.00	100.00	21.28	76.09	6.00	
0.00	32 BLH37	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.00	33 BSH24	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.50	34 BSH32	3.00	0.00	6.00	0.00			3.00	100.00	16.41	98.18	3.00	
0.50	35 NG04	2.00	0.00	2.00	0.00			2.00	100.00	1.22	100.00	1.00	
0.00	36 BGH18	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.61	100.00	0.00	
0.00	37 CSC12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00	
0.00	38 PBB07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	10.64	100.00	0.00	
0.50	39 PSH01	3.00	0.00	6.00	0.00			3.00	100.00	17.02	93.33	3.00	
0.50	40 BP06	5.00	0.00	20.00	0.00			5.00	100.00	7.90	81.25	10.00	
0.50	41 BGH26	6.00	0.00	30.00	0.00			6.00	100.00	23.40	79.38	15.00	
0.00	42 TW02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00	
0.00	43 BX02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00	
0.48	44 BP05	12.00	4.00	132.00	3.03			8.00	66.67	20.67	66.02	64.00	
0.50	45 BSH51	3.00	0.00	6.00	0.00			3.00	100.00	22.49	73.27	3.00	
0.50	46 DG01	11.00	1.00	110.00	0.91			10.00	90.91	16.41	72.97	54.50	
0.50	47 BGH21	2.00	0.00	2.00	0.00			2.00	100.00	21.28	87.50	1.00	
0.50	48 BSC17	3.00	0.00	6.00	0.00			3.00	100.00	14.29	100.00	3.00	
0.00	49 BSC18	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.91	100.00	0.00	
0.00	50 BSC25	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.91	100.00	0.00	
0.50	51 CBB01	4.00	0.00	12.00	0.00			4.00	100.00	10.64	79.55	6.00	
0.46	52 CP03	4.00	1.00	12.00	8.33			3.00	75.00	7.60	73.53	5.50	
0.50	53 NG03	4.00	0.00	12.00	0.00			4.00	100.00	3.34	78.57	6.00	
0.50	54 PBB19	5.00	0.00	20.00	0.00			5.00	100.00	14.29	95.92	10.00	
0.00	55 PBB15	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.50	56 PBB20	2.00	0.00	2.00	0.00			2.00	100.00	3.04	90.91	1.00	
0.00	57 PGH05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.50	58 PSC25	2.00	0.00	2.00	0.00			2.00	100.00	13.37	84.62	1.00	
0.25	59 BBB16	2.00	1.00	2.00	50.00			1.00	50.00	16.72	87.30	0.50	
0.48	60 BA03	17.00	11.00	272.00	4.04			7.00	41.18	32.52	59.12	130.50	
0.50	61 PSC30	4.00	0.00	12.00	0.00			4.00	100.00	16.72	79.71	6.00	
0.50	62 PPO2	2.00	0.00	2.00	0.00			2.00	100.00	1.82	85.71	1.00	
0.45	63 CGH07	5.00	2.00	20.00	10.00			3.00	60.00	10.33	87.18	9.00	
0.00	64 CGH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.00	65 CBB12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.48	66 CGH04	12.00	6.00	132.00	4.55			6.00	50.00	16.11	72.60	63.00	

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
67	NP01	4.00	1.00	12.00	8.33			3.00	75.00	10.64	92.11	5.50	
0.46	0.00	0.00											
68	PCA04	2.00	0.00	2.00	0.00			2.00	100.00	3.34	100.00	1.00	
0.50	0.00	0.00											
69	NS03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.61	100.00	0.00	
0.00													
70	CP01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.65	100.00	0.00	
0.00													
71	CSH05	15.00	6.00	210.00	2.86			9.00	60.00	30.70	72.14	102.00	
0.49	20.00	9.52											
72	CGH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.65	100.00	0.00	
0.00													
73	CA09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.65	100.00	0.00	
0.00													
74	CS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.65	100.00	0.00	
0.00													
75	CS02	2.00	1.00	2.00	50.00			1.00	50.00	6.69	81.48	0.50	
0.25	0.00	0.00											
76	CGH09	3.00	0.00	6.00	0.00			3.00	100.00	6.08	86.96	3.00	
0.50	0.00	0.00											
77	BSC07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.91	100.00	0.00	
0.00													
78	PBB06	5.00	4.00	20.00	20.00			1.00	20.00	16.72	73.33	8.00	
0.40	0.00	0.00											
79	PBB09	6.00	5.00	30.00	16.67			1.00	16.67	19.15	75.00	12.50	
0.42	1.00	3.33											
80	PBB03	2.00	1.00	2.00	50.00			1.00	50.00	1.82	54.55	0.50	
0.25	0.00	0.00											
81	BG02	6.00	1.00	30.00	3.33			5.00	83.33	11.55	74.51	14.50	
0.48	0.00	0.00											
82	PSC37	2.00	0.00	2.00	0.00			2.00	100.00	13.37	84.62	1.00	
0.50	0.00	0.00											
83	PBB05	6.00	0.00	30.00	0.00			6.00	100.00	14.59	84.21	15.00	
0.50	0.00	0.00											
84	PGH08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00	
0.00													
85	ND01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00	
0.00													
86	ND02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00	
0.00													
87	CGH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00	
0.00													
88	CSC03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00	
0.00													
89	BGH38	12.00	3.00	132.00	2.27			9.00	75.00	26.14	72.27	64.50	
0.49	0.00	0.00											
90	BS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.65	100.00	0.00	
0.00													
91	NS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.65	100.00	0.00	
0.00													
92	TW04	3.00	1.00	6.00	16.67			2.00	66.67	7.90	86.67	2.50	
0.42	0.00	0.00											
93	BS05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.65	100.00	0.00	
0.00													
94	BS06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.65	100.00	0.00	
0.00													
95	BBB27	7.00	2.00	42.00	4.76			5.00	71.43	10.64	87.50	20.00	
0.48	8.00	19.05											
96	DGH01	2.00	0.00	2.00	0.00			2.00	100.00	8.21	96.43	1.00	
0.50	0.00	0.00											
97	NS05	2.00	0.00	2.00	0.00			2.00	100.00	4.26	87.50	1.00	
0.50	0.00	0.00											
98	TW08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.65	100.00	0.00	
0.00													
99	BSH23	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.56	100.00	0.00	
0.00													
100	CBB03	2.00	0.00	2.00	0.00			2.00	100.00	3.34	100.00	1.00	
0.50	0.00	0.00											
101	DA03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.61	100.00	0.00	
0.00													

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
102	BGH37	2.00	0.00	2.00	0.00				2.00	100.00	17.63	96.67	1.00
0.50	0.00	0.00											
103	CSC25	8.00	0.00	56.00	0.00				8.00	100.00	35.56	70.06	28.00
0.50	0.00	0.00											
104	CG02	2.00	0.00	2.00	0.00				2.00	100.00	3.04	90.91	1.00
0.50	0.00	0.00											
105	DG04	1.00	0.00	0.00		0.00	0.00		1.00	100.00	2.43	100.00	0.00
0.00													
106	DG05	1.00	0.00	0.00		0.00	0.00		1.00	100.00	2.43	100.00	0.00
0.00													
107	CSC20	2.00	0.00	2.00	0.00				2.00	100.00	10.94	94.74	1.00
0.50	0.00	0.00											
108	PSC16	1.00	0.00	0.00		0.00	0.00		1.00	100.00	1.52	100.00	0.00
0.00													
109	BBB03	13.00	0.00	156.00	0.00				13.00	100.00	29.18	75.59	78.00
0.50	0.00	0.00											
110	BP02	5.00	0.00	20.00	0.00				5.00	100.00	6.69	78.57	10.00
0.50	0.00	0.00											
111	PP01	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.95	100.00	0.00
0.00													
112	NG02	4.00	0.00	12.00	0.00				4.00	100.00	9.73	94.12	6.00
0.50	0.00	0.00											
113	HW03	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.95	100.00	0.00
0.00													
114	NP06	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.95	100.00	0.00
0.00													
115	NP05	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.95	100.00	0.00
0.00													
116	HW04	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.95	100.00	0.00
0.00													
117	BG03	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.95	100.00	0.00
0.00													
118	BP07	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.95	100.00	0.00
0.00													
119	BGH13	1.00	0.00	0.00		0.00	0.00		1.00	100.00	2.43	100.00	0.00
0.00													
120	BSH35	1.00	0.00	0.00		0.00	0.00		1.00	100.00	2.43	100.00	0.00
0.00													
121	BBB10	1.00	0.00	0.00		0.00	0.00		1.00	100.00	2.43	100.00	0.00
0.00													
122	BSC10	1.00	0.00	0.00		0.00	0.00		1.00	100.00	13.68	100.00	0.00
0.00													
123	BGH04	1.00	0.00	0.00		0.00	0.00		1.00	100.00	13.68	100.00	0.00
0.00													
124	BSH08	4.00	1.00	12.00	8.33				3.00	75.00	15.50	94.44	5.50
0.46	2.00	16.67											
125	DP03	2.00	0.00	2.00	0.00				2.00	100.00	3.04	100.00	1.00
0.50	0.00	0.00											
126	BSH12	11.00	0.00	110.00	0.00				11.00	100.00	24.01	76.70	55.00
0.50	0.00	0.00											
127	BGH40	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.34	100.00	0.00
0.00													
128	BGH41	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.34	100.00	0.00
0.00													
129	NS02	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.34	100.00	0.00
0.00													
130	BS02	2.00	0.00	2.00	0.00				2.00	100.00	5.17	100.00	1.00
0.50	0.00	0.00											
131	HW01	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.34	100.00	0.00
0.00													
132	HW02	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.34	100.00	0.00
0.00													
133	TW07	1.00	0.00	0.00		0.00	0.00		1.00	100.00	3.34	100.00	0.00
0.00													
134	BLH29	2.00	0.00	2.00	0.00				2.00	100.00	3.95	92.86	1.00
0.50	0.00	0.00											
135	BBB01	7.00	6.00	42.00	14.29				2.00	28.57	24.01	63.71	18.00
0.43	0.00	0.00											
136	BP03	2.00	0.00	2.00	0.00				2.00	100.00	3.34	84.62	1.00
0.50	0.00	0.00											

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
137	BBB20	5.00	2.00	20.00	10.00				3.00	60.00	29.79	71.53	9.00
0.45	2.00	10.00											
138	BSC12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	13.68	100.00	0.00	
0.00													
139	BSC06	2.00	0.00	2.00	0.00			2.00	100.00	20.67	75.56	1.00	
0.50	0.00	0.00											
140	BLH34	6.00	1.00	30.00	3.33			5.00	83.33	21.58	74.74	14.50	
0.48	0.00	0.00											
141	BSH19	2.00	1.00	2.00	50.00			1.00	50.00	14.89	96.08	0.50	
0.25	0.00	0.00											
142	BLH09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00	
0.00													
143	BLH30	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00	
0.00													
144	BS07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00	
0.00													
145	BSH46	3.00	0.00	6.00	0.00			3.00	100.00	21.28	73.68	3.00	
0.50	0.00	0.00											
146	BGH16	3.00	0.00	6.00	0.00			3.00	100.00	21.58	87.65	3.00	
0.50	0.00	0.00											
147	BBB32	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.91	100.00	0.00	
0.00													
148	CGH10	7.00	2.00	42.00	4.76			5.00	71.43	12.16	83.33	20.00	
0.48	0.00	0.00											
149	CLH02	5.00	1.00	20.00	5.00			4.00	80.00	20.97	92.00	9.50	
0.47	6.00	30.00											
150	DA08	2.00	0.00	2.00	0.00			2.00	100.00	3.65	92.31	1.00	
0.50	0.00	0.00											
151	CCA01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00	
0.00													
152	CA06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00	
0.00													
153	BGH31	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.00													
154	BSC13	1.00	0.00	0.00		0.00	0.00	1.00	100.00	13.68	100.00	0.00	
0.00													
155	BGH36	1.00	0.00	0.00		0.00	0.00	1.00	100.00	13.68	100.00	0.00	
0.00													
156	BSH10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	13.68	100.00	0.00	
0.00													
157	BBB22	3.00	0.00	6.00	0.00			3.00	100.00	1.52	100.00	3.00	
0.50	0.00	0.00											
158	BBB33	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.91	100.00	0.00	
0.00													
159	BS11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.91	100.00	0.00	
0.00													
160	BBB11	8.00	0.00	56.00	0.00			8.00	100.00	4.86	94.12	28.00	
0.50	0.00	0.00											
161	BBB12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.43	100.00	0.00	
0.00													
162	BSH21	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.43	100.00	0.00	
0.00													
163	BBB09	2.00	0.00	2.00	0.00			2.00	100.00	2.74	100.00	1.00	
0.50	1.00	50.00											
164	BBB30	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.43	100.00	0.00	
0.00													
165	BBB31	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.43	100.00	0.00	
0.00													
166	PA02	10.00	2.00	90.00	2.22			8.00	80.00	25.23	79.05	44.00	
0.49	8.00	8.89											
167	PBB31	4.00	0.00	12.00	0.00			4.00	100.00	11.55	100.00	6.00	
0.50	0.00	0.00											
168	DGH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.00													
169	DBB02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.00													
170	PBB33	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.00													
171	CBB06	4.00	0.00	12.00	0.00			4.00	100.00	11.85	86.67	6.00	
0.50	0.00	0.00											

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
172	BSC08	3.00	0.00	6.00	0.00				3.00	100.00	20.97	75.82	3.00
0.50	0.00	0.00											
173	BSH06	4.00	2.00	12.00	16.67				2.00	50.00	16.11	88.33	5.00
0.42	0.00	0.00											
174	BLH22	1.00	0.00	0.00			0.00	0.00	1.00	100.00	1.22	100.00	0.00
0.00													
175	PCA09	5.00	0.00	20.00	0.00				5.00	100.00	2.13	100.00	10.00
0.50	0.00	0.00											
176	PCA03	1.00	0.00	0.00			0.00	0.00	1.00	100.00	1.52	100.00	0.00
0.00													
177	DCA02	1.00	0.00	0.00			0.00	0.00	1.00	100.00	1.52	100.00	0.00
0.00													
178	DCA03	1.00	0.00	0.00			0.00	0.00	1.00	100.00	1.52	100.00	0.00
0.00													
179	PCA08	3.00	1.00	6.00	16.67				2.00	66.67	5.17	85.00	2.50
0.42	1.00	16.67											
180	NP15	1.00	0.00	0.00			0.00	0.00	1.00	100.00	1.52	100.00	0.00
0.00													
181	CSC08	4.00	0.00	12.00	0.00				4.00	100.00	24.62	75.00	6.00
0.50	0.00	0.00											
182	BP08	1.00	0.00	0.00			0.00	0.00	1.00	100.00	1.22	100.00	0.00
0.00													
183	CBB08	4.00	0.00	12.00	0.00				4.00	100.00	13.37	89.80	6.00
0.50	0.00	0.00											
184	CW01	1.00	0.00	0.00			0.00	0.00	1.00	100.00	1.22	100.00	0.00
0.00													
185	BSC23	1.00	0.00	0.00			0.00	0.00	1.00	100.00	6.38	100.00	0.00
0.00													
186	BSC20	3.00	0.00	6.00	0.00				3.00	100.00	20.97	75.82	3.00
0.50	0.00	0.00											
187	ND05	1.00	0.00	0.00			0.00	0.00	1.00	100.00	0.91	100.00	0.00
0.00													
188	BSH38	6.00	1.00	30.00	3.33				5.00	83.33	24.92	82.00	14.50
0.48	0.00	0.00											
189	BBB17	1.00	0.00	0.00			0.00	0.00	1.00	100.00	1.82	100.00	0.00
0.00													
190	BLH50	7.00	1.00	42.00	2.38				6.00	85.71	21.28	80.46	20.50
0.49	11.00	26.19											
191	BLH08	6.00	1.00	30.00	3.33				5.00	83.33	17.63	89.23	14.50
0.48	0.00	0.00											
192	BLH20	4.00	0.00	12.00	0.00				4.00	100.00	8.21	96.43	6.00
0.50	3.00	25.00											
193	BLH26	5.00	4.00	20.00	20.00				1.00	20.00	26.14	69.35	8.00
0.40	4.00	20.00											
194	BLH39	1.00	0.00	0.00			0.00	0.00	1.00	100.00	1.82	100.00	0.00
0.00													
195	NP07	5.00	1.00	20.00	5.00				4.00	80.00	10.94	94.74	9.50
0.47	0.00	0.00											
196	PA04	1.00	0.00	0.00			0.00	0.00	1.00	100.00	0.91	100.00	0.00
0.00													
197	PG02	3.00	0.00	6.00	0.00				3.00	100.00	1.52	100.00	3.00
0.50	0.00	0.00											
198	DP01	5.00	0.00	20.00	0.00				5.00	100.00	10.33	75.56	10.00
0.50	0.00	0.00											
199	NP11	1.00	0.00	0.00			0.00	0.00	1.00	100.00	5.17	94.44	0.00
0.00													
200	NP03	2.00	0.00	2.00	0.00				2.00	100.00	6.99	82.14	1.00
0.50	0.00	0.00											
201	IP01	1.00	0.00	0.00			0.00	0.00	1.00	100.00	5.17	94.44	0.00
0.00													
202	BSC19	4.00	2.00	12.00	16.67				2.00	50.00	20.67	86.08	5.00
0.42	2.00	16.67											
203	PLH01	6.00	2.00	30.00	6.67				4.00	66.67	24.62	77.88	14.00
0.47	0.00	0.00											
204	PLH05	7.00	2.00	42.00	4.76				5.00	71.43	17.33	85.07	20.00
0.48	8.00	19.05											
205	PCA01	4.00	3.00	12.00	25.00				1.00	25.00	14.29	85.45	4.50
0.38	1.00	8.33											
206	NE03	2.00	0.00	2.00	0.00				2.00	100.00	3.95	86.67	1.00
0.50	0.00	0.00											

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
207	BBB08	3.00	0.00	6.00	0.00				3.00	100.00	15.20	100.00	3.00
0.50	0.00	0.00											
208	BGH05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.91	100.00	0.00	
0.00													
209	BLH27	4.00	0.00	12.00	0.00			4.00	100.00	17.02	82.35	6.00	
0.50	0.00	0.00											
210	BLH28	5.00	0.00	20.00	0.00			5.00	100.00	10.03	86.84	10.00	
0.50	4.00	20.00											
211	BLH31	6.00	0.00	30.00	0.00			6.00	100.00	4.26	87.50	15.00	
0.50	5.00	16.67											
212	BBB26	1.00	0.00	0.00		0.00	0.00	1.00	100.00	13.68	100.00	0.00	
0.00													
213	BLH04	10.00	6.00	90.00	6.67			5.00	50.00	27.36	63.83	42.00	
0.47	16.50	18.33											
214	BP04	3.00	0.00	6.00	0.00			3.00	100.00	5.78	86.36	3.00	
0.50	0.00	0.00											
215	BLH35	10.00	4.00	90.00	4.44			6.00	60.00	27.05	63.12	43.00	
0.48	11.50	12.78											
216	BLH52	2.00	0.00	2.00	0.00			2.00	100.00	3.65	92.31	1.00	
0.50	0.00	0.00											
217	CSH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.56	100.00	0.00	
0.00													
218	PSC23	3.00	1.00	6.00	16.67			2.00	66.67	11.85	92.86	2.50	
0.42	1.00	16.67											
219	PA06	11.00	0.00	110.00	0.00			11.00	100.00	19.76	84.42	55.00	
0.50	10.00	9.09											
220	DA01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.34	100.00	0.00	
0.00													
221	PA09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.34	100.00	0.00	
0.00													
222	DG02	3.00	0.00	6.00	0.00			3.00	100.00	5.47	85.71	3.00	
0.50	0.00	0.00											
223	DA11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.34	100.00	0.00	
0.00													
224	NG05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.34	100.00	0.00	
0.00													
225	NA02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.34	100.00	0.00	
0.00													
226	PA08	2.00	0.00	2.00	0.00			2.00	100.00	1.22	100.00	1.00	
0.50	0.00	0.00											
227	DA02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.61	100.00	0.00	
0.00													
228	CA05	3.00	0.00	6.00	0.00			3.00	100.00	2.13	100.00	3.00	
0.50	0.00	0.00											
229	CA02	5.00	0.00	20.00	0.00			5.00	100.00	8.81	100.00	10.00	
0.50	4.00	20.00											
230	DP02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.91	100.00	0.00	
0.00													
231	CA08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.91	100.00	0.00	
0.00													
232	PLH03	5.00	1.00	20.00	5.00			4.00	80.00	6.08	80.00	9.50	
0.47	0.00	0.00											
233	BLH23	2.00	0.00	2.00	0.00			2.00	100.00	2.43	100.00	1.00	
0.50	0.00	0.00											
234	BX01	2.00	0.00	2.00	0.00			2.00	100.00	6.08	100.00	1.00	
0.50	0.00	0.00											
235	NX01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.00													
236	NE01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.00													
237	PLH08	2.00	0.00	2.00	0.00			2.00	100.00	11.55	100.00	1.00	
0.50	0.00	0.00											
238	PSH05	16.00	3.00	240.00	1.25			13.00	81.25	20.67	80.00	118.50	
0.49	0.00	0.00											
239	DSH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.86	100.00	0.00	
0.00													
240	DSH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.86	100.00	0.00	
0.00													
241	PLH04	3.00	1.00	6.00	16.67			2.00	66.67	15.81	89.66	2.50	
0.42	1.00	16.67											

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.00	242	PSH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.86	100.00	0.00
0.00	243	RG02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.86	100.00	0.00
0.00	244	PS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.86	100.00	0.00
0.00	245	PS02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.86	100.00	0.00
0.00	246	PS03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.86	100.00	0.00
0.00	247	PS04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.86	100.00	0.00
0.00	248	PS05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.86	100.00	0.00
0.25	249	BLH33	2.00	1.00	2.00	50.00			1.00	50.00	17.63	92.06	0.50
0.50	250	CSH04	3.00	0.00	6.00	0.00			3.00	100.00	7.29	82.76	3.00
0.50	251	BSH17	4.00	0.00	12.00	0.00			4.00	100.00	24.62	74.31	6.00
0.00	252	NGH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.61	100.00	0.00
0.42	253	BSH13	3.00	1.00	6.00	16.67			2.00	66.67	17.02	86.15	2.50
0.00	254	DS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00
0.00	255	BS03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00
0.50	256	BLH43	4.00	0.00	12.00	0.00			4.00	100.00	22.49	76.29	6.00
0.50	257	BLH19	4.00	0.00	12.00	0.00			4.00	100.00	6.69	78.57	6.00
0.50	258	NE02	2.00	0.00	2.00	0.00			2.00	100.00	5.47	94.74	1.00
0.50	259	PLH02	9.00	0.00	72.00	0.00			9.00	100.00	23.40	86.52	36.00
0.00	260	NE06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00
0.00	261	EE01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00
0.00	262	NE07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00
0.00	263	NE08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00
0.00	264	NE04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00
0.50	265	PSC41	2.00	0.00	2.00	0.00			2.00	100.00	10.94	94.74	1.00
0.50	266	CA03	3.00	0.00	6.00	0.00			3.00	100.00	12.16	85.11	3.00
0.00	267	NP08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00
0.50	268	TW03	2.00	0.00	2.00	0.00			2.00	100.00	4.86	100.00	1.00
0.00	269	NP04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00
0.00	270	NE05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00
0.00	271	BSH31	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.17	94.44	0.00
0.50	272	BSH45	6.00	0.00	30.00	0.00			6.00	100.00	22.80	83.33	15.00
0.47	273	BLH46	9.00	4.00	72.00	5.56			6.00	66.67	19.76	79.27	34.00
0.00	274	NLH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00
0.00	275	ND03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00
0.00	276	BS08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00



12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
277	BS10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00	
0.00													
278	BLH48	8.00	2.00	56.00	3.57			6.00	75.00	25.84	74.56	27.00	
0.48	5.00	8.93											
279	BLH25	9.00	0.00	72.00	0.00			9.00	100.00	19.45	86.49	36.00	
0.50	0.00	0.00											
280	TW05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00	
0.00													
281	TW06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00	
0.00													
282	NP10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00	
0.00													
283	NP09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.74	100.00	0.00	
0.00													
284	BLH40	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.00													
285	PLH07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00	
0.00													
286	PCA02	4.00	0.00	12.00	0.00			4.00	100.00	11.55	100.00	6.00	
0.50	0.00	0.00											
287	NP12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.00													
288	RP01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.00													
289	NP13	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.00													
290	PX01	2.00	0.00	2.00	0.00			2.00	100.00	3.95	86.67	1.00	
0.50	0.00	0.00											
291	BLH44	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.04	100.00	0.00	
0.00													
292	BLH49	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.04	100.00	0.00	
0.00													
293	DG03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.04	100.00	0.00	
0.00													
294	PA07	11.00	4.00	110.00	3.64			7.00	63.64	15.20	78.13	53.00	
0.48	9.00	8.18											
295	PA10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.34	100.00	0.00	
0.00													
296	PA11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.34	100.00	0.00	
0.00													
297	PS06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.34	100.00	0.00	
0.00													
298	PE01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.34	100.00	0.00	
0.00													
299	DA09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00	
0.00													
300	PLH06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00	
0.00													
301	ND04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.43	100.00	0.00	
0.00													
302	PA01	8.00	0.00	56.00	0.00			8.00	100.00	15.81	89.66	28.00	
0.50	0.00	0.00											
303	NA01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.43	100.00	0.00	
0.00													
304	DA06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.43	100.00	0.00	
0.00													
305	DA07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.43	100.00	0.00	
0.00													
306	PX03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.43	100.00	0.00	
0.00													
307	PX04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.43	100.00	0.00	
0.00													
308	BA01	5.00	1.00	20.00	5.00			4.00	80.00	15.20	86.21	9.50	
0.47	3.00	15.00											
309	BS09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.00													
310	CLH03	4.00	0.00	12.00	0.00			4.00	100.00	8.81	93.55	6.00	
0.50	0.00	0.00											
311	CS03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.00													

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.46	CCA03	4.00	1.00	12.00	8.33				3.00	75.00	11.25	86.05	5.50
0.00	2.00	16.67											
0.00	NP14	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.22	100.00	0.00	
0.45	PA03	5.00	2.00	20.00	10.00			3.00	60.00	13.68	90.00	9.00	
0.25	0.00	0.00											
0.00	PLH09	2.00	1.00	2.00	50.00			1.00	50.00	11.25	92.50	0.50	
0.00	0.00	0.00											
0.00	BA04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.00	RG03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.50	BSH52	3.00	0.00	6.00	0.00			3.00	100.00	3.65	92.31	3.00	
0.00	0.00	0.00											
0.00	BS12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.56	100.00	0.00	
0.00	CS04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.56	100.00	0.00	
0.00	DSH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.56	100.00	0.00	
0.50	CSC10	3.00	0.00	6.00	0.00			3.00	100.00	6.99	95.83	3.00	
0.00	0.00	0.00											
0.00	CSC26	1.00	0.00	0.00		0.00	0.00	1.00	100.00	0.91	100.00	0.00	
0.48	CA07	6.00	1.00	30.00	3.33			5.00	83.33	20.97	93.24	14.50	
0.00	0.00	0.00											
0.00	DA12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00	
0.00	DA13	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.82	100.00	0.00	
0.00	BS13	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.00	DA04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.00	DA05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.52	100.00	0.00	
0.33	BLH14	3.00	2.00	6.00	33.33			1.00	33.33	17.33	76.00	2.00	
0.00	0.00	0.00											

**KEY (APPLICABLE TO ALL TABLES):**

1. Size. Size of ego network.
2. Ties. Number of directed ties.
3. Pairs. Number of ordered pairs.
4. Density. Ties divided by Pairs.
5. AvgDist. Average geodesic distance.
6. Diameter. Longest distance in egonet.
7. nWeakComp. Number of weak components.
8. pWeakComp. NWeakComp divided by Size.
9. 2StepReach. # of nodes within 2 links of ego.
10. ReachEffic. 2StepReach divided Size.
11. Broker. # of pairs not directly connected.
12. Normalized Broker. Broker divided by number of pairs.
13. Ego Betweenness. Betweenness of ego in own network.
14. Normalized Ego Betweenness. Betweenness of ego in own network.

**Owners' Ego-network Basic Measures**

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.45	1 BBB01	7.00	4.00	42.00	9.52				3.00	42.86	25.68	65.28	19.00
0.46	2 DG01	4.00	1.00	12.00	8.33				3.00	75.00	9.29	70.83	5.50
0.50	3 BG01	23.00	2.00	506.00	0.40				21.00	91.30	49.18	72.58	252.00
0.00	4 BP03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.83	100.00	0.00	
0.50	5 BP01	31.00	6.00	930.00	0.65				26.00	83.87	52.46	72.73	462.00
0.46	6 BSH09	10.00	7.00	90.00	7.78				4.00	40.00	37.16	66.02	41.50
0.00	7 BBB20	18.89	1.00	0.00		0.00	0.00	1.00	100.00	3.83	100.00	0.00	
0.25	8 BG02	2.00	1.00	2.00	50.00				1.00	50.00	6.56	70.59	0.50
0.50	9 BBB03	13.00	0.00	156.00	0.00				13.00	100.00	34.43	77.78	78.00
0.50	10 BP02	3.00	0.00	6.00	0.00				3.00	100.00	8.20	88.24	3.00
0.00	11 PP01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00	
0.46	12 NP01	4.00	1.00	12.00	8.33				3.00	75.00	19.13	92.11	5.50
0.00	13 NG02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00	
0.00	14 HW03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00	
0.00	15 NP06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00	
0.00	16 NP05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00	
0.50	17 NG01	12.00	1.00	132.00	0.76				11.00	91.67	22.40	70.69	65.50
0.00	18 HW04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00	
0.00	19 BG03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00	
0.00	20 BP07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00	
0.50	21 BBB11	8.00	0.00	56.00	0.00				8.00	100.00	8.20	93.75	28.00
0.00	22 BBB12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.37	100.00	0.00	
0.50	23 BSH26	4.00	0.00	12.00	0.00				4.00	100.00	21.86	97.56	6.00
0.00	24 BSH21	25.00	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.37	100.00	0.00
0.00	25 BBB09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.37	100.00	0.00	
0.00	26 BBB30	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.37	100.00	0.00	
0.00	27 BBB31	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.37	100.00	0.00	
0.50	28 BSH32	3.00	0.00	6.00	0.00				3.00	100.00	21.86	97.56	3.00
0.48	29 BBB15	8.00	2.00	56.00	3.57				6.00	75.00	27.32	70.42	27.00
0.33	30 BGH07	5.00	3.00	6.00	33.33				1.00	33.33	23.50	89.58	2.00
0.00	31 BGH13	8.93	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.37	100.00	0.00

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
32	BSH35	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.37	100.00	0.00	
0.00													
33	BBB10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.37	100.00	0.00	
0.00													
34	RG01	9.00	3.00	72.00	4.17			7.00	77.78	17.49	71.11	34.50	
0.48	0.00	0.00											
35	BE01	2.00	0.00	2.00	0.00			2.00	100.00	6.01	91.67	1.00	
0.50	0.00	0.00											
36	BBB16	2.00	0.00	2.00	0.00			2.00	100.00	13.11	96.00	1.00	
0.50	0.00	0.00											
37	BA03	2.00	0.00	2.00	0.00			2.00	100.00	6.01	91.67	1.00	
0.50	0.00	0.00											
38	BBB22	3.00	0.00	6.00	0.00			3.00	100.00	2.73	100.00	3.00	
0.50	0.00	0.00											
39	BBB33	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.64	100.00	0.00	
0.00													
40	BS11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.64	100.00	0.00	
0.00													
41	BGH33	3.00	0.00	6.00	0.00			3.00	100.00	22.95	73.68	3.00	
0.50	2.00	33.33											
42	BBB29	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.83	100.00	0.00	
0.00													
43	NP02	7.00	0.00	42.00	0.00			7.00	100.00	12.02	91.67	21.00	
0.50	0.00	0.00											
44	BGH04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	16.94	100.00	0.00	
0.00													
45	BGH16	3.00	0.00	6.00	0.00			3.00	100.00	19.13	87.50	3.00	
0.50	0.00	0.00											
46	BBB32	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.64	100.00	0.00	
0.00													
47	PG01	16.00	1.00	240.00	0.42			15.00	93.75	30.05	74.32	119.50	
0.50	0.00	0.00											
48	BGH18	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.09	100.00	0.00	
0.00													
49	NG04	2.00	0.00	2.00	0.00			2.00	100.00	2.19	100.00	1.00	
0.50	0.00	0.00											
50	BGH21	2.00	0.00	2.00	0.00			2.00	100.00	18.58	87.18	1.00	
0.50	0.00	0.00											
51	BGH26	6.00	0.00	30.00	0.00			6.00	100.00	21.31	86.67	15.00	
0.50	0.00	0.00											
52	TW02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00	
0.00													
53	BX02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00	
0.00													
54	BA06	3.00	0.00	6.00	0.00			3.00	100.00	7.10	92.86	3.00	
0.50	0.00	0.00											
55	BP05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00	
0.00													
56	BGH31	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.64	100.00	0.00	
0.00													
57	BGH36	1.00	0.00	0.00		0.00	0.00	1.00	100.00	16.94	100.00	0.00	
0.00													
58	BGH37	2.00	0.00	2.00	0.00			2.00	100.00	20.77	95.00	1.00	
0.50	0.00	0.00											
59	BGH38	12.00	2.00	132.00	1.52			10.00	83.33	28.96	71.62	65.00	
0.49	0.00	0.00											
60	BS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00	
0.00													
61	NS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00	
0.00													
62	TW04	2.00	0.00	2.00	0.00			2.00	100.00	11.48	91.30	1.00	
0.50	0.00	0.00											
63	BS05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00	
0.00													
64	BS06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00	
0.00													
65	BBB27	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00	
0.00													
66	DGH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00	
0.00													

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
67	NS05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00	
68	TW08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00	
69	BLH34	6.00	0.00	30.00	0.00			6.00	100.00	23.50	74.14	15.00	
70	BSH19	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00	
71	BLH09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00	
72	BLH30	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00	
73	BS07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00	
74	BLH41	4.00	0.00	12.00	0.00			4.00	100.00	22.40	73.21	6.00	
75	BLH37	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00	
76	BSH24	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00	
77	BLH47	4.00	0.00	12.00	0.00			4.00	100.00	14.75	93.10	6.00	
78	TW01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00	
79	BSC06	2.00	0.00	2.00	0.00			2.00	100.00	21.31	72.22	1.00	
80	BSC07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.64	100.00	0.00	
81	BSC08	3.00	0.00	6.00	0.00			3.00	100.00	21.86	72.73	3.00	
82	BSC10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	16.94	100.00	0.00	
83	BSC12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	16.94	100.00	0.00	
84	BSC13	1.00	0.00	0.00		0.00	0.00	1.00	100.00	12.57	100.00	0.00	
85	BSC17	3.00	0.00	6.00	0.00			3.00	100.00	18.03	100.00	3.00	
86	BSC18	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.64	100.00	0.00	
87	BSC25	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.64	100.00	0.00	
88	BSC20	3.00	0.00	6.00	0.00			3.00	100.00	21.86	72.73	3.00	
89	ND05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.64	100.00	0.00	
90	BSC23	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00	
91	CG01	13.00	1.00	156.00	0.64			12.00	92.31	21.86	78.43	77.50	
92	BSH06	4.00	2.00	12.00	16.67			2.00	50.00	21.86	86.96	5.00	
93	BSH08	4.00	1.00	12.00	8.33			3.00	75.00	20.22	92.50	5.50	
94	BLH22	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00	
95	DP03	2.00	0.00	2.00	0.00			2.00	100.00	5.46	100.00	1.00	
96	BSH10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	16.94	100.00	0.00	
97	BSH11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	16.94	100.00	0.00	
98	BSH12	11.00	0.00	110.00	0.00			11.00	100.00	26.23	75.00	55.00	
99	BGH40	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.01	100.00	0.00	
100	BGH41	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.01	100.00	0.00	
101	NS02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.01	100.00	0.00	

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.00	102	BS02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.01	100.00	0.00
0.00	103	HW01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.01	100.00	0.00
0.00	104	HW02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.01	100.00	0.00
0.00	105	TW07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.01	100.00	0.00
0.00	106	BLH29	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.01	100.00	0.00
0.00	107	BSH23	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.92	100.00	0.00
0.50	108	BSH25	2.00	0.00	2.00	0.00			2.00	100.00	6.01	100.00	1.00
0.00	109	BA02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.09	100.00	0.00
0.00	110	BSH53	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00
0.00	111	BSH54	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00
0.00	112	BSH33	1.00	0.00	0.00		0.00	0.00	1.00	100.00	16.94	100.00	0.00
0.50	113	BSH38	6.00	0.00	30.00	0.00			6.00	100.00	24.04	88.00	15.00
0.00	114	BBB17	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00
0.00	115	BLH50	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00
0.50	116	BSH46	3.00	0.00	6.00	0.00			3.00	100.00	22.40	71.93	3.00
0.50	117	BSH51	3.00	0.00	6.00	0.00			3.00	100.00	22.40	70.69	3.00
0.50	118	CBB01	4.00	0.00	12.00	0.00			4.00	100.00	12.57	92.00	6.00
0.50	119	CP03	2.00	0.00	2.00	0.00			2.00	100.00	7.65	87.50	1.00
0.00	120	NG03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00
0.50	121	CBB03	2.00	0.00	2.00	0.00			2.00	100.00	4.37	100.00	1.00
0.00	122	DA03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.09	100.00	0.00
0.00	123	CBB04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00
0.50	124	CBB06	4.00	0.00	12.00	0.00			4.00	100.00	13.11	88.89	6.00
0.50	125	CGH09	3.00	0.00	6.00	0.00			3.00	100.00	10.93	86.96	3.00
0.50	126	CBB08	4.00	0.00	12.00	0.00			4.00	100.00	16.39	90.91	6.00
0.00	127	CW01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00
0.00	128	CGH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00
0.49	129	CGH04	12.00	2.00	132.00	1.52			10.00	83.33	18.58	79.07	65.00
0.00	130	CP01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00
0.50	131	CSH05	2.00	0.00	2.00	0.00			2.00	100.00	9.29	89.47	1.00
0.00	132	CGH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00
0.00	133	CA09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00
0.00	134	CS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00
0.00	135	CS02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.56	100.00	0.00
0.45	136	CGH07	5.00	2.00	20.00	10.00			3.00	60.00	14.75	87.10	9.00

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
137	CGH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.73	100.00	0.00	
0.00													
138	CBB12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.73	100.00	0.00	
0.00													
139	CGH10	7.00	0.00	42.00	0.00			7.00	100.00	10.38	86.36	21.00	
0.50	0.00	0.00											
140	CLH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.83	100.00	0.00	
0.00													
141	DA08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.83	100.00	0.00	
0.00													
142	CCA01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.83	100.00	0.00	
0.00													
143	CA06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.83	100.00	0.00	
0.00													
144	CSC03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00	
0.00													
145	CSC08	4.00	0.00	12.00	0.00			4.00	100.00	27.32	74.63	6.00	
0.50	0.00	0.00											
146	BP08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00	
0.00													
147	CSC12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.10	100.00	0.00	
0.00													
148	CSC20	2.00	0.00	2.00	0.00			2.00	100.00	12.57	92.00	1.00	
0.50	0.00	0.00											
149	CSC25	8.00	0.00	56.00	0.00			8.00	100.00	37.16	69.39	28.00	
0.50	0.00	0.00											
150	CG02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.37	100.00	0.00	
0.00													
151	DG04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.37	100.00	0.00	
0.00													
152	DG05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.37	100.00	0.00	
0.00													
153	PBB05	6.00	0.00	30.00	0.00			6.00	100.00	14.21	78.79	15.00	
0.50	0.00	0.00											
154	PBB20	2.00	0.00	2.00	0.00			2.00	100.00	5.46	90.91	1.00	
0.50	0.00	0.00											
155	PGH08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00	
0.00													
156	ND01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00	
0.00													
157	ND02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00	
0.00													
158	PBB06	5.00	4.00	20.00	20.00			1.00	20.00	16.94	68.89	8.00	
0.40	0.00	0.00											
159	PBB09	6.00	4.00	30.00	13.33			2.00	33.33	16.94	68.89	13.00	
0.43	1.00	3.33											
160	PBB03	2.00	1.00	2.00	50.00			1.00	50.00	3.28	54.55	0.50	
0.25	0.00	0.00											
161	PBB07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	8.74	100.00	0.00	
0.00													
162	PA02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.28	100.00	0.00	
0.00													
163	PBB15	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.73	100.00	0.00	
0.00													
164	PBB19	5.00	0.00	20.00	0.00			5.00	100.00	13.66	92.59	10.00	
0.50	0.00	0.00											
165	PGH05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.73	100.00	0.00	
0.00													
166	PBB31	4.00	0.00	12.00	0.00			4.00	100.00	10.38	100.00	6.00	
0.50	0.00	0.00											
167	DGH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00	
0.00													
168	DBB02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00	
0.00													
169	PBB33	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.19	100.00	0.00	
0.00													
170	PCA04	2.00	0.00	2.00	0.00			2.00	100.00	4.37	100.00	1.00	
0.50	0.00	0.00											
171	NS03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.09	100.00	0.00	
0.00													

12	13	14	1	2	3	4	5	6	7	8	9	10	11	
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker		
172	PSC07	2.00	0.00	2.00	0.00					2.00	100.00	7.65	100.00	1.00
0.50	0.00	0.00												
173	PSC10	2.00	0.00	2.00	0.00					2.00	100.00	1.64	100.00	1.00
0.50	0.00	0.00												
174	PSC16	1.00	0.00	0.00			0.00	0.00		1.00	100.00	1.09	100.00	0.00
0.00														
175	PSC25	2.00	0.00	2.00	0.00					2.00	100.00	12.02	78.57	1.00
0.50	0.00	0.00												
176	PSC30	4.00	0.00	12.00	0.00					4.00	100.00	16.39	78.95	6.00
0.50	0.00	0.00												
177	PP02	1.00	0.00	0.00			0.00	0.00		1.00	100.00	2.19	100.00	0.00
0.00														
178	PSC35	4.00	0.00	12.00	0.00					4.00	100.00	10.38	100.00	6.00
0.50	0.00	0.00												
179	BS04	1.00	0.00	0.00			0.00	0.00		1.00	100.00	2.19	100.00	0.00
0.00														
180	DBB01	1.00	0.00	0.00			0.00	0.00		1.00	100.00	2.19	100.00	0.00
0.00														
181	DSCC01	1.00	0.00	0.00			0.00	0.00		1.00	100.00	2.19	100.00	0.00
0.00														
182	PSC37	2.00	0.00	2.00	0.00					2.00	100.00	12.02	78.57	1.00
0.50	0.00	0.00												
183	PSH01	2.00	0.00	2.00	0.00					2.00	100.00	17.49	100.00	1.00
0.50	0.00	0.00												
184	BP06	1.00	0.00	0.00			0.00	0.00		1.00	100.00	1.09	100.00	0.00
0.00														



**Managers' Ego-network Basic Measures**

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	nEgoBe	Size	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker
0.47	1 BA01	5.00	15.00	1.00	20.00	5.00			4.00	80.00	15.25	81.82	9.50
0.50	2 PX01	2.00	0.00	0.00	2.00	0.00			2.00	100.00	6.78	85.71	1.00
0.49	3 BG01	22.00	0.00	9.00	462.00	1.95			13.00	59.09	50.85	62.07	226.50
0.00	4 BS09	1.00	0.00	0.00			0.00	0.00	1.00	100.00	2.82	100.00	0.00
0.50	5 BG02	4.00	0.00	0.00	12.00	0.00			4.00	100.00	15.82	84.85	6.00
0.48	6 BA03	15.00	48.00	7.00	210.00	3.33			8.00	53.33	32.20	58.16	101.50
0.49	7 PG01	19.00	0.00	8.00	342.00	2.34			11.00	57.89	51.98	73.60	167.00
0.49	8 BP01	14.00	0.00	4.00	182.00	2.20			10.00	71.43	28.81	62.20	89.00
0.48	9 BP05	11.00	0.00	4.00	110.00	3.64			7.00	63.64	33.33	64.13	53.00
0.50	10 DP01	5.00	0.00	0.00	20.00	0.00			5.00	100.00	17.51	73.81	10.00
0.00	11 NP11	1.00	0.00	0.00			0.00	0.00	1.00	100.00	8.47	93.75	0.00
0.50	12 NP03	2.00	0.00	0.00	2.00	0.00			2.00	100.00	11.86	80.77	1.00
0.00	13 IP01	1.00	0.00	0.00			0.00	0.00	1.00	100.00	8.47	93.75	0.00
0.42	14 BSC19	4.00	2.00	2.00	12.00	16.67			2.00	50.00	25.42	83.33	5.00
0.00	15 BA04	1.00	0.00	0.00			0.00	0.00	1.00	100.00	2.82	100.00	0.00
0.50	16 BBB08	3.00	0.00	0.00	6.00	0.00			3.00	100.00	14.69	100.00	3.00
0.00	17 BGH05	1.00	0.00	0.00			0.00	0.00	1.00	100.00	1.69	100.00	0.00
0.50	18 NG03	3.00	0.00	0.00	6.00	0.00			3.00	100.00	5.08	90.00	3.00
0.50	19 BBB20	4.00	0.00	0.00	12.00	0.00			4.00	100.00	25.99	80.70	6.00
0.50	20 BP02	2.00	0.00	0.00	2.00	0.00			2.00	100.00	5.08	90.00	1.00
0.00	21 BBB26	1.00	0.00	0.00			0.00	0.00	1.00	100.00	7.91	100.00	0.00
0.48	22 BBB27	6.00	4.00	1.00	30.00	3.33			5.00	83.33	13.56	92.31	14.50
0.50	23 TW03	2.00	0.00	0.00	2.00	0.00			2.00	100.00	8.47	100.00	1.00
0.00	24 TW04	1.00	0.00	0.00			0.00	0.00	1.00	100.00	3.39	100.00	0.00
0.00	25 NP04	1.00	0.00	0.00			0.00	0.00	1.00	100.00	3.39	100.00	0.00
0.00	26 NE05	1.00	0.00	0.00			0.00	0.00	1.00	100.00	3.39	100.00	0.00
0.47	27 NP07	5.00	0.00	1.00	20.00	5.00			4.00	80.00	19.21	94.44	9.50
0.47	28 BLH04	10.00	16.50	6.00	90.00	6.67			5.00	50.00	29.38	61.90	42.00
0.50	29 BP04	3.00	0.00	0.00	6.00	0.00			3.00	100.00	9.60	85.00	3.00
0.48	30 BLH35	10.00	11.50	4.00	90.00	4.44			6.00	60.00	25.42	57.69	43.00
0.50	31 BLH52	2.00	0.00	0.00	2.00	0.00			2.00	100.00	6.78	92.31	1.00
0.48	32 BLH08	6.00	0.00	1.00	30.00	3.33			5.00	83.33	15.25	81.82	14.50

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.50	33 BLH20	4.00	0.00	12.00	0.00			4.00	100.00	12.99	95.83	6.00	
	0.50 3.00	25.00											
0.40	34 BLH26	5.00	4.00	20.00	20.00			1.00	20.00	27.12	71.64	8.00	
	0.40 4.00	20.00											
0.00	35 BLH39	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.39	100.00	0.00	
	0.00												
0.50	36 BP06	4.00	0.00	12.00	0.00			4.00	100.00	13.56	82.76	6.00	
	0.50 0.00	0.00											
0.33	37 BLH14	3.00	2.00	6.00	33.33			1.00	33.33	19.21	69.39	2.00	
	0.33 0.00	0.00											
0.50	38 BLH19	4.00	0.00	12.00	0.00			4.00	100.00	11.30	76.92	6.00	
	0.50 3.00	25.00											
0.50	39 DG01	7.00	0.00	42.00	0.00			7.00	100.00	23.73	87.50	21.00	
	0.50 0.00	0.00											
0.00	40 NE01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.26	100.00	0.00	
	0.00												
0.50	41 BLH23	2.00	0.00	2.00	0.00			2.00	100.00	4.52	100.00	1.00	
	0.50 0.00	0.00											
0.50	42 BLH25	9.00	0.00	72.00	0.00			9.00	100.00	18.08	82.05	36.00	
	0.50 0.00	0.00											
0.00	43 TW05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
	0.00												
0.00	44 TW06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
	0.00												
0.00	45 NP10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
	0.00												
0.00	46 NP09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
	0.00												
0.50	47 BLH27	4.00	0.00	12.00	0.00			4.00	100.00	18.64	75.00	6.00	
	0.50 0.00	0.00											
0.50	48 BLH28	5.00	0.00	20.00	0.00			5.00	100.00	15.25	87.10	10.00	
	0.50 4.00	20.00											
0.50	49 BLH31	6.00	0.00	30.00	0.00			6.00	100.00	7.34	86.67	15.00	
	0.50 5.00	16.67											
0.50	50 NG02	3.00	0.00	6.00	0.00			3.00	100.00	10.73	95.00	3.00	
	0.50 0.00	0.00											
0.00	51 NP08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.82	100.00	0.00	
	0.00												
0.00	52 DS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.39	100.00	0.00	
	0.00												
0.00	53 BS02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.39	100.00	0.00	
	0.00												
0.00	54 BS03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.39	100.00	0.00	
	0.00												
0.50	55 BLH43	4.00	0.00	12.00	0.00			4.00	100.00	20.34	83.72	6.00	
	0.50 3.00	25.00											
0.25	56 BLH33	2.00	1.00	2.00	50.00			1.00	50.00	14.69	86.67	0.50	
	0.25 0.00	0.00											
0.50	57 NP02	3.00	0.00	6.00	0.00			3.00	100.00	10.73	79.17	3.00	
	0.50 0.00	0.00											
0.50	58 NE02	2.00	0.00	2.00	0.00			2.00	100.00	10.17	94.74	1.00	
	0.50 0.00	0.00											
0.00	59 BLH40	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.26	100.00	0.00	
	0.00												
0.47	60 BLH46	9.00	4.00	72.00	5.56			6.00	66.67	23.73	72.41	34.00	
	0.47 8.00	11.11											
0.00	61 NLH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
	0.00												
0.00	62 ND03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
	0.00												
0.00	63 BS08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
	0.00												
0.00	64 BS10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
	0.00												
0.48	65 BLH48	8.00	2.00	56.00	3.57			6.00	75.00	24.29	69.35	27.00	
	0.48 5.00	8.93											
0.50	66 RG01	6.00	0.00	30.00	0.00			6.00	100.00	22.03	82.98	15.00	
	0.50 0.00	0.00											
0.00	67 ND04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.52	100.00	0.00	
	0.00												

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.50	0.00	0.00	0.00	20.00	0.00			5.00	100.00	18.64	89.19	10.00	
0.50	9.00	30.00	0.00	30.00	0.00			6.00	100.00	24.86	77.19	15.00	
0.50	10.00	11.00	0.00	110.00	0.00			11.00	100.00	22.03	82.98	55.00	
0.42	0.00	9.09	1.00	6.00	16.67			2.00	66.67	18.64	84.62	2.50	
0.00		0.00	0.00	0.00		0.00	0.00	1.00	100.00	1.69	100.00	0.00	
0.50	0.00	4.00	0.00	12.00	0.00			4.00	100.00	19.21	80.95	6.00	
0.00		0.00	0.00	0.00		0.00	0.00	1.00	100.00	2.26	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.91	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	8.47	93.75	0.00	
0.50	0.00	6.00	0.00	30.00	0.00			6.00	100.00	15.82	87.50	15.00	
0.00		0.00	0.00	0.00		0.00	0.00	1.00	100.00	3.39	100.00	0.00	
0.50	0.00	3.00	0.00	6.00	0.00			3.00	100.00	6.78	92.31	3.00	
0.50	0.00	0.00	0.00	12.00	0.00			4.00	100.00	17.51	100.00	6.00	
0.00		0.00	0.00	0.00		0.00	0.00	1.00	100.00	2.26	100.00	0.00	
0.50	4.00	5.00	0.00	20.00	0.00			5.00	100.00	8.47	100.00	10.00	
0.50	0.00	2.00	0.00	2.00	0.00			2.00	100.00	9.04	100.00	1.00	
0.00		0.00	0.00	0.00		0.00	0.00	1.00	100.00	2.82	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.82	100.00	0.00	
0.49	0.00	8.00	1.00	56.00	1.79			7.00	87.50	18.64	80.49	27.50	
0.50	0.00	3.00	0.00	6.00	0.00			3.00	100.00	9.60	80.95	3.00	
0.50	0.00	3.00	0.00	6.00	0.00			3.00	100.00	3.95	100.00	3.00	
0.00		0.00	0.00	0.00		0.00	0.00	1.00	100.00	1.69	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.69	100.00	0.00	
0.48	0.00	6.00	1.00	30.00	3.33			5.00	83.33	19.21	91.89	14.50	
0.46	2.00	4.00	1.00	12.00	8.33			3.00	75.00	9.60	80.95	5.50	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.39	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.39	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.26	100.00	0.00	
0.50	3.00	4.00	0.00	12.00	0.00			4.00	100.00	18.08	91.43	6.00	
0.50	0.00	4.00	0.00	12.00	0.00			4.00	100.00	9.04	94.12	6.00	
0.00		0.00	0.00	0.00		0.00	0.00	1.00	100.00	2.26	100.00	0.00	
0.50	0.00	3.00	0.00	6.00	0.00			3.00	100.00	5.65	100.00	3.00	
0.00		0.00	0.00	0.00		0.00	0.00	1.00	100.00	1.69	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.69	100.00	0.00	

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.00	103	CSH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.34	100.00	0.00
0.50	104	CSH04	3.00	0.00	6.00	0.00			3.00	100.00	6.21	84.62	3.00
0.50	105	CP03	2.00	0.00	2.00	0.00			2.00	100.00	8.47	93.75	1.00
0.50	106	CSH05	13.00	0.00	156.00	0.00			13.00	100.00	28.81	76.12	78.00
0.50	107	BX01	2.00	0.00	2.00	0.00			2.00	100.00	10.17	100.00	1.00
0.00	108	BS12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.34	100.00	0.00
0.00	109	CS04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.34	100.00	0.00
0.00	110	DSH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.34	100.00	0.00
0.00	111	CS02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.34	100.00	0.00
0.50	112	PA01	8.00	0.00	56.00	0.00			8.00	100.00	16.95	90.91	28.00
0.00	113	NA01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.52	100.00	0.00
0.00	114	DA06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.52	100.00	0.00
0.00	115	DA07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.52	100.00	0.00
0.00	116	PX03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.52	100.00	0.00
0.00	117	PX04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.52	100.00	0.00
0.50	118	DG02	3.00	0.00	6.00	0.00			3.00	100.00	10.17	85.71	3.00
0.49	119	PA02	9.00	1.00	72.00	1.39			8.00	88.89	25.99	82.14	35.50
0.00	120	BLH44	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00
0.00	121	BLH49	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00
0.00	122	PSH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00
0.00	123	DG03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00
0.45	124	PA03	5.00	2.00	20.00	10.00			3.00	60.00	16.38	85.29	9.00
0.25	125	PLH09	2.00	1.00	2.00	50.00			1.00	50.00	11.86	87.50	0.50
0.49	126	PA07	11.00	3.00	110.00	2.73			8.00	72.73	18.64	76.74	53.50
0.00	127	RG03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.82	100.00	0.00
0.00	128	PA04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.69	100.00	0.00
0.50	129	PG02	3.00	0.00	6.00	0.00			3.00	100.00	2.82	100.00	3.00
0.00	130	DA01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.21	100.00	0.00
0.00	131	PA09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.21	100.00	0.00
0.00	132	DA11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.21	100.00	0.00
0.00	133	NG05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.21	100.00	0.00
0.00	134	NA02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.21	100.00	0.00
0.38	135	PCA01	4.00	3.00	12.00	25.00			1.00	25.00	16.95	78.95	4.50
0.25	136	PCA08	2.00	1.00	2.00	50.00			1.00	50.00	6.78	80.00	0.50
0.00	137	BSH25	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.21	100.00	0.00

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.00	138 PA10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.21	100.00	0.00	
0.00	139 PA11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.21	100.00	0.00	
0.00	140 PS06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.21	100.00	0.00	
0.00	141 PE01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.21	100.00	0.00	
0.50	142 PA08	2.00	0.00	2.00	0.00			2.00	100.00	2.26	100.00	1.00	
0.00	143 DA02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.13	100.00	0.00	
0.50	144 PCA02	4.00	0.00	12.00	0.00			4.00	100.00	12.43	100.00	6.00	
0.00	145 NP12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.26	100.00	0.00	
0.00	146 RP01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.26	100.00	0.00	
0.00	147 NP13	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.26	100.00	0.00	
0.47	148 PLH01	6.00	2.00	30.00	6.67			4.00	66.67	26.55	77.05	14.00	
0.48	149 PLH05	7.00	2.00	42.00	4.76			5.00	71.43	23.16	82.00	20.00	
0.50	150 NE03	2.00	0.00	2.00	0.00			2.00	100.00	7.34	86.67	1.00	
0.50	151 PLH02	9.00	0.00	72.00	0.00			9.00	100.00	24.86	88.00	36.00	
0.00	152 NE06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
0.00	153 EE01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
0.00	154 NE07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
0.00	155 NE08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
0.00	156 NE04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.08	100.00	0.00	
0.47	157 PLH03	5.00	1.00	20.00	5.00			4.00	80.00	11.30	80.00	9.50	
0.00	158 NX01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.82	100.00	0.00	
0.42	159 PLH04	3.00	1.00	6.00	16.67			2.00	66.67	20.34	87.80	2.50	
0.00	160 PLH07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.95	100.00	0.00	
0.00	161 DA09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.95	100.00	0.00	
0.00	162 PLH06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.95	100.00	0.00	
0.50	163 PLH08	2.00	0.00	2.00	0.00			2.00	100.00	12.43	100.00	1.00	
0.42	164 PSC10	3.00	1.00	6.00	16.67			2.00	66.67	13.56	88.89	2.50	
0.42	165 PSC23	3.00	1.00	6.00	16.67			2.00	66.67	11.86	91.30	2.50	
0.00	166 PP02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.69	100.00	0.00	
0.50	167 PSC41	2.00	0.00	2.00	0.00			2.00	100.00	11.30	90.91	1.00	
0.49	168 PSH05	16.00	3.00	240.00	1.25			13.00	81.25	25.99	83.64	118.50	
0.00	169 DGH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.04	100.00	0.00	
0.00	170 DSH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.04	100.00	0.00	
0.00	171 DSH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.04	100.00	0.00	
0.00	172 PSH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.04	100.00	0.00	

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
173 0.00	RG02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.04	100.00	0.00	
174 0.00	PS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.04	100.00	0.00	
175 0.00	PS02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.04	100.00	0.00	
176 0.00	PS03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.04	100.00	0.00	
177 0.00	PS04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.04	100.00	0.00	
178 0.00	PS05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.04	100.00	0.00	

**Individual Business Ego-network Basic Measures**

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.47	1 BA01	5.00	1.00	20.00	5.00			4.00	80.00	21.47	93.18	9.50	
0.47	3.00	15.00											
0.47	2 BA03	10.00	6.00	90.00	6.67			4.00	40.00	31.41	60.00	42.00	
0.47	19.00	21.11											
0.00	3 BA04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.50	4 BA06	3.00	0.00	6.00	0.00			3.00	100.00	6.28	92.31	3.00	
0.50	0.00	0.00											
0.50	5 BBB01	4.00	0.00	12.00	0.00			4.00	100.00	24.61	74.60	6.00	
0.50	0.00	0.00											
0.50	6 BBB03	10.00	0.00	90.00	0.00			10.00	100.00	31.41	75.95	45.00	
0.50	0.00	0.00											
0.50	7 BBB08	3.00	0.00	6.00	0.00			3.00	100.00	20.42	100.00	3.00	
0.50	0.00	0.00											
0.25	8 BBB16	2.00	1.00	2.00	50.00			1.00	50.00	21.47	87.23	0.50	
0.25	0.00	0.00											
0.00	9 BBB17	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.14	100.00	0.00	
0.50	10 BBB20	3.00	0.00	6.00	0.00			3.00	100.00	28.27	73.97	3.00	
0.50	0.00	0.00											
0.50	11 BBB27	4.00	0.00	12.00	0.00			4.00	100.00	8.38	100.00	6.00	
0.50	3.00	25.00											
0.00	12 BBB29	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.14	100.00	0.00	
0.00	0.00	0.00											
0.00	13 BE01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.09	100.00	0.00	
0.50	14 BG01	36.00	7.00	1260.00	0.56			29.00	80.56	53.40	64.56	626.50	
0.50	0.00	0.00											
0.50	15 BG02	2.00	0.00	2.00	0.00			2.00	100.00	5.76	91.67	1.00	
0.50	0.00	0.00											
0.00	16 BGH05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.50	17 BGH21	2.00	0.00	2.00	0.00			2.00	100.00	26.70	91.07	1.00	
0.50	0.00	0.00											
0.50	18 BGH26	6.00	0.00	30.00	0.00			6.00	100.00	30.37	80.56	15.00	
0.50	0.00	0.00											
0.00	19 BGH31	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.50	20 BGH38	5.00	0.00	20.00	0.00			5.00	100.00	23.04	75.86	10.00	
0.50	0.00	0.00											
0.00	21 BGH40	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00	
0.00	0.00	0.00											
0.00	22 BGH41	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00	
0.48	23 BLH04	7.00	2.00	42.00	4.76			5.00	71.43	27.23	80.00	20.00	
0.48	10.00	23.81											
0.50	24 BLH08	3.00	0.00	6.00	0.00			3.00	100.00	5.24	100.00	3.00	
0.50	0.00	0.00											
0.00	25 BLH09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.33	26 BLH14	3.00	2.00	6.00	33.33			1.00	33.33	22.51	74.14	2.00	
0.33	0.00	0.00											
0.50	27 BLH20	4.00	0.00	12.00	0.00			4.00	100.00	10.47	100.00	6.00	
0.50	3.00	25.00											
0.00	28 BLH22	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.05	100.00	0.00	
0.50	29 BLH23	2.00	0.00	2.00	0.00			2.00	100.00	4.19	100.00	1.00	
0.50	0.00	0.00											
0.50	30 BLH25	5.00	0.00	20.00	0.00			5.00	100.00	16.23	96.88	10.00	
0.50	0.00	0.00											
0.45	31 BLH26	5.00	2.00	20.00	10.00			3.00	60.00	27.23	72.22	9.00	
0.45	6.00	30.00											
0.50	32 BLH27	2.00	0.00	2.00	0.00			2.00	100.00	20.42	82.98	1.00	
0.50	0.00	0.00											

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.50	BLH28	2.00	0.00	2.00	0.00				2.00	100.00	6.28	92.31	1.00
0.00	0.00	0.00											
0.00	BLH30	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.50	BLH31	3.00	0.00	6.00	0.00			3.00	100.00	2.09	100.00	3.00	
0.50	0.00	0.00											
0.50	BLH34	5.00	0.00	20.00	0.00			5.00	100.00	22.51	76.79	10.00	
0.50	0.00	0.00											
0.50	BLH35	7.00	0.00	42.00	0.00			7.00	100.00	26.18	79.37	21.00	
0.00	6.00	14.29											
0.00	BLH37	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.09	100.00	0.00	
0.00	0.00												
0.00	BLH39	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.00	0.00												
0.00	BLH40	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.00	0.00												
0.50	BLH41	4.00	0.00	12.00	0.00			4.00	100.00	21.99	76.36	6.00	
0.50	0.00	0.00											
0.50	BLH43	3.00	0.00	6.00	0.00			3.00	100.00	21.47	75.93	3.00	
0.50	0.00	0.00											
0.00	BLH44	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00	0.00												
0.47	BLH46	6.00	2.00	30.00	6.67			4.00	66.67	25.13	81.36	14.00	
0.50	5.00	16.67											
0.50	BLH47	4.00	0.00	12.00	0.00			4.00	100.00	20.94	97.56	6.00	
0.50	0.00	0.00											
0.50	BLH48	7.00	0.00	42.00	0.00			7.00	100.00	30.89	75.64	21.00	
0.50	0.00	0.00											
0.00	BLH49	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00	0.00												
0.46	BLH50	4.00	1.00	12.00	8.33			3.00	75.00	23.56	80.36	5.50	
0.00	3.00	25.00											
0.00	BLH52	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.00	0.00												
0.50	BP01	17.00	1.00	272.00	0.37			16.00	94.12	30.37	69.05	135.50	
0.50	0.00	0.00											
0.50	BP02	3.00	0.00	6.00	0.00			3.00	100.00	6.81	92.86	3.00	
0.50	0.00	0.00											
0.00	BP03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.09	100.00	0.00	
0.00	0.00												
0.00	BP04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.66	100.00	0.00	
0.00	0.00												
0.49	BP05	11.00	2.00	110.00	1.82			9.00	81.82	23.04	68.75	54.00	
0.00	0.00	0.00											
0.00	BP06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.66	100.00	0.00	
0.00	0.00												
0.00	BS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00	0.00												
0.50	BS02	2.00	0.00	2.00	0.00			2.00	100.00	6.81	100.00	1.00	
0.50	0.00	0.00											
0.00	BS03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.00	0.00												
0.00	BS09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00	0.00												
0.00	BSC13	1.00	0.00	0.00		0.00	0.00	1.00	100.00	18.85	100.00	0.00	
0.00	0.00												
0.42	BSC19	3.00	1.00	6.00	16.67			2.00	66.67	24.08	95.83	2.50	
0.50	0.00	0.00											
0.50	BSC20	3.00	0.00	6.00	0.00			3.00	100.00	21.47	75.93	3.00	
0.50	0.00	0.00											
0.00	BSC23	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.28	100.00	0.00	
0.00	0.00												
0.50	BSH06	2.00	0.00	2.00	0.00			2.00	100.00	2.09	100.00	1.00	
0.50	0.00	0.00											
0.50	BSH08	3.00	0.00	6.00	0.00			3.00	100.00	3.66	100.00	3.00	
0.50	2.00	33.33											
0.50	BSH09	3.00	0.00	6.00	0.00			3.00	100.00	20.94	86.96	3.00	
0.50	0.00	0.00											
0.50	BSH12	10.00	0.00	90.00	0.00			10.00	100.00	26.18	78.13	45.00	
0.50	0.00	0.00											



12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
68	BSH13	2.00	1.00	2.00	50.00			1.00	50.00	21.47	87.23	0.50	
0.25	0.00	0.00											
69	BSH17	3.00	0.00	6.00	0.00			3.00	100.00	25.65	74.24	3.00	
0.50	0.00	0.00											
70	BSH19	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00													
71	BSH23	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.19	100.00	0.00	
0.00													
72	BSH24	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.09	100.00	0.00	
0.00													
73	BSH31	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	90.91	0.00	
0.00													
74	BSH38	6.00	1.00	30.00	3.33			5.00	83.33	30.89	85.51	14.50	
0.48	0.00	0.00											
75	BSH45	3.00	0.00	6.00	0.00			3.00	100.00	13.09	86.21	3.00	
0.50	0.00	0.00											
76	BSH46	1.00	0.00	0.00		0.00	0.00	1.00	100.00	18.85	100.00	0.00	
0.00													
77	BSH51	3.00	0.00	6.00	0.00			3.00	100.00	24.08	74.19	3.00	
0.50	0.00	0.00											
78	BSH52	3.00	0.00	6.00	0.00			3.00	100.00	4.71	100.00	3.00	
0.50	0.00	0.00											
79	BSH53	2.00	0.00	2.00	0.00			2.00	100.00	20.42	97.50	1.00	
0.50	0.00	0.00											
80	BX01	2.00	0.00	2.00	0.00			2.00	100.00	5.76	100.00	1.00	
0.50	0.00	0.00											
81	BX02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.14	100.00	0.00	
0.00													
82	CA03	3.00	0.00	6.00	0.00			3.00	100.00	13.09	86.21	3.00	
0.50	0.00	0.00											
83	CA06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.14	100.00	0.00	
0.00													
84	CA07	5.00	1.00	20.00	5.00			4.00	80.00	26.70	92.73	9.50	
0.47	0.00	0.00											
85	CBB01	3.00	0.00	6.00	0.00			3.00	100.00	7.85	100.00	3.00	
0.50	0.00	0.00											
86	CBB03	2.00	0.00	2.00	0.00			2.00	100.00	3.66	100.00	1.00	
0.50	0.00	0.00											
87	CBB06	4.00	0.00	12.00	0.00			4.00	100.00	14.14	96.43	6.00	
0.50	0.00	0.00											
88	CBB12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.00													
89	CCA01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.14	100.00	0.00	
0.00													
90	CCA03	4.00	1.00	12.00	8.33			3.00	75.00	10.99	80.77	5.50	
0.46	2.00	16.67											
91	CG01	12.00	3.00	132.00	2.27			9.00	75.00	17.28	73.33	64.50	
0.49	0.00	0.00											
92	CGH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.00													
93	CGH04	5.00	2.00	20.00	10.00			3.00	60.00	11.52	75.86	9.00	
0.45	0.00	0.00											
94	CGH07	3.00	0.00	6.00	0.00			3.00	100.00	7.33	100.00	3.00	
0.50	0.00	0.00											
95	CGH09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.09	100.00	0.00	
0.00													
96	CGH10	6.00	1.00	30.00	3.33			5.00	83.33	9.95	82.61	14.50	
0.48	0.00	0.00											
97	CLH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.14	100.00	0.00	
0.00													
98	CLH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.28	100.00	0.00	
0.00													
99	CP01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00													
100	CP03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.00													
101	CSC08	2.00	0.00	2.00	0.00			2.00	100.00	23.56	91.84	1.00	
0.50	0.00	0.00											
102	CSC25	4.00	0.00	12.00	0.00			4.00	100.00	31.41	76.92	6.00	
0.50	0.00	0.00											

12	13	14	1	2	3	4	5	6	7	8	9	10	11	
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker		
103	CSH05	6.00	3.00	30.00	10.00					3.00	50.00	18.32	79.55	13.50
0.45	5.00	16.67												
104	DA01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.66	100.00	0.00		
0.00														
105	DA03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.05	100.00	0.00		
0.00														
106	DA06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.66	100.00	0.00		
0.00														
107	DA07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.66	100.00	0.00		
0.00														
108	DA08	2.00	0.00	2.00	0.00			2.00	100.00	5.24	90.91	1.00		
0.50	0.00	0.00												
109	DA09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.09	100.00	0.00		
0.00														
110	DA12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00		
0.00														
111	DG01	9.00	0.00	72.00	0.00			9.00	100.00	13.61	78.79	36.00		
0.50	0.00	0.00												
112	DG02	3.00	0.00	6.00	0.00			3.00	100.00	7.33	87.50	3.00		
0.50	0.00	0.00												
113	DGH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00		
0.00														
114	DP01	3.00	0.00	6.00	0.00			3.00	100.00	9.95	76.00	3.00		
0.50	0.00	0.00												
115	DP03	2.00	0.00	2.00	0.00			2.00	100.00	4.71	100.00	1.00		
0.50	0.00	0.00												
116	DS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00		
0.00														
117	DSH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00		
0.00														
118	DSH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00		
0.00														
119	EE01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00		
0.00														
120	HW01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00		
0.00														
121	HW02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00		
0.00														
122	HW03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00		
0.00														
123	NA01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.66	100.00	0.00		
0.00														
124	ND01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00		
0.00														
125	ND02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00		
0.00														
126	ND03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.14	100.00	0.00		
0.00														
127	ND04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.66	100.00	0.00		
0.00														
128	ND05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00		
0.00														
129	NE01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.09	100.00	0.00		
0.00														
130	NE02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00		
0.00														
131	NE06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00		
0.00														
132	NG01	13.00	1.00	156.00	0.64			12.00	92.31	22.51	75.44	77.50		
0.50	0.00	0.00												
133	NG02	4.00	0.00	12.00	0.00			4.00	100.00	9.95	90.48	6.00		
0.50	0.00	0.00												
134	NG03	2.00	0.00	2.00	0.00			2.00	100.00	3.14	100.00	1.00		
0.50	0.00	0.00												
135	NLH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.14	100.00	0.00		
0.00														
136	NP01	2.00	0.00	2.00	0.00			2.00	100.00	7.85	100.00	1.00		
0.50	0.00	0.00												
137	NP02	6.00	0.00	30.00	0.00			6.00	100.00	12.04	85.19	15.00		
0.50	0.00	0.00												

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
138	NP03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.66	100.00	0.00	
0.00													
139	NP04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.09	100.00	0.00	
0.00													
140	NP05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00	
0.00													
141	NP06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00	
0.00													
142	NP14	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.09	100.00	0.00	
0.00													
143	NS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00													
144	NS02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00	
0.00													
145	NX01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00													
146	PA01	7.00	0.00	42.00	0.00			7.00	100.00	13.61	92.86	21.00	
0.50	0.00	0.00											
147	PA02	5.00	0.00	20.00	0.00			5.00	100.00	5.24	100.00	10.00	
0.50	0.00	0.00											
148	PA03	3.00	0.00	6.00	0.00			3.00	100.00	3.14	100.00	3.00	
0.50	0.00	0.00											
149	PA06	7.00	0.00	42.00	0.00			7.00	100.00	19.37	90.24	21.00	
0.50	6.00	14.29											
150	PA07	3.00	0.00	6.00	0.00			3.00	100.00	3.14	100.00	3.00	
0.50	2.00	33.33											
151	PA09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.66	100.00	0.00	
0.00													
152	PBB05	5.00	0.00	20.00	0.00			5.00	100.00	9.42	100.00	10.00	
0.50	0.00	0.00											
153	PBB06	2.00	0.00	2.00	0.00			2.00	100.00	9.95	90.48	1.00	
0.50	0.00	0.00											
154	PBB15	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.00													
155	PBB19	3.00	0.00	6.00	0.00			3.00	100.00	2.09	100.00	3.00	
0.50	0.00	0.00											
156	PBB20	2.00	0.00	2.00	0.00			2.00	100.00	4.19	100.00	1.00	
0.50	0.00	0.00											
157	PCA01	2.00	0.00	2.00	0.00			2.00	100.00	12.04	100.00	1.00	
0.50	1.00	50.00											
158	PCA08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.00													
159	PG01	20.00	3.00	380.00	0.79			17.00	85.00	34.03	73.86	188.50	
0.50	0.00	0.00											
160	PGH05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.00													
161	PGH08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00													
162	PLH02	5.00	0.00	20.00	0.00			5.00	100.00	28.27	91.53	10.00	
0.50	0.00	0.00											
163	PLH03	5.00	0.00	20.00	0.00			5.00	100.00	8.90	89.47	10.00	
0.50	0.00	0.00											
164	PLH04	3.00	1.00	6.00	16.67			2.00	66.67	15.71	88.24	2.50	
0.42	1.00	16.67											
165	PLH05	4.00	1.00	12.00	8.33			3.00	75.00	15.18	90.63	5.50	
0.46	2.00	16.67											
166	PLH07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.09	100.00	0.00	
0.00													
167	PLH09	2.00	0.00	2.00	0.00			2.00	100.00	12.04	100.00	1.00	
0.50	1.00	50.00											
168	PP01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00	
0.00													
169	PP02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.57	100.00	0.00	
0.00													
170	PSC07	2.00	1.00	2.00	50.00			1.00	50.00	8.38	88.89	0.50	
0.25	0.00	0.00											
171	PSC10	5.00	2.00	20.00	10.00			3.00	60.00	16.23	79.49	9.00	
0.45	5.00	25.00											
172	PSC16	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00													

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
173	PSC23	3.00	1.00	6.00	16.67			2.00	66.67	12.57	92.31	2.50	
0.42	1.00	16.67											
174	PSC25	2.00	0.00	2.00	0.00			2.00	100.00	15.18	87.88	1.00	
0.50	0.00	0.00											
175	PSC30	3.00	0.00	6.00	0.00			3.00	100.00	18.32	85.37	3.00	
0.50	0.00	0.00											
176	PSC37	2.00	0.00	2.00	0.00			2.00	100.00	15.18	87.88	1.00	
0.50	0.00	0.00											
177	PSC41	2.00	0.00	2.00	0.00			2.00	100.00	10.99	91.30	1.00	
0.50	0.00	0.00											
178	PSH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00													
179	PSH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00	
0.00													
180	PSH05	10.00	2.00	90.00	2.22			8.00	80.00	21.47	83.67	44.00	
0.49	0.00	0.00											
181	PX01	2.00	0.00	2.00	0.00			2.00	100.00	5.24	100.00	1.00	
0.50	0.00	0.00											
182	PX03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.66	100.00	0.00	
0.00													
183	PX04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.66	100.00	0.00	
0.00													
184	RG01	8.00	1.00	56.00	1.79			7.00	87.50	12.04	74.19	27.50	
0.49	0.00	0.00											
185	RG02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00	
0.00													
186	TW01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.09	100.00	0.00	
0.00													
187	TW02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.14	100.00	0.00	
0.00													
188	TW03	2.00	0.00	2.00	0.00			2.00	100.00	4.71	100.00	1.00	
0.50	0.00	0.00											
189	TW04	3.00	0.00	6.00	0.00			3.00	100.00	8.90	89.47	3.00	
0.50	0.00	0.00											
190	TW05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00													
191	TW06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.62	100.00	0.00	
0.00													
192	TW07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.24	100.00	0.00	
0.00													

**Individual Personal Ego-network Basic Measures**

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.00	1	BA01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.19	100.00	0.00
0.00	2	BA02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00
0.50	3	BA03	2.00	0.00	2.00	0.00			2.00	100.00	10.64	100.00	1.00
0.00	4	BA06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.19	100.00	0.00
0.46	5	BBB01	4.00	1.00	12.00	8.33			3.00	75.00	14.89	82.35	5.50
0.00	6	BBB20	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.26	100.00	0.00
0.00	7	BBB27	1.00	0.00	0.00		0.00	0.00	1.00	100.00	8.51	100.00	0.00
0.50	8	BG01	9.00	0.00	72.00	0.00			9.00	100.00	37.23	94.59	36.00
0.00	9	BG02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00
0.50	10	BGH26	3.00	0.00	6.00	0.00			3.00	100.00	7.45	100.00	3.00
0.50	11	BGH38	8.00	0.00	56.00	0.00			8.00	100.00	14.89	100.00	28.00
0.47	12	BLH04	6.00	2.00	30.00	6.67			4.00	66.67	20.21	79.17	14.00
0.50	13	BLH19	2.00	0.00	2.00	0.00			2.00	100.00	8.51	100.00	1.00
0.50	14	BLH25	6.00	0.00	30.00	0.00			6.00	100.00	15.96	93.75	15.00
0.50	15	BLH27	2.00	0.00	2.00	0.00			2.00	100.00	6.38	100.00	1.00
0.50	16	BLH28	3.00	0.00	6.00	0.00			3.00	100.00	5.32	100.00	3.00
0.50	17	BLH31	3.00	0.00	6.00	0.00			3.00	100.00	5.32	100.00	3.00
0.42	18	BLH35	3.00	1.00	6.00	16.67			2.00	66.67	12.77	85.71	2.50
0.00	19	BLH37	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.26	100.00	0.00
0.50	20	BLH41	4.00	0.00	12.00	0.00			4.00	100.00	18.09	94.44	6.00
0.00	21	BLH43	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.19	100.00	0.00
0.48	22	BLH46	6.00	1.00	30.00	3.33			5.00	83.33	22.34	91.30	14.50
0.00	23	BLH48	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00
0.50	24	BLH50	2.00	0.00	2.00	0.00			2.00	100.00	11.70	100.00	1.00
0.00	25	BLH52	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00
0.48	26	BP01	7.00	2.00	42.00	4.76			5.00	71.43	29.79	80.00	20.00
0.00	27	BP02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.32	100.00	0.00
0.50	28	BP03	2.00	0.00	2.00	0.00			2.00	100.00	8.51	88.89	1.00
0.50	29	BP04	2.00	0.00	2.00	0.00			2.00	100.00	8.51	100.00	1.00
0.47	30	BP05	5.00	1.00	20.00	5.00			4.00	80.00	21.28	86.96	9.50
0.00	31	BP06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00
0.00	32	BS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	8.51	100.00	0.00

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.00	33	BS04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.26	100.00	0.00
0.00	34	BS05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	8.51	100.00	0.00
0.00	35	BS06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	8.51	100.00	0.00
0.00	36	BS08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00
0.00	37	BS10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00
0.00	38	BS12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.57	100.00	0.00
0.00	39	BSC07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00
0.50	40	BSC08	2.00	0.00	2.00	0.00			2.00	100.00	10.64	100.00	1.00
0.50	41	BSC19	3.00	0.00	6.00	0.00			3.00	100.00	11.70	100.00	3.00
0.49	42	BSH09	7.00	1.00	42.00	2.38			6.00	85.71	34.04	88.89	20.50
0.00	43	BSH17	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.57	100.00	0.00
0.00	44	BSH24	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.26	100.00	0.00
0.50	45	BSH25	2.00	0.00	2.00	0.00			2.00	100.00	9.57	100.00	1.00
0.50	46	BSH45	5.00	0.00	20.00	0.00			5.00	100.00	14.89	93.33	10.00
0.00	47	BX02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.19	100.00	0.00
0.50	48	CA03	3.00	0.00	6.00	0.00			3.00	100.00	7.45	87.50	3.00
0.00	49	CA09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00
0.00	50	CBB12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.19	100.00	0.00
0.50	51	CG01	2.00	0.00	2.00	0.00			2.00	100.00	5.32	100.00	1.00
0.00	52	CGH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00
0.00	53	CGH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.19	100.00	0.00
0.50	54	CGH04	6.00	0.00	30.00	0.00			6.00	100.00	17.02	100.00	15.00
0.50	55	CGH07	3.00	0.00	6.00	0.00			3.00	100.00	8.51	100.00	3.00
0.00	56	CLH02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.57	100.00	0.00
0.00	57	CS01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00
0.00	58	CS02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00
0.00	59	CS04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.57	100.00	0.00
0.50	60	CSC10	2.00	0.00	2.00	0.00			2.00	100.00	3.19	100.00	1.00
0.00	61	CSC26	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00
0.00	62	CSH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.57	100.00	0.00
0.50	63	CSH05	9.00	0.00	72.00	0.00			9.00	100.00	25.53	92.31	36.00
0.00	64	DBB01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.26	100.00	0.00
0.50	65	DG01	4.00	0.00	12.00	0.00			4.00	100.00	22.34	91.30	6.00
0.00	66	DG03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.19	100.00	0.00
0.00	67	DGH01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	8.51	100.00	0.00

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
68	DSCC01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.26	100.00	0.00	
69	DSH03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.57	100.00	0.00	
70	NE02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.19	100.00	0.00	
71	NG01	3.00	0.00	6.00	0.00			3.00	100.00	10.64	90.91	3.00	
72	NP02	2.00	0.00	2.00	0.00			2.00	100.00	7.45	100.00	1.00	
73	NP08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.19	100.00	0.00	
74	NP09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00	
75	NP10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.38	100.00	0.00	
76	NS03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00	
77	NS05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	8.51	100.00	0.00	
78	PA01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	7.45	100.00	0.00	
79	PA02	3.00	0.00	6.00	0.00			3.00	100.00	18.09	100.00	3.00	
80	PA06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.19	100.00	0.00	
81	PA07	2.00	0.00	2.00	0.00			2.00	100.00	3.19	100.00	1.00	
82	PBB03	2.00	1.00	2.00	50.00			1.00	50.00	4.26	57.14	0.50	
83	PBB05	2.00	0.00	2.00	0.00			2.00	100.00	9.57	90.00	1.00	
84	PBB06	3.00	2.00	6.00	33.33			1.00	33.33	9.57	69.23	2.00	
85	PBB09	4.00	2.00	12.00	16.67			2.00	50.00	10.64	66.67	5.00	
86	PCA01	2.00	0.00	2.00	0.00			2.00	100.00	6.38	100.00	1.00	
87	PCA04	2.00	0.00	2.00	0.00			2.00	100.00	3.19	100.00	1.00	
88	PCA08	2.00	0.00	2.00	0.00			2.00	100.00	3.19	100.00	1.00	
89	PCA09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.13	100.00	0.00	
90	PG01	7.00	1.00	42.00	2.38			6.00	85.71	18.09	80.95	20.50	
91	PLH01	4.00	0.00	12.00	0.00			4.00	100.00	14.89	100.00	6.00	
92	PLH05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.26	100.00	0.00	
93	PSC35	4.00	0.00	12.00	0.00			4.00	100.00	10.64	100.00	6.00	
94	RG01	2.00	0.00	2.00	0.00			2.00	100.00	11.70	91.67	1.00	
95	TW08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	8.51	100.00	0.00	

**Group Formal Ego-network Basic Measures**

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.00	1 BA03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.77	100.00	0.00	
0.00	2 BBB08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.77	100.00	0.00	
0.00	3 BBB11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.77	100.00	0.00	
0.50	4 BBB27	2.00	0.00	2.00	0.00			2.00	100.00	5.66	100.00	1.00	
0.50	5 BG01	5.00	0.00	20.00	0.00			5.00	100.00	13.21	70.00	10.00	
0.00	6 BGH04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	43.40	100.00	0.00	
0.50	7 BGH07	2.00	0.00	2.00	0.00			2.00	100.00	45.28	96.00	1.00	
0.50	8 BGH16	2.00	0.00	2.00	0.00			2.00	100.00	15.09	100.00	1.00	
0.00	9 BGH18	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.77	100.00	0.00	
0.50	10 BGH33	2.00	0.00	2.00	0.00			2.00	100.00	47.17	89.29	1.00	
0.00	11 BGH36	1.00	0.00	0.00		0.00	0.00	1.00	100.00	43.40	100.00	0.00	
0.50	12 BGH37	2.00	0.00	2.00	0.00			2.00	100.00	45.28	96.00	1.00	
0.50	13 BGH38	2.00	0.00	2.00	0.00			2.00	100.00	47.17	89.29	1.00	
0.50	14 BLH08	3.00	0.00	6.00	0.00			3.00	100.00	49.06	100.00	3.00	
0.50	15 BLH33	2.00	0.00	2.00	0.00			2.00	100.00	45.28	100.00	1.00	
0.50	16 BLH34	2.00	0.00	2.00	0.00			2.00	100.00	47.17	89.29	1.00	
0.50	17 BP01	23.00	0.00	506.00	0.00			23.00	100.00	58.49	88.57	253.00	
0.00	18 BP06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.66	100.00	0.00	
0.00	19 BP08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.77	100.00	0.00	
0.50	20 BSC06	2.00	0.00	2.00	0.00			2.00	100.00	47.17	89.29	1.00	
0.00	21 BSC08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	43.40	100.00	0.00	
0.00	22 BSC12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	43.40	100.00	0.00	
0.00	23 BSC17	1.00	0.00	0.00		0.00	0.00	1.00	100.00	43.40	100.00	0.00	
0.00	24 BSC20	1.00	0.00	0.00		0.00	0.00	1.00	100.00	43.40	100.00	0.00	
0.50	25 BSH06	2.00	0.00	2.00	0.00			2.00	100.00	45.28	100.00	1.00	
0.00	26 BSH08	1.00	0.00	0.00		0.00	0.00	1.00	100.00	43.40	100.00	0.00	
0.00	27 BSH09	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.77	100.00	0.00	
0.00	28 BSH10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	43.40	100.00	0.00	
0.00	29 BSH11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	43.40	100.00	0.00	
0.00	30 BSH12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	43.40	100.00	0.00	
0.00	31 BSH19	1.00	0.00	0.00		0.00	0.00	1.00	100.00	43.40	100.00	0.00	
0.50	32 BSH32	2.00	0.00	2.00	0.00			2.00	100.00	47.17	100.00	1.00	



12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	nEgoBe	Size	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker
0.00	33 BSH33	1.00	0.00	0.00			0.00	0.00	1.00	100.00	43.40	100.00	0.00
0.50	34 CG01	6.00	0.00	30.00	0.00				6.00	100.00	26.42	93.33	15.00
0.50	35 CG02	2.00	0.00	2.00	0.00				2.00	100.00	13.21	87.50	1.00
0.50	36 CGH07	2.00	0.00	2.00	0.00				2.00	100.00	15.09	100.00	1.00
0.00	37 CP03	1.00	0.00	0.00			0.00	0.00	1.00	100.00	5.66	100.00	0.00
0.00	38 CSC03	1.00	0.00	0.00			0.00	0.00	1.00	100.00	11.32	100.00	0.00
0.50	39 CSC08	2.00	0.00	2.00	0.00				2.00	100.00	45.28	100.00	1.00
0.50	40 CSC10	2.00	0.00	2.00	0.00				2.00	100.00	13.21	87.50	1.00
0.00	41 CSC12	1.00	0.00	0.00			0.00	0.00	1.00	100.00	11.32	100.00	0.00
0.50	42 CSC25	6.00	0.00	30.00	0.00				6.00	100.00	24.53	92.86	15.00
0.50	43 CSH04	3.00	0.00	6.00	0.00				3.00	100.00	16.98	100.00	3.00
0.00	44 DG04	1.00	0.00	0.00			0.00	0.00	1.00	100.00	11.32	100.00	0.00
0.00	45 DG05	1.00	0.00	0.00			0.00	0.00	1.00	100.00	11.32	100.00	0.00
0.00	46 NE05	1.00	0.00	0.00			0.00	0.00	1.00	100.00	3.77	100.00	0.00
0.00	47 NG01	1.00	0.00	0.00			0.00	0.00	1.00	100.00	11.32	100.00	0.00
0.50	48 NG03	2.00	0.00	2.00	0.00				2.00	100.00	7.55	100.00	1.00
0.50	49 NG04	2.00	0.00	2.00	0.00				2.00	100.00	5.66	100.00	1.00
0.50	50 NP01	2.00	0.00	2.00	0.00				2.00	100.00	5.66	100.00	1.00
0.50	51 NP07	2.00	0.00	2.00	0.00				2.00	100.00	9.43	100.00	1.00
0.50	52 PG01	3.00	0.00	6.00	0.00				3.00	100.00	16.98	100.00	3.00
0.00	53 PSC35	1.00	0.00	0.00			0.00	0.00	1.00	100.00	5.66	100.00	0.00
0.50	54 RG01	2.00	0.00	2.00	0.00				2.00	100.00	5.66	75.00	1.00

**Group Informal Ego-network Basic Measures**

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.49	1 BA03	10.00	2.00	90.00	2.22				8.00	80.00	28.43	72.50	44.00
	14.00	15.56											
0.00	2 BA04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.94	100.00	0.00	
0.50	3 BBB01	4.00	0.00	12.00	0.00			4.00	100.00	23.53	80.00	6.00	
	0.00	0.00											
0.50	4 BBB03	5.00	0.00	20.00	0.00			5.00	100.00	21.57	100.00	10.00	
	0.00	0.00											
0.50	5 BBB15	4.00	0.00	12.00	0.00			4.00	100.00	26.47	84.38	6.00	
	0.00	0.00											
0.50	6 BBB20	2.00	0.00	2.00	0.00			2.00	100.00	18.63	90.48	1.00	
	0.00	0.00											
0.00	7 BBB26	1.00	0.00	0.00		0.00	0.00	1.00	100.00	17.65	100.00	0.00	
0.00	8 BE01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.92	100.00	0.00	
0.49	9 BG01	8.00	1.00	56.00	1.79			7.00	87.50	24.51	75.76	27.50	
	0.00	0.00											
0.50	10 BG02	3.00	0.00	6.00	0.00			3.00	100.00	6.86	87.50	3.00	
	0.00	0.00											
0.00	11 BG03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.90	100.00	0.00	
0.00	12 BGH26	1.00	0.00	0.00		0.00	0.00	1.00	100.00	13.73	100.00	0.00	
0.50	13 BLH19	2.00	0.00	2.00	0.00			2.00	100.00	6.86	100.00	1.00	
	0.00	0.00											
0.50	14 BLH25	3.00	0.00	6.00	0.00			3.00	100.00	19.61	95.24	3.00	
	0.00	0.00											
0.25	15 BLH26	2.00	1.00	2.00	50.00			1.00	50.00	25.49	89.66	0.50	
	0.00	0.00											
0.50	16 BLH35	3.00	0.00	6.00	0.00			3.00	100.00	22.55	79.31	3.00	
	0.00	0.00											
0.00	17 BLH48	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.92	100.00	0.00	
0.00	18 BLH50	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.88	100.00	0.00	
0.50	19 BP01	18.00	1.00	306.00	0.33			17.00	94.44	41.18	75.00	152.50	
	0.00	0.00											
0.50	20 BP02	3.00	0.00	6.00	0.00			3.00	100.00	4.90	71.43	3.00	
	0.00	0.00											
0.00	21 BP03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.92	100.00	0.00	
0.00	22 BP04	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.92	100.00	0.00	
0.50	23 BP05	2.00	0.00	2.00	0.00			2.00	100.00	11.76	85.71	1.00	
	0.00	0.00											
0.50	24 BP06	3.00	0.00	6.00	0.00			3.00	100.00	5.88	85.71	3.00	
	0.00	0.00											
0.00	25 BP07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.90	100.00	0.00	
0.00	26 BS12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.86	100.00	0.00	
0.00	27 BSC10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	17.65	100.00	0.00	
0.00	28 BSC19	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.80	90.91	0.00	
0.50	29 BSH09	2.00	0.00	2.00	0.00			2.00	100.00	19.61	95.24	1.00	
	0.00	0.00											
0.25	30 BSH13	2.00	1.00	2.00	50.00			1.00	50.00	15.69	84.21	0.50	
	0.00	0.00											
0.50	31 BSH17	3.00	0.00	6.00	0.00			3.00	100.00	21.57	81.48	3.00	
	0.00	0.00											
0.00	32 BSH26	1.00	0.00	0.00		0.00	0.00	1.00	100.00	17.65	100.00	0.00	
0.50	33 BSH45	3.00	0.00	6.00	0.00			3.00	100.00	21.57	91.67	3.00	
	0.00	0.00											

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.50	0.00	0.00	0.00	2.00	0.00				2.00	100.00	18.63	90.48	1.00
0.50	0.00	0.00	0.00	6.00	0.00				3.00	100.00	21.57	81.48	3.00
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.94	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	10.78	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	10.78	100.00	0.00	
0.50	0.00	0.00	0.00	6.00	0.00				3.00	100.00	17.65	100.00	3.00
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	10.78	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	10.78	100.00	0.00	
0.50	0.00	0.00	0.00	12.00	0.00				4.00	100.00	17.65	94.74	6.00
0.50	0.00	0.00	1.00	110.00	0.91				10.00	90.91	23.53	85.71	54.50
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.88	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	10.78	100.00	0.00	
0.47	0.00	0.00	6.00	2.00	30.00	6.67			4.00	66.67	18.63	82.61	14.00
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.88	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	10.78	100.00	0.00	
0.50	3.00	25.00	4.00	0.00	12.00	0.00			4.00	100.00	28.43	96.67	6.00
0.50	0.00	0.00	2.00	0.00	2.00	0.00			2.00	100.00	4.90	100.00	1.00
0.25	0.00	0.00	2.00	1.00	2.00	50.00			1.00	50.00	9.80	76.92	0.50
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.88	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.86	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	6.86	100.00	0.00	
0.50	0.00	0.00	2.00	0.00	2.00	0.00			2.00	100.00	13.73	93.33	1.00
0.48	4.00	9.52	7.00	2.00	42.00	4.76			5.00	71.43	21.57	84.62	20.00
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.92	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.94	100.00	0.00	
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.94	100.00	0.00	
0.50	0.00	0.00	4.00	0.00	12.00	0.00			4.00	100.00	15.69	88.89	6.00
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.80	90.91	0.00	
0.50	0.00	0.00	2.00	0.00	2.00	0.00			2.00	100.00	4.90	83.33	1.00
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.94	100.00	0.00	
0.50	0.00	0.00	4.00	0.00	12.00	0.00			4.00	100.00	9.80	83.33	6.00
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.90	100.00	0.00	
0.50	0.00	0.00	2.00	0.00	2.00	0.00			2.00	100.00	4.90	100.00	1.00
0.00		1.00	0.00	0.00		0.00	0.00	1.00	100.00	4.90	100.00	0.00	
0.50	0.00	0.00	3.00	0.00	6.00	0.00			3.00	100.00	8.82	100.00	3.00

12	13	14	1	2	3	4	5	6	7	8	9	10	11
nBroke	EgoBet	Size nEgoBe	Ties	Pairs	Densit	AvgDis	Diamet	nWeakC	pWeakC	2StepR	ReachE	Broker	
0.00	69 NP03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.80	90.91	0.00	
0.50	70 NP07	3.00	0.00	6.00	0.00			3.00	100.00	3.92	100.00	3.00	
0.00	71 NP10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.94	100.00	0.00	
0.00	72 NP11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	9.80	90.91	0.00	
0.00	73 NP12	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.92	100.00	0.00	
0.00	74 NP13	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.92	100.00	0.00	
0.00	75 NS05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.94	100.00	0.00	
0.50	76 PA01	2.00	0.00	2.00	0.00			2.00	100.00	17.65	94.74	1.00	
0.50	77 PA02	2.00	0.00	2.00	0.00			2.00	100.00	6.86	100.00	1.00	
0.50	78 PA03	3.00	0.00	6.00	0.00			3.00	100.00	15.69	100.00	3.00	
0.50	79 PA07	6.00	0.00	30.00	0.00			6.00	100.00	18.63	100.00	15.00	
0.00	80 PA10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.88	100.00	0.00	
0.00	81 PA11	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.88	100.00	0.00	
0.50	82 PBB06	2.00	0.00	2.00	0.00			2.00	100.00	7.84	88.89	1.00	
0.00	83 PBB07	1.00	0.00	0.00		0.00	0.00	1.00	100.00	13.73	100.00	0.00	
0.50	84 PBB09	4.00	0.00	12.00	0.00			4.00	100.00	22.55	92.00	6.00	
0.50	85 PBB19	2.00	0.00	2.00	0.00			2.00	100.00	16.67	100.00	1.00	
0.50	86 PBB31	3.00	0.00	6.00	0.00			3.00	100.00	15.69	100.00	3.00	
0.00	87 PBB33	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.94	100.00	0.00	
0.50	88 PCA02	4.00	0.00	12.00	0.00			4.00	100.00	16.67	100.00	6.00	
0.00	89 PE01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.88	100.00	0.00	
0.50	90 PG01	14.00	0.00	182.00	0.00			14.00	100.00	34.31	94.59	91.00	
0.00	91 PG02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.96	100.00	0.00	
0.50	92 PLH01	3.00	0.00	6.00	0.00			3.00	100.00	22.55	95.83	3.00	
0.50	93 PLH02	3.00	0.00	6.00	0.00			3.00	100.00	15.69	94.12	3.00	
0.50	94 PLH08	2.00	0.00	2.00	0.00			2.00	100.00	14.71	100.00	1.00	
0.00	95 PP02	1.00	0.00	0.00		0.00	0.00	1.00	100.00	1.96	100.00	0.00	
0.00	96 PS06	1.00	0.00	0.00		0.00	0.00	1.00	100.00	5.88	100.00	0.00	
0.00	97 PSC10	1.00	0.00	0.00		0.00	0.00	1.00	100.00	13.73	100.00	0.00	
0.50	98 PSC30	2.00	0.00	2.00	0.00			2.00	100.00	14.71	100.00	1.00	
0.50	99 PSH01	2.00	0.00	2.00	0.00			2.00	100.00	19.61	95.24	1.00	
0.00	100 PSH05	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.94	100.00	0.00	
0.50	101 RG01	5.00	0.00	20.00	0.00			5.00	100.00	12.75	86.67	10.00	
0.00	102 RG03	1.00	0.00	0.00		0.00	0.00	1.00	100.00	2.94	100.00	0.00	
0.00	103 RP01	1.00	0.00	0.00		0.00	0.00	1.00	100.00	3.92	100.00	0.00	